

Gold Line Phase II

Pasadena to Montclair - Foothill Extension

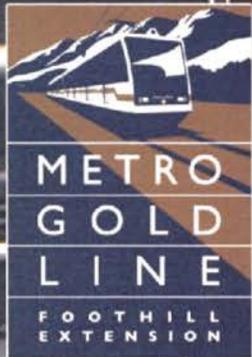
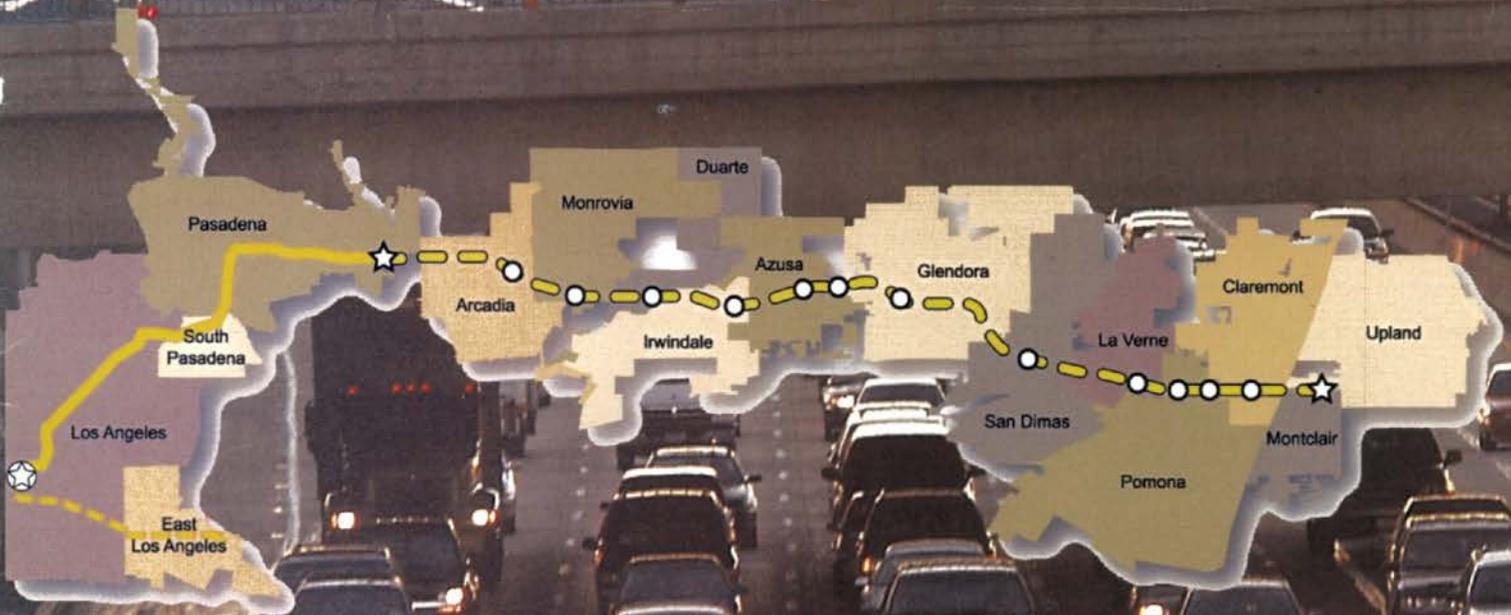
Draft Environmental Impact Statement

Draft Environmental Impact Report

(SCH No. 200361157)

April 2004

Volume 2, Book 1: DEIS/ DEIR



U.S. Department of Transportation
Federal Transit Administration

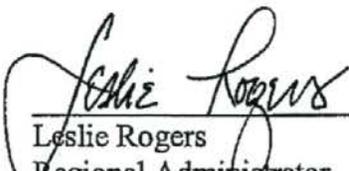
GOLD LINE PHASE II
PASADENA TO MONTCLAIR
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
DRAFT ENVIRONMENTAL IMPACT REPORT (SCH No. 200361157)

Los Angeles and San Bernardino Counties, California

Prepared by:
US DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION
and
LOS ANGELES TO PASADENA METRO BLUE LINE CONSTRUCTION AUTHORITY

In cooperation with:
Federal Railroad Administration
San Bernardino Associated Governments
San Gabriel Valley Council of Governments
Los Angeles County Metropolitan Transportation Authority

Submitted Pursuant to:
National Environmental Policy Act of 1969, §102,42 USC §4332; Federal Transit Laws, Title 49 USC Chapter 53, §5301(e), §5323(b) and §5324(b); Title 49 USC §303, formerly Department of Transportation Act, §4(f); National Historic Preservation Act of 1996, §106, 16 USC 470(f); Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Flood Plain Management); Executive Order 12898 (Environmental Justice); Executive Order 13045 (Environmental Health and Safety Risks to Children); Executive Order 13112 (Invasive Species); and Executive Order 13166 (Improving Access to Services for Persons with Limited English Proficiency). California Environmental Quality Act, Public Resources Code 2100 *et seq.*; and the State of California CEQA Guidelines as amended December 1, 2003 (California Code of Regulations, Title 14, Chapter 3 §15000 *et seq.*)



Leslie Rogers
Regional Administrator
Federal Transit Administration

4/23/04

Date



Habib F. Balian
Chief Executive Officer
Los Angeles To Pasadena Metro Blue Line
Construction Authority

4/19/04

Date

This Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) describes and summarizes the transportation impacts, environmental impacts, and costs for the proposed Gold Line Phase II Light Rail Transit (LRT) Extension Project being considered in Los Angeles and San Bernardino Counties, California. The proposed project is an extension of light rail transit from the city of Pasadena on the west to the cities of Montclair and Upland on the east. The proposed project would be construction of an 8.7-mile rail extension (Pasadena to Irwindale with 4 stations, 2,350 parking spaces [by 2025], and a maintenance and operation facility) or a 24-mile rail extension (Pasadena to Montclair with 12 stations, 7,150 parking spaces [by 2025], and a maintenance and operation facility). The lead agencies for the DEIS/DEIR are the Federal Transit Administration (FTA) and the Los Angeles to Pasadena Metro Blue Line Construction Authority (Construction Authority). Depending on the alternative selected, the Construction Authority may seek a federal transit New Starts grant to fund the selected Locally Preferred Alternative (LPA).

This report is a combined DEIS and DEIR, satisfying both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively. The DEIS/DEIR examines four alternatives: No Build, Transportation System Management (TSM), Light Rail Transit (LRT) on Triple Tracks, and LRT on Double Tracks Alternatives. Each of the LRT alternatives is assessed for a Full Build Alternative (24 miles) and a Build Alternative to Maintenance Facility (8.7 miles). The proposed maintenance facility would encompass about 33 acres and would accommodate about 170 vehicles (19 to 29 for the proposed Full Build project and the remainder for the balance of the overall (44 miles) Gold Line system. The facility would support an ultimate system with operation of 3-car trains at 5-minute headways. The LRT alternatives were developed based on extensive public involvement and initial environmental and technical analysis conducted as part of the Gold Line Phase II Alternatives Analysis conducted by the Construction Authority (January 2003). The DEIS/DEIR examines the socioeconomic and physical environmental impacts, capital and operating costs, and the potential effects on transportation and traffic for the alternatives being considered. Where adverse environmental effects under NEPA and significant environmental impacts under CEQA are identified, the document identifies draft mitigation measures that would eliminate or reduce impacts. The information contained in this document will be used by the Construction Authority to select an LPA for implementation of the Project and by FTA to make informed programming decisions and to ensure that potential environmental impacts are fully considered.

This DEIS/DEIR is being circulated for agency and public review to disclose potential environmental impacts associated with these alternatives. The comments received during the public review period for this document will be individually addressed in the Final Environmental Impact Statement/Final Environmental Impact Report (FEIS/FEIR) for the Project. Commenters are asked to focus their comments on the alternatives addressed in this environmental document. The public review period for this DEIS/DEIR is from May 7 to June 21, 2004. Public hearings will be held in each city in the study corridor (see page ii). During the public review process, the DEIS/DEIR and supporting technical reports are available for review at the **Construction Authority offices, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030** and the libraries and other locations listed on page iii. Copies of this DEIS/DEIR are available for purchase in hard copy form and on a CD-ROM. Contact the Construction Authority at 626-799-0080 or its website (www.metrogoldline.org) for more information. Comments may be submitted in writing to the address above, at any public hearing, by fax to 626-799-8599 or by e-mail to eircomments@metrogoldline.org before midnight on June 21, 2004.

The Construction Authority Board of Directors will consider all comments prior to adoption of the LPA and certification of an FEIR. FTA will consider all comments in the preparation of the FEIS and adoption of a Record of Decision.

For additional information concerning this document, please contact:

Mr. A. Joseph Ossi; Office of Human and Natural Environment; FTA, 400 7th Street SW, Room 9413, TPL-30, Washington D.C. 20590; Phone: (202) 366-1613

Mr. Ray Sukys; Office of Planning and Program Development; FTA, Region 9, 201 Mission Street, Suite 2210, San Francisco, CA, 94105; Phone: (415) 744-3115

Mr. Erv Poka, Metropolitan Office, FTA/FHWA, Region 9; 888 S. Figueroa Street, Suite 1850, Los Angeles, CA, 90017; Phone: (213) 202-3950.

Mr. Habib F. Balian, Chief Executive Office, Los Angeles to Pasadena Metro Blue Line Construction Authority, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030; Phone: (626) 799-0080

| GOLD LINE PHASE II DEIS/DIER DOCUMENT LOCATIONS | |
|--|---|
| Location | Address |
| Construction Authority | 625 Fair Oaks Ave., Suite 200, South Pasadena |
| Arcadia Public Library | 20 W. Duarte Rd., Arcadia |
| Azusa Public Library | 729 N. Dalton Ave., Azusa |
| Claremont Public Library | 208 N. Harvard Ave., Claremont |
| Duarte Public Library | 1301 Buena Vista St., Duarte |
| Glendora Public Library | 140 S. Glendora Ave., Glendora |
| Irwindale Public Library | 5050 North Irwindale Ave., Irwindale |
| La Verne Public Library | 3640 D St., La Verne |
| Los Angeles Public Library | 6145 N. Figueroa St., Los Angeles |
| Monrovia Public Library | 321 South Myrtle Ave., Monrovia |
| Montclair Public Library | 9955 Fremont Ave. Montclair |
| Pasadena Public Library | 285 E. Walnut St., Pasadena |
| Pomona Public Library | 625 S. Garey Ave., Pomona |
| San Dimas Public Library | 145 N. Walnut Ave., San Dimas |
| San Gabriel Valley Council of Governments | 3452 East Foothill Blvd., Suite 810, Pasadena |
| South Pasadena Public Library | 1100 Oxley St., South Pasadena |
| Upland Public Library | 450 N. Euclid Ave., Upland |
| Note: Copies of Technical Reports are available only at the Construction Authority | |

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Esta Declaración Preliminar de Impactos Ambientales e Informe Preliminar de Impactos Ambientales (DEIS/DEIR, siglas en inglés) describe y resume los impactos al transporte y al ambiente y los costos para el Proyecto de extensión de la Fase II Transporte de Tren Ligero (LRT) de la Línea Dorada que está considerándose para los condados de Los Ángeles y San Bernardino. El Proyecto propuesto es una extensión del tren ligero que transita de la ciudad de Pasadena en el oeste y las ciudades de Montclair y Upland en el este. El proyecto propuesto es la construcción de una extensión de 8.7 millas de vía (Pasadena a Irwindale con 4 estaciones, 2,350 espacios de estacionamiento [para el 2025], y una instalación para mantenimiento y operaciones), o una extensión de 24 millas de vía (Pasadena a Montclair con 12 estaciones, 7,150 lugares de estacionamiento [para el 2025] y una instalación para mantenimiento y operaciones). Las agencias encargadas del DEIS/DEIR son la Administración de Tránsito Federal (FTA) y la Autoridad de Construcción de la Línea Azul Metro de Los Ángeles a Pasadena (Autoridad de Construcción). Es la intención de la Autoridad de Construcción, dependiendo de la alternativa seleccionada, procurar la subvención federal para Nuevos Inicios (New Starts Grant) para financiar la Alternativa Preferida Localmente (LPA) seleccionada.

Este informe es una combinación del DEIS y DEIR, satisfaciendo tanto la Ley Nacional de Política Ambiental (NEPA) y la Ley de Calidad Ambiental de California (CEQA), respectivamente. El DEIS/DEIR explora cuatro alternativas: La No Construcción, Administración de Sistemas de Transporte (TSM), Transporte de Tren Ligero (LRT) por Riel Triple, y LRT en Alternativa de Riel Doble. Cada una de las alternativas de LTR es analizada con Alternativa de Construcción completa (24 millas) y con Alternativa de Construcción a Instalación de Mantenimiento (8.7 millas). La instalación de mantenimiento propuesta comprendería cerca de 33 acres y tendría lugar para 170 vehículos (19 a 29 para la propuesta de proyecto de construcción completo y lo demás para el resto del sistema de Línea Dorada (44 millas). Esta instalación dará apoyo al sistema y operación final de trenes de 3 vagones en intervalos de 5 minutos. Las alternativas de LRT fueron desarrolladas basándose en extensa participación Pública y análisis técnicos y ambientales llevados a cabo como parte del Análisis de Alternativas Fase II de la Línea Dorada, conducidos por la Autoridad de Construcción (Enero 2003). El DEIS/DEIR examina los impactos socioeconómicos y físico ambientales, costos capitales y operacionales y los efectos potenciales al transporte y al tránsito para las alternativas consideradas. En donde se identifiquen efectos ambientales adversos bajo NEPA e impactos ambientales significativos bajo CEQA, el documento identifica medidas mitigatorias preliminares que podrían eliminar o reducir los impactos. La información contenida en este documento será utilizada por la Autoridad de Construcción para seleccionar la LPA para la implementación del proyecto y por la FTA para tomar decisiones bien informadas de programación y para asegurarse de que los impactos ambientales potenciales están considerados completamente.

Este DEIS/DEIR es puesto en circulación para revisión pública y de otras agencias para divulgar los impactos ambientales potenciales asociados con estas alternativas. Los comentarios recibidos durante el periodo de revisión pública para este documento serán abordados individualmente en la Declaración Final de Impactos Ambientales/Informe Final de Impactos Ambientales (FEIS/FEIR) para el Proyecto. Se solicita que los comentarios estén enfocados a las alternativas abordadas en este documento sobre el ambiente. El periodo para revisión pública para este DEIS/DEIR es del 7 de mayo al 21 de junio, 2004. Se llevarán a cabo audiencias públicas en cada una de las ciudades en el corredor estudiado (ver pagina ii). Durante el proceso de revisión pública, el DEIS/DEIR junto con los informes técnicos que lo apoyan, están disponibles para su revisión en las oficinas **Construction Authority offices, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030** y en las bibliotecas y otros lugares listados en la pagina iii. Copias del DEIS/DEIR están disponibles para su compra en papel impreso y en CD-ROM. Comuníquese con la Autoridad de Construcción al 626-799-0080 o su página en Internet (www.metrogoldline.org) para más información. Puede enviar sus comentarios por escrito al domicilio mencionado encima, o en las audiencias públicas, por fax al 626-799-8599, o correo electrónico al eircomments@metrogoldline.org antes de la medianoche del 21 de junio, 2004.

La junta directiva de la Autoridad de Construcción considerará todos los comentarios antes de adoptar la LPA y certificar el FEIR. La FTA considerará todos los comentarios en la preparación del FEIS y adopción de un Registro de Decisión.

Para información adicional concerniente a este documento por favor comuníquese con:

Mr. A. Joseph Ossi; Office of Human and Natural Environment; FTA, 400 7th Street SW, Room 9413, TPL-30, Washington D.C. 20590; Teléfono: (202) 366-1613

Mr. Ray Sukys; Office of Planning and Program Development; FTA, Region 9, 201 Mission Street, Suite 2210, San Francisco, CA, 94105; Teléfono: (415) 744-3115

Mr. Erv Poka, Metropolitan Office, FTA/FHWA, Region 9; 888 S. Figueroa Street, Suite 1850, Los Angeles, CA, 90017; Teléfono: (213) 202-3950.

Mr. Habib F. Balian, Chief Executive Office, Los Angeles to Pasadena Metro Blue Line Construction Authority, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030; Teléfono: (626) 799-0080

| LUGARES CON DOCUMENTOS DEIS/DEIR LINEA DORADA FASE II | |
|---|---|
| Lugar | Domicilio |
| Autoridad de Construcción | 625 Fair Oaks Ave., Suite 200, South Pasadena |
| Biblioteca Pública Arcadia | 20 W. Duarte Rd., Arcadia |
| Biblioteca Pública Azusa | 729 N. Dalton Ave., Azusa |
| Biblioteca Pública Claremont | 208 N. Harvard Ave., Claremont |
| Biblioteca Pública Duarte | 1301 Buena Vista St., Duarte |
| Biblioteca Pública Glendora | 140 S. Glendora Ave., Glendora |
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| Concilio de Gobiernos del Valle de San Gabriel | 3452 East Foothill Blvd., Suite 810, Pasadena |
| Biblioteca Pública South Pasadena | 1100 Oxley St., South Pasadena |
| Biblioteca Pública Upland | 450 N. Euclid Ave., Upland |
| Nota: Copia de Informes Técnicos solo esta disponible en la oficina de la Autoridad de Construcción | |

本「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 描述並總結了擬在加州洛杉磯和 San Bernardino Counties 實施的「黃金線路第二階段輕軌運輸延長項目」(Gold Line Phase II Light Rail Transit (LRT) Extension Project) 對交通以及環境帶來的影響及其成本。此提議項目是要在西部的 Pasadena 市到東部 Montclair 和 Upland 市之間加修輕軌運輸線路。此提議項目擬新建一條 8.7 英哩長的輕軌延長線 (從 Pasadena 到 Irwindale, 帶 4 個車站和 2,350 個停車位 [2025 年之前建成], 以及一個維護和運營設備) 或一條 24 英哩長的輕軌延長線 (從 Pasadena 到 Montclair, 帶 12 個車站, 7,150 個停車位 [2025 年之前建成], 以及一個維護和運營設備)。「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 的管理機構是「美國聯邦交通管理局」(Federal Transit Administration) 和「洛杉磯到 Pasadena 的地鐵藍線營建管理局」(Los Angeles to Pasadena Metro Blue Line Construction Authority, 簡稱「營建管理局」)。依照選用的方案,「營建管理局」將尋求聯邦運輸「新開始」項目來撥款並資助所選用的「當地優選方案」(LPA)。

本報告結合了「環境影響聲明草案」和「環境影響報告草案」,同時滿足了「國家環境政策法案」(NEPA) 和「加州環境品質法」(CEQA)。「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 審查了四種可選方案:不營建輕軌延長線、「交通系統管理」(TSM)、「三軌輕軌運輸」和「雙軌輕軌運輸」方案。針對每種輕軌運輸方案都評估了其「全面營建方案」(24 英哩)和「營建方案到維護設備」(8.7 英哩)。提議的維護設備將占地大約 33 英畝,能容納約 170 輛車(提議的「全面營建」項目為 19 到 29 英畝,及全長 44 英哩的黃金線路系統的剩餘部分)。此設備將可支持系統每隔 5 分鐘開出帶 3 節車廂的列車。輕軌運輸方案的開發是基於廣泛的公眾參與及初步環境和技術分析。此分析由「營建管理局」於 2003 年 1 月在作「黃金線路第二階段方案分析」時一並進行。「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 審查了在考量範圍內各方案的社會經濟及物理環境影響、資本和運營成本,以及對交通運輸存在的潛在影響。本報告指出「國家環境政策法案」下的不利環境影響和「加州環境品質法」(CEQA)的嚴重環境影響並提出草擬的緩解環境影響措施,以消除或減少對環境的影響。本文件中包含的信息將由「營建管理局」用來選擇要實施的「當地優選方案」,並由「美國聯邦交通管理局」用來在有詳實信息的情況下作規劃,並確保所有潛在環境影響都得到全面考量。

本「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 已在機構和公眾間流通,以便公開這些方案的潛在環境影響。在本文件的公審期間收到的意見和建議將在項目的「最終環境影響聲明/最終環境影響報告」(FEIS/FEIR) 中一一解答。評估者必須針對此環境文件中提及的方案做評估。本報告的公審期為 2004 年 5 月 7 日到 6 月 21 日。在各城市的學習走廊還將召開公開聽證會(參見第二頁)。在公審過程中,「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 及其輔助的技術報告可在「營建管理局」辦公室(625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030)及第三頁列出的圖書館及其他地點獲得以供查閱。你也可以購買本「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 的印刷本及 CD-ROM。若要了解更多信息,請致電 626-799-0080 聯系「營建管理局」或上網至 (www.metrogoldline.org)。如有意見或建議,請在 2004 年 6 月 21 日午夜前寫信到上面的地址、在公開聽證會提出、發送傳真到 626-799-8599,或寫電子郵件到 eircomments@metrogoldline.org。

「營建管理局董事會」將在採行「當地優選方案」並核准「最終環境影響報告」前對所有意見和建議作考量。美國聯邦交通管理局將在準備「最終環境影響聲明」和採行「決定記錄」時對意見和建議作考量。

如欲洽詢此文件的相關信息,請聯系:

A. Joseph Ossi 先生; Office of Human and Natural Environment; FTA, 400 7th Street SW, Room 9413, TPL-30, Washington D.C. 20590; 電話號碼: (202) 366-1613

Ray Sukys 先生; Office of Planning and Program Development; FTA, Region 9, 201 Mission Street, Suite 2210, San Francisco, CA, 94105; 電話號碼: (415) 744-3115

Erv Poka 先生, Metropolitan Office, FTA/FHWA, Region 9; 888 S. Figueroa Street, Suite 1850, Los Angeles, CA, 90017; 電話號碼: (213) 202-3950

Habib F. Balian 先生, Chief Executive Office, Los Angeles to Pasadena Metro Blue Line Construction Authority, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030; 電話號碼: (626) 799-0080.

| 「黃金線路第二階段環境影響聲明草案/環境影響報告草案」文件地點 (GOLD LINE PHASE II DEIS/DEIR) | |
|--|---|
| 地點 | 地址 |
| 「營建管理局」 Construction Authority | 625 Fair Oaks Ave., Suite 200, South Pasadena |
| Arcadia 公共圖書館 | 20 W. Duarte Rd., Arcadia |
| Azusa 公共圖書館 | 729 N. Dalton Ave., Azusa |
| Claremont 公共圖書館 | 208 N. Harvard Ave., Claremont |
| Duarte 公共圖書館 | 1301 Buena Vista St., Duarte |
| Glendora 公共圖書館 | 140 S. Glendora Ave., Glendora |
| Irwindale 公共圖書館 | 5050 North Irwindale Ave., Irwindale |
| La Verne 公共圖書館 | 3640 D St., La Verne |
| Los Angeles 公共圖書館 | 6145 N. Figueroa St., Los Angeles |
| Monrovia 公共圖書館 | 321 South Myrtle Ave., Monrovia |
| Montclair 公共圖書館 | 9955 Fremont Ave. Montclair |
| Pasadena 公共圖書館 | 285 E. Walnut St., Pasadena |
| Pomona 公共圖書館 | 625 S. Garey Ave., Pomona |
| San Dimas 公共圖書館 | 145 N. Walnut Ave., San Dimas |
| San Gabriel Valley 政府議會 | 3452 East Foothill Blvd., Suite 810, Pasadena |
| South Pasadena 公共圖書館 | 1100 Oxley St., South Pasadena |
| Upland 公共圖書館 | 450 N. Euclid Ave., Upland |
| 註: 只有「營建管理局」才有提供技術報告 | |

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GOLD LINE PHASE II
PASADENA TO MONTCLAIR
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
DRAFT ENVIRONMENTAL IMPACT REPORT (SCH No. 200361157)

Los Angeles and San Bernardino Counties, California

Prepared by:
US DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION
and
LOS ANGELES TO PASADENA METRO BLUE LINE CONSTRUCTION AUTHORITY

In cooperation with:
Federal Railroad Administration
San Bernardino Associated Governments
San Gabriel Valley Council of Governments
Los Angeles County Metropolitan Transportation Authority

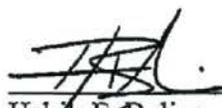
Submitted Pursuant to:
National Environmental Policy Act of 1969, §102,42 USC §4332; Federal Transit Laws, Title 49 USC Chapter 53, §5301(e), §5323(b) and §5324(b); Title 49 USC §303, formerly Department of Transportation Act, §4(f); National Historic Preservation Act of 1996, §106, 16 USC 470(f); Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Flood Plain Management); Executive Order 12898 (Environmental Justice); Executive Order 13045 (Environmental Health and Safety Risks to Children); Executive Order 13112 (Invasive Species); and Executive Order 13166 (Improving Access to Services for Persons with Limited English Proficiency). California Environmental Quality Act, Public Resources Code 2100 *et seq.*; and the State of California CEQA Guidelines as amended December 1, 2003 (California Code of Regulations, Title 14, Chapter 3 §15000 *et seq.*)



Leslie Rogers
Regional Administrator
Federal Transit Administration

4/23/04

Date



Habib P. Balian
Chief Executive Officer
Los Angeles To Pasadena Metro Blue Line
Construction Authority

4/19/04

Date

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This Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) describes and summarizes the transportation impacts, environmental impacts, and costs for the proposed Gold Line Phase II Light Rail Transit (LRT) Extension Project being considered in Los Angeles and San Bernardino Counties, California. The proposed project is an extension of light rail transit from the city of Pasadena on the west to the cities of Montclair and Upland on the east. The proposed project would be construction of an 8.7-mile rail extension (Pasadena to Irwindale with 4 stations, 2,350 parking spaces [by 2025], and a maintenance and operation facility) or a 24-mile rail extension (Pasadena to Montclair with 12 stations, 7,150 parking spaces [by 2025], and a maintenance and operation facility). The lead agencies for the DEIS/DEIR are the Federal Transit Administration (FTA) and the Los Angeles to Pasadena Metro Blue Line Construction Authority (Construction Authority). Depending on the alternative selected, the Construction Authority may seek a federal transit New Starts grant to fund the selected Locally Preferred Alternative (LPA).

This report is a combined DEIS and DEIR, satisfying both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively. The DEIS/DEIR examines four alternatives: No Build, Transportation System Management (TSM), Light Rail Transit (LRT) on Triple Tracks, and LRT on Double Tracks Alternatives. Each of the LRT alternatives is assessed for a Full Build Alternative (24 miles) and a Build Alternative to Maintenance Facility (8.7 miles). The proposed maintenance facility would encompass about 33 acres and would accommodate about 170 vehicles (19 to 29 for the proposed Full Build project and the remainder for the balance of the overall (44 miles) Gold Line system. The facility would support an ultimate system with operation of 3-car trains at 5-minute headways. The LRT alternatives were developed based on extensive public involvement and initial environmental and technical analysis conducted as part of the Gold Line Phase II Alternatives Analysis conducted by the Construction Authority (January 2003). The DEIS/DEIR examines the socioeconomic and physical environmental impacts, capital and operating costs, and the potential effects on transportation and traffic for the alternatives being considered. Where adverse environmental effects under NEPA and significant environmental impacts under CEQA are identified, the document identifies draft mitigation measures that would eliminate or reduce impacts. The information contained in this document will be used by the Construction Authority to select an LPA for implementation of the Project and by FTA to make informed programming decisions and to ensure that potential environmental impacts are fully considered.

This DEIS/DEIR is being circulated for agency and public review to disclose potential environmental impacts associated with these alternatives. The comments received during the public review period for this document will be individually addressed in the Final Environmental Impact Statement/Final Environmental Impact Report (FEIS/FEIR) for the Project. Commenters are asked to focus their comments on the alternatives addressed in this environmental document. The public review period for this DEIS/DEIR is from May 7 to June 21, 2004. Public hearings will be held in each city in the study corridor (see page ii). During the public review process, the DEIS/DEIR and supporting technical reports are available for review at the **Construction Authority offices, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030** and the libraries and other locations listed on page iii. Copies of this DEIS/DEIR are available for purchase in hard copy form and on a CD-ROM. Contact the Construction Authority at 626-799-0080 or its website (www.metrogoldline.org) for more information. Comments may be submitted in writing to the address above, at any public hearing, by fax to 626-799-8599 or by e-mail to eircomments@metrogoldline.org before midnight on June 21, 2004.

The Construction Authority Board of Directors will consider all comments prior to adoption of the LPA and certification of an FEIR. FTA will consider all comments in the preparation of the FEIS and adoption of a Record of Decision.

For additional information concerning this document, please contact:

Mr. A. Joseph Ossi; Office of Human and Natural Environment; FTA, 400 7th Street SW, Room 9413, TPL-30, Washington D.C. 20590; Phone: (202) 366-1613

Mr. Ray Sukys; Office of Planning and Program Development; FTA, Region 9, 201 Mission Street, Suite 2210, San Francisco, CA, 94105; Phone: (415) 744-3115

Mr. Erv Poka, Metropolitan Office, FTA/FHWA, Region 9; 888 S. Figueroa Street, Suite 1850, Los Angeles, CA, 90017; Phone: (213) 202-3950.

Mr. Habib F. Balian, Chief Executive Office, Los Angeles to Pasadena Metro Blue Line Construction Authority, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030; Phone: (626) 799-0080

| GOLD LINE PHASE II DEIS/DEIR PUBLIC HEARING SCHEDULE | | |
|---|--|--|
| Date | Location | Time/Format |
| Wed., May 19 | Claremont Council Chambers 225 Second St., Claremont | 5-7 pm - Open House 7:00 pm - Presentation & Public Hearing with Traffic & Transportation Commission |
| Thur., May 20 | Teen and Family Center 241 W. Dawson Ave., Glendora | 5:30-6:30 pm - Open House 6:30 pm - Presentation & Public Hearing. Town Hall format with City Council and Transportation Commission |
| Wed., May 26 | Duarte Community Center 1600 Huntington Dr., Duarte | 6:00 pm – Open House |
| Tues., June 1 | Ramona Hall Community Center 4580 N. Figueroa St., Los Angeles | 5:30 – 7:30 – Open House & Public Hearing |
| Thur., June 3 | Monrovia Community Center 119 W. Palm, Monrovia | 6-8 pm – Open House |
| Mon., June 7 | Montclair Council Chambers 5111 Benito St., Montclair | 5-7 pm - Open House 7:00 pm - Presentation & Public Hearing |
| Tues., June 8 | San Dimas Council Chambers 245 E Bonita Ave., San Dimas | 5:30 pm- Open House 7:00 pm - Presentation & Public Hearing |
| Wed., June 9 | La Verne Council Chambers 3660 D St., La Verne | 5:30-6:30 pm - Open House 6:30 pm - Presentation & Public Hearing with Planning Commission |
| Wed., June 9 | Due to seismic refit, city hall will be closed. Call 626-744-4009 for location | 5:15-6:15 pm - Open House 6:15 pm - Public Hearing with Planning Commission |
| Thur., June 10 | South Pasadena Council Chambers 1424 Mission St., So. Pasadena | 6:30-7:30 pm - Open House 7:30 pm - Presentation & Public Hearing |
| Mon., June 14 | Ganesha Park Community Center 1575 N. White Ave., Pomona | 6-8:30 pm - Open House |
| Mon., June 14 | Arcadia Council Chambers 240 Huntington Dr., Arcadia | 7:00 pm - Presentation & Public Hearing |
| Tues., June 15 | Irwindale Council Chambers 5050 N. Irwindale, Irwindale | 5-6 pm - Open House 6:00 pm - Presentation & Public Hearing |
| Wed., June 16 | Azusa Council Chambers 213 E. Foothill Blvd., Azusa | 6:30 pm - Open House 7:30 pm - Presentation & Public Hearing with Planning Commission |
| Thurs. June 17 | Duarte Community Center 1600 Huntington Dr., Duarte | 4:30 pm Presentation & Public Hearing with San Gabriel Valley Council of Governments Joint Powers Authority |

| GOLD LINE PHASE II DEIS/DIER DOCUMENT LOCATIONS | |
|--|---|
| Location | Address |
| Construction Authority | 625 Fair Oaks Ave., Suite 200, South Pasadena |
| Arcadia Public Library | 20 W. Duarte Rd., Arcadia |
| Azusa Public Library | 729 N. Dalton Ave., Azusa |
| Claremont Public Library | 208 N. Harvard Ave., Claremont |
| Duarte Public Library | 1301 Buena Vista St., Duarte |
| Glendora Public Library | 140 S. Glendora Ave., Glendora |
| Irwindale Public Library | 5050 North Irwindale Ave., Irwindale |
| La Verne Public Library | 3640 D St., La Verne |
| Los Angeles Public Library | 6145 N. Figueroa St., Los Angeles |
| Monrovia Public Library | 321 South Myrtle Ave., Monrovia |
| Montclair Public Library | 9955 Fremont Ave. Montclair |
| Pasadena Public Library | 285 E. Walnut St., Pasadena |
| Pomona Public Library | 625 S. Garey Ave., Pomona |
| San Dimas Public Library | 145 N. Walnut Ave., San Dimas |
| San Gabriel Valley Council of Governments | 3452 East Foothill Blvd., Suite 810, Pasadena |
| South Pasadena Public Library | 1100 Oxley St., South Pasadena |
| Upland Public Library | 450 N. Euclid Ave., Upland |
| Note: Copies of Technical Reports are available only at the Construction Authority | |

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Esta Declaración Preliminar de Impactos Ambientales e Informe Preliminar de Impactos Ambientales (DEIS/DEIR, siglas en inglés) describe y resume los impactos al transporte y al ambiente y los costos para el Proyecto de extensión de la Fase II Transporte de Tren Ligero (LRT) de la Línea Dorada que está considerándose para los condados de Los Ángeles y San Bernardino. El Proyecto propuesto es una extensión del tren ligero que transita de la ciudad de Pasadena en el oeste y las ciudades de Montclair y Upland en el este. El proyecto propuesto es la construcción de una extensión de 8.7 millas de vía (Pasadena a Irwindale con 4 estaciones, 2,350 espacios de estacionamiento [para el 2025], y una instalación para mantenimiento y operaciones), o una extensión de 24 millas de vía (Pasadena a Montclair con 12 estaciones, 7,150 lugares de estacionamiento [para el 2025] y una instalación para mantenimiento y operaciones). Las agencias encargadas del DEIS/DEIR son la Administración de Tránsito Federal (FTA) y la Autoridad de Construcción de la Línea Azul Metro de Los Ángeles a Pasadena (Autoridad de Construcción). Es la intención de la Autoridad de Construcción, dependiendo de la alternativa seleccionada, procurar la subvención federal para Nuevos Inicios (New Starts Grant) para financiar la Alternativa Preferida Localmente (LPA) seleccionada.

Este informe es una combinación del DEIS y DEIR, satisfaciendo tanto la Ley Nacional de Política Ambiental (NEPA) y la Ley de Calidad Ambiental de California (CEQA), respectivamente. El DEIS/DEIR explora cuatro alternativas: La No Construcción, Administración de Sistemas de Transporte (TSM), Transporte de Tren Ligero (LRT) por Riel Triple, y LRT en Alternativa de Riel Doble. Cada una de las alternativas de LTR es analizada con Alternativa de Construcción completa (24 millas) y con Alternativa de Construcción a Instalación de Mantenimiento (8.7 millas). La instalación de mantenimiento propuesta comprendería cerca de 33 acres y tendría lugar para 170 vehículos (19 a 29 para la propuesta de proyecto de construcción completo y lo demás para el resto del sistema de Línea Dorada (44 millas). Esta instalación dará apoyo al sistema y operación final de trenes de 3 vagones en intervalos de 5 minutos. Las alternativas de LRT fueron desarrolladas basándose en extensa participación Pública y análisis técnicos y ambientales llevados a cabo como parte del Análisis de Alternativas Fase II de la Línea Dorada, conducidos por la Autoridad de Construcción (Enero 2003). El DEIS/DEIR examina los impactos socioeconómicos y físico ambientales, costos capitales y operacionales y los efectos potenciales al transporte y al tránsito para las alternativas consideradas. En donde se identifiquen efectos ambientales adversos bajo NEPA e impactos ambientales significativos bajo CEQA, el documento identifica medidas mitigatorias preliminares que podrían eliminar o reducir los impactos. La información contenida en este documento será utilizada por la Autoridad de Construcción para seleccionar la LPA para la implementación del proyecto y por la FTA para tomar decisiones bien informadas de programación y para asegurarse de que los impactos ambientales potenciales están considerados completamente.

Este DEIS/DEIR es puesto en circulación para revisión pública y de otras agencias para divulgar los impactos ambientales potenciales asociados con estas alternativas. Los comentarios recibidos durante el periodo de revisión pública para este documento serán abordados individualmente en la Declaración Final de Impactos Ambientales/Informe Final de Impactos Ambientales (FEIS/FEIR) para el Proyecto. Se solicita que los comentarios estén enfocados a las alternativas abordadas en este documento sobre el ambiente. El periodo para revisión pública para este DEIS/DEIR es del 7 de mayo al 21 de junio, 2004. Se llevarán a cabo audiencias públicas en cada una de las ciudades en el corredor estudiado (ver pagina ii). Durante el proceso de revisión pública, el DEIS/DEIR junto con los informes técnicos que lo apoyan, están disponibles para su revisión en las oficinas **Construction Authority offices, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030** y en las bibliotecas y otros lugares listados en la pagina iii. Copias del DEIS/DEIR están disponibles para su compra en papel impreso y en CD-ROM. Comuníquese con la Autoridad de Construcción al 626-799-0080 o su página en Internet (www.metrogoldline.org) para más información. Puede enviar sus comentarios por escrito al domicilio mencionado encima, o en las audiencias públicas, por fax al 626-799-8599, o correo electrónico al eircomments@metrogoldline.org antes de la medianoche del 21 de junio, 2004.

La junta directiva de la Autoridad de Construcción considerará todos los comentarios antes de adoptar la LPA y certificar el FEIR. La FTA considerará todos los comentarios en la preparación del FEIS y adopción de un Registro de Decisión.

Para información adicional concerniente a este documento por favor comuníquese con:

Mr. A. Joseph Ossi; Office of Human and Natural Environment; FTA, 400 7th Street SW, Room 9413, TPL-30, Washington D.C. 20590; Teléfono: (202) 366-1613

Mr. Ray Sukys; Office of Planning and Program Development; FTA, Region 9, 201 Mission Street, Suite 2210, San Francisco, CA, 94105; Teléfono: (415) 744-3115

Mr. Erv Poka, Metropolitan Office, FTA/FHWA, Region 9; 888 S. Figueroa Street, Suite 1850, Los Angeles, CA, 90017; Teléfono: (213) 202-3950.

Mr. Habib F. Balian, Chief Executive Office, Los Angeles to Pasadena Metro Blue Line Construction Authority, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030; Teléfono: (626) 799-0080

| AUDIENCIAS PUBLICAS DEIS/DEIR LINEA DORADA FASE II | | |
|--|---|--|
| Fecha | Lugar | Horario/Formato |
| Miércoles 19 de mayo | Cámara del Concilio de Claremont 207 Harvard Ave., Claremont | 5-7 pm - Open House 7:00 pm – Presentación y Audiencia Pública con la Comisión de Tráfico y Transporte |
| Jueves 20 de mayo | Centro Familiar y de Jovenes 241 W. Dawson Ave., Glendora | 5:30-6:30 pm - Open House 6:30 pm - Presentación y Audiencia Pública. Formato de Town Hall con el Concilio de la Ciudad y Comisión de Transporte |
| Miércoles 26 de mayo | Centro Comunitario de Duarte 1600 Huntington Dr., Duarte | 6:00 pm – Open House |
| Martes 1 de junio | Centro Comunitario Ramona Hall 4580 N. Figueroa St., Los Angeles | 5:30 – 7:30 – Open House & Audiencia Pública |
| Jueves 3 de junio | Centro Comunitario Monrovia 119 W. Palm, Monrovia | 6-8 pm – Open House |
| Lunes 7 de junio | Cámara del Concilio de Montclair 5111 Benito St., Montclair | 5-7 pm - Open House 7:00 pm - Presentación y Audiencia Pública |
| Martes 8 de junio | Cámara del Concilio San Dimas 245 E Bonita Ave., San Dimas | 5:30 pm- Open House 7:00 pm - Presentación y Audiencia Pública |
| Miércoles 9 de junio | Cámara del Concilio de La Verne 3660 D St., La Verne | 5:30-6:30 pm - Open House 6:30 pm - Presentación y Audiencia Pública con la Comisión de Planificación |
| Miércoles 9 de junio | Debido a restauración sísmica, la alcaldía estará cerrada. Llame al 626-744-4009 para el lugar. | 5:15 - 6:15 Open House 6:15 pm - Audiencia Pública con la Comisión de Planificación |
| Jueves 10 de junio | Cámara del Concilio de South Pasadena 1424 Mission St., So. Pasadena | 6:30-7:30 pm - Open House 7:30 pm - Presentación y Audiencia Pública |
| Lunes 14 de junio | Centro Comunitario Ganesha Park 1575 N. White Ave., Pomona | 6-8:30 pm - Open House |
| Lunes 14 de junio | Cámara del Concilio de Arcadia 240 Huntington Dr., Arcadia | 7:00 pm - Presentación y Audiencia Pública |
| Martes 15 de junio | Cámara del Concilio de Irwindale 5050 N. Irwindale, Irwindale | 5-6 pm - Open House 6:00 pm - Presentación y Audiencia Pública |
| Miércoles 16 de junio | Cámara del Concilio de Azusa 213 E. Foothill Blvd., Azusa | 6:30 pm - Open House 7:30 pm - Presentación y Audiencia Pública con la Comisión de Planificación |
| Jueves 17 de junio | Centro Comunitario de Duarte 1600 Huntington Dr., Duarte | 4:30 pm - Presentación y Audiencia Pública con Concilio de Gobiernos del Valle de San Gabriel /Autoridad de Poderes Conjuntos |

| LUGARES CON DOCUMENTOS DEIS/DEIR LINEA DORADA FASE II | |
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| Autoridad de Construcción | 625 Fair Oaks Ave., Suite 200, South Pasadena |
| Biblioteca Pública Arcadia | 20 W. Duarte Rd., Arcadia |
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本「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 描述並總結了擬在加州洛杉磯和 San Bernardino Counties 實施的「黃金線路第二階段輕軌運輸延長項目」(Gold Line Phase II Light Rail Transit (LRT) Extension Project) 對交通以及環境帶來的影響及其成本。此提議項目是要在西部的 Pasadena 市到東部 Montclair 和 Upland 市之間加修輕軌運輸線路。此提議項目擬新建一條 8.7 英哩長的輕軌延長線 (從 Pasadena 到 Irwindale, 帶 4 個車站和 2,350 個停車位 [2025 年之前建成], 以及一個維護和運營設備) 或一條 24 英哩長的輕軌延長線 (從 Pasadena 到 Montclair, 帶 12 個車站, 7,150 個停車位 [2025 年之前建成], 以及一個維護和運營設備)。「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 的管理機構是「美國聯邦交通管理局」(Federal Transit Administration) 和「洛杉磯到 Pasadena 的地鐵藍線營建管理局」(Los Angeles to Pasadena Metro Blue Line Construction Authority, 簡稱「營建管理局」)。依照選用的方案,「營建管理局」將尋求聯邦運輸「新開始」項目來撥款並資助所選用的「當地優選方案」(LPA)。

本報告結合了「環境影響聲明草案」和「環境影響報告草案」,同時滿足了「國家環境政策法案」(NEPA) 和「加州環境品質法」(CEQA)。「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 審查了四種可選方案:不營建輕軌延長線、「交通系統管理」(TSM)、「三軌輕軌運輸」和「雙軌輕軌運輸」方案。針對每種輕軌運輸方案都評估了其「全面營建方案」(24 英哩)和「營建方案到維護設備」(8.7 英哩)。提議的維護設備將占地大約 33 英畝,能容納約 170 輛車(提議的「全面營建」項目為 19 到 29 英畝,及全長 44 英哩的黃金線路系統的剩餘部分)。此設備將可支持系統每隔 5 分鐘開出帶 3 節車廂的列車。輕軌運輸方案的開發是基於廣泛的公眾參與及初步環境和技術分析。此分析由「營建管理局」於 2003 年 1 月在作「黃金線路第二階段方案分析」時一並進行。「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 審查了在考量範圍內各方案的社會經濟及物理環境影響、資本和運營成本,以及對交通運輸存在的潛在影響。本報告指出「國家環境政策法案」下的不利環境影響和「加州環境品質法」(CEQA)的嚴重環境影響並提出草擬的緩解環境影響措施,以消除或減少對環境的影響。本文件中包含的信息將由「營建管理局」用來選擇要實施的「當地優選方案」,並由「美國聯邦交通管理局」用來在有詳實信息的情況下作規劃,並確保所有潛在環境影響都得到全面考量。

本「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 已在機構和公眾間流通,以便公開這些方案的潛在環境影響。在本文件的公審期間收到的意見和建議將在項目的「最終環境影響聲明/最終環境影響報告」(FEIS/FEIR) 中一一解答。評估者必須針對此環境文件中提及的方案做評估。本報告的公審期為 2004 年 5 月 7 日到 6 月 21 日。在各城市的學習走廊還將召開公開聽證會(參見第二頁)。在公審過程中,「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 及其輔助的技術報告可在「營建管理局」辦公室(625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030)及第三頁列出的圖書館及其他地點獲得以供查閱。你也可以購買本「環境影響聲明草案/環境影響報告草案」(DEIS/DEIR) 的印刷本及 CD-ROM。若要了解更多信息,請致電 626-799-0080 聯繫「營建管理局」或上網至 (www.metrogoldline.org)。如有意見或建議,請在 2004 年 6 月 21 日午夜前寫信到上面的地址、在公開聽證會提出、發送傳真到 626-799-8599,或寫電子郵件到 eircomments@metrogoldline.org。

「營建管理局董事會」將在採行「當地優選方案」並核准「最終環境影響報告」前對所有意見和建議作考量。美國聯邦交通管理局將在準備「最終環境影響聲明」和採行「決定記錄」時對意見和建議作考量。

如欲洽詢此文件的相關信息,請聯系:

A. Joseph Ossi 先生; Office of Human and Natural Environment; FTA, 400 7th Street SW, Room 9413, TPL-30, Washington D.C. 20590; 電話號碼: (202) 366-1613

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Habib F. Balian 先生, Chief Executive Office, Los Angeles to Pasadena Metro Blue Line Construction Authority, 625 Fair Oaks Avenue, Suite 200, South Pasadena, CA 91030; 電話號碼: (626) 799-0080.

| 「黃金線路第二階段環境影響聲明草案/環境影響報告草案」(GOLD LINE PHASE II DEIS/DEIR) 公開聽證會 | | |
|--|---|---|
| 日期 | 地點 | Time/Format |
| 5月19日, 星期三 | Claremont Council Chambers 207 Harvard Ave., Claremont | 開放時間 - 下午 5-7 下午 7:00 - 交通和運輸委員會的報告及公開聽證會 |
| 5月20日, 星期四 | Teen and Family Center 116 E. Foothill Blvd., Glendora | 開放時間 - 下午 5:30-6:30 下午 6:30 - 報告及公開聽證會 市議會和交通委員會進行城鎮大會市民提問方式的會議 |
| 5月26日, 星期二 | Duarte Community Center 1600 Huntington Dr., Duarte | 開放時間 - 下午 6:00 |
| 6月1日, 星期二 | Ramona Hall Community Center 4580 N. Figueroa St., Los Angeles | 下午 5:30 - 7:30 - Open House 和公開聽證會 |
| 6月3日, 星期四 | Monrovia Community Center 119 W. Palm, Monrovia | 開放時間 - 下午 6-8 |
| 6月7日, 星期一 | Montclair Council Chambers 5111 Benito St., Montclair | 開放時間 - 下午 5-7 下午 7:00 - 報告及公開聽證會 |
| 6月8日, 星期二 | San Dimas Council Chambers 245 E Bonita Ave., San Dimas | 開放時間 - 下午 5:30 下午 7:00 - 報告及公開聽證會 |
| 6月9日, 星期三 | La Verne Council Chambers 3660 D St., La Verne | 開放時間 - 下午 5:30-6:30 下午 6:30 - 策劃委員會的報告及公開聽證會 |
| 6月9日, 星期三 | 由於地震整修, 市政廳將關閉。請致電 626-744-4009 洽詢地點。 | 開放時間 - 下午 5:15-6:15 下午 6:15 - 策劃委員會的公開聽證會 |
| 6月10日, 星期四 | South Pasadena Council Chambers 1424 Mission St., So. Pasadena | 開放時間 - 下午 6:30-7:30 下午 7:30 - 報告及公開聽證會 |
| 6月14日, 星期一 | Ganesha Park Community Center 1575 N. White Ave., Pomona | 開放時間 - 下午 6-8:30 |
| 6月14日, 星期一 | Arcadia Council Chambers 240 Huntington Dr., Arcadia | 下午 7:00 - 報告及公開聽證會 |
| 6月15日, 星期二 | Irwindale Council Chambers 5050 N. Irwindale, Irwindale | 開放時間 - 下午 5-6 下午 6:00 - 報告及公開聽證會 |
| 6月16日, 星期三 | Azusa Council Chambers 213 E. Foothill Blvd., Azusa | 開放時間 - 下午 6:30 下午 7:30 - 策劃委員會的報告及公開聽證會 |
| 6月17日, 星期四 | Duarte Community Center 1600 Huntington Dr., Duarte | 下午 4:30 - San Gabriel Valley 政府議會/聯合動力機構 (San Gabriel Valley Council of Governments/Joint Powers Authority) 的報告及公開聽證會 |

| 「黃金線路第二階段環境影響聲明草案/環境影響報告草案」文件地點 (GOLD LINE PHASE II DEIS/DEIR) | |
|--|---|
| 地點 | 地址 |
| 「營建管理局」 Construction Authority | 625 Fair Oaks Ave., Suite 200, South Pasadena |
| Arcadia 公共圖書館 | 20 W. Duarte Rd., Arcadia |
| Azusa 公共圖書館 | 729 N. Dalton Ave., Azusa |
| Claremont 公共圖書館 | 208 N. Harvard Ave., Claremont |
| Duarte 公共圖書館 | 1301 Buena Vista St., Duarte |
| Glendora 公共圖書館 | 140 S. Glendora Ave., Glendora |
| Irwindale 公共圖書館 | 5050 North Irwindale Ave., Irwindale |
| La Verne 公共圖書館 | 3640 D St., La Verne |
| Los Angeles 公共圖書館 | 6145 N. Figueroa St., Los Angeles |
| Monrovia 公共圖書館 | 321 South Myrtle Ave., Monrovia |
| Montclair 公共圖書館 | 9955 Fremont Ave. Montclair |
| Pasadena 公共圖書館 | 285 E. Walnut St., Pasadena |
| Pomona 公共圖書館 | 625 S. Garey Ave., Pomona |
| San Dimas 公共圖書館 | 145 N. Walnut Ave., San Dimas |
| San Gabriel Valley 政府議會 | 3452 East Foothill Blvd., Suite 810, Pasadena |
| South Pasadena 公共圖書館 | 1100 Oxley St., South Pasadena |
| Upland 公共圖書館 | 450 N. Euclid Ave., Upland |
| 註: 只有「營建管理局」才有提供技術報告 | |

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INTRODUCTION

DOCUMENT ORGANIZATION

This Draft EIS/EIR presents information about four alternatives that address transportation problems identified in the study corridor. The entire EIS/EIR consists of four volumes.

Volume I of the Draft EIS/EIR includes the following:

Executive Summary provides an overview of the alternatives studied and impacts.

Volume II (2 books) of the Draft EIS/EIR is the main body of the document set and includes the following:

Chapter 1, Purpose and Need, identifies transportation problems and issues that exist in parts of the San Gabriel Valley.

Chapter 2, Alternatives, describes a corridor study process that preceded this DEIS/DEIR that looked at transportation conditions and possible solutions for improving mobility across the corridor, resulting in identification of light rail transit (LRT) service on existing railroad right-of-way as a promising means for addressing the transportation problems. Chapter 2 defines four alternatives that are the subject of environmental and financial analysis. These include a No-Build Alternative (projects already planned and financially committed to in the Regional Transportation Plan); a Transportation Systems Management (TSM) Alternative (low capital cost projects that would use existing infrastructure); and two potential LRT alternatives (one about 24 miles in length, and one about 8 miles in length). Two types of track configurations (double track and triple track) that respond to freight train operations on the proposed LRT alignment are also described.

Chapter 3, Environmental Evaluation, presents information to help decision makers and the public to understand the potential environmental impacts of the alternatives and ways to avoid those impacts. This chapter is composed of 18 subsections covering the range of environmental topics and other key information required in the evaluation of impacts under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

Chapter 4, Other Impact Consideration, addresses the relationship of project-related impacts to the greater environment for such issues as secondary impacts, cumulative impact, short-term impact versus long-term benefits, growth inducement, etc. The environmentally superior alternative is identified.

Chapter 5, Financial Analysis and Comparison of Alternatives, describes the plan for financing the proposed LRT alternatives and provides a high-level comparison of the advantages and disadvantages of alternatives.

Chapter 6, Agency Coordination, outlines the interaction with agencies and cities that occurred during preparation of the DEIS/DEIR.

Chapter 7, Section 4(f) Evaluation, presents the draft assessment of protected properties (parks and historic resources) potentially affected by the proposed LRT alternatives in comparison to Section 4(f) of the Transportation Act.

Chapter 8, Public Outreach, describes the Scoping process conducted at the initiation of the environmental process, on-going communication efforts, and proposed public meetings and comment opportunities during the circulation period for this DEIS/DEIR.

Chapter 9, List of Preparers, identifies those who conducted the technical impact analyses reported in this document.

Chapter 10, Bibliography and Other References, provides a listing of data sources used in defining existing conditions and in assessing impacts

Chapter 11, Agencies, Persons and Organizations Consulted, identifies various parties contacted during preparation of the documents.

Volume III includes conceptual level engineering and other drawings that show the physical configuration of the proposed LRT alternatives. The conceptual designs are based upon and reflect the existing Phase I Gold Line facilities and other transit elements in the LACMTA light rail system. These drawings were the basis for identifying and assessing the impacts reported in Volume II.

Volume IV includes a group of Appendices that support the information presented in the chapters. These appendices are incorporated into the main body of the DEIS/DEIR by reference. Due their size, the appendices are not distributed with the main body of the DEIS/DEIR, but are available upon request. The appendices are the Alternatives Analysis Final Draft Report Executive Summary, Air Quality Technical Report, Biology Technical Report, Bridge Analysis, Cultural Resources Historic Properties Survey Report & Draft Finding of Effect, Phase I Hazardous Materials Study, Noise and Vibration Study, Related Development Projects List, Traffic Studies, and Geology Technical Report.

STUDY AREA AND STUDY CORRIDOR

A general Study Area was defined to encompass 13 adjoining cities that lie along I-210 and a railroad right-of-way, between Pasadena on the west and Montclair on the east. The study area includes the cities of Pasadena, Arcadia, Monrovia, Duarte, Irwindale, Azusa, Glendora, San Dimas, La Verne, Pomona, and Claremont in Los Angeles County. In San Bernardino, it includes the cities of Montclair and Upland.

For the purposes of environmental analysis, a Study Corridor was defined within the broader Study Area. The Study Corridor was defined to be 1,000 feet in width, along either side of the rail alignment. This 1,000-foot width was selected because most environmental impacts that would potentially be generated by the proposed LRT service would occur within this band. The 1,000-foot band is the Area of Potential Impact (API) for all environmental assessment topics except traffic and cultural resources. For traffic, the API was determined on a case-by case basis in consultation with corridor cities to reflect traffic patterns of the cities around proposed stations. For cultural resources, the Area of Potential Effect (APE) was defined by FTA, with concurrence of the State Historic Preservation Officer, to meet the needs for assessing impacts in accordance with Section 106 of the National Historic Preservation Act. The APE was defined to be the proposed railroad alignment and one parcel beyond sites to be used for stations or parking. This definition included the caveat that the APE could be refined to account for project elements that would not be known until later in the design development process, such as noise barriers.

For convenience and to reflect geographic limits of the two LRT alternatives, the Phase II Study Corridor was divided into two segments. Segment 1 includes Pasadena east of the Sierra Madre Villa Station, and the cities of Arcadia, Monrovia, Duarte, and Irwindale. Segment 2 includes the cities of Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland.

The rail right-of-way in Los Angeles County was acquired by the Los Angeles County Metropolitan Transportation Authority (LACMTA), and is currently under the control of the Los Angeles to Pasadena Blue Line Construction Authority (the Construction Authority). The rail right-of-way within San Bernardino County is owned by the San Bernardino Associated Governments (SANBAG).

CEQA AND NEPA DEFINITIONS OF IMPACT

Language used in the document:

For impacts that are assessed under NEPA, the level of impact is expressed in terms of whether it is *not adverse*, *potentially adverse*, or *adverse*. NEPA assessments often do not have specific impact criteria and documents typically do not specify whether impacts are significant.

CEQA, on the other hand, requires that determinations of significance be made. Accordingly for impacts assessed under CEQA the level of impact is expressed in terms of whether it is *not significant* (or no effect), *less than significant*, *potentially significant*, or *significant* when compared to specific criteria of significance.

Explanation:

Projects can result in either positive or negative impacts to the environment. Although benefits arising from a project could be considered as a project impact, in California the term “impact” is associated with negative effects because of the language and assessment methods used in preparing environmental documents that meet the requirements of the California Environmental Quality Act (CEQA). CEQA requires that a determination whether effects would be significant be stated in the environmental evaluation. The typical method of making this determination is to assess whether an impact would exceed a specified threshold of significance, as determined by each CEQA lead agency. CEQA thresholds can be either quantitative or qualitative. The State CEQA Guidelines define significant effect as: “... a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance.” Section 15382 of the State CEQA Guidelines states that: “An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.” Section 15064 of the State CEQA Guidelines states that: “An ironclad definition of significant effect is not possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban setting may be significant in a rural area.”

NEPA does not have this requirement to determine and state significance in the environmental evaluation. Under NEPA, significance is used to determine whether an Environmental Impact Study (EIS) or some lower level of documentation will be required. The determination of appropriate documentation level is made in consideration of the context in which the action takes place and the intensity of effects. Some effects determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision to prepare an EIS is made (as in the case of the Gold Line Phase II project) it is the nature of the effect that is evaluated and no judgment of its significance need be stated in the environmental document. The nature of an effect is judged as to whether or not it is adverse.

Federal agencies implementation guidelines for preparing NEPA documents also do not have a requirement to determine whether an effect is significant once the decision to prepare an EIS has been made. A NEPA assessment considers both the context in which the action takes place and the intensity of effects, often on a qualitative basis, with a resultant determination of whether an effect would be adverse or not. The degree of adversity is also usually expressed, but the term significant is rarely used.

For purposes of this combined NEPA/CEQA document, “adverse impact” or “adverse effect” under NEPA is usually taken to mean a “significant impact” under CEQA. More specifically, a CEQA significant impact is one that exceeds a defined threshold of impact and would thus require mitigation. A “less than adverse effect,” “less than adverse impact,” “minor adverse impact,” “minor adverse effect,” “not adverse impact,” or “not adverse effect” under NEPA, as used in this document, would typically be a “less than significant impact” under CEQA. A less than significant impact under CEQA, although negative in nature, would not require mitigation because it would not exceed a specified threshold of significance. A “beneficial effect” or “beneficial impact” is a change producing a beneficial consequence; when such an effect occurs, it would be specifically identified as a positive result, but not as an “impact” under either NEPA or CEQA because of the California language convention noted above. “No effect” means essentially no change from either existing conditions or in comparison to the No-Build Alternative. Where unusual NEPA/CEQA impact pairings or conclusions are drawn, such as not adverse under NEPA but significant under CEQA, careful explanations will be provided.

GLOSSARY

A

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| alignment | In transportation, the horizontal and vertical ground plan of a roadway, railroad, transit route, or other facility as it would appear in plan and profile. The alignment is usually described on the plans by the use of technical data, such as grades, coordinates, bearings, and horizontal and vertical curves. |
| Alluvial | Relating to or deposited by flowing water. |
| Area of Potential Impact (API) | The study area for all environmental issues other than cultural resources and traffic and circulation impacts. |
| Area of Potential Effect (APE) | The study area for cultural resources is known as the “area of potential effect” (APE). |
| at grade | At street level. |
| at-grade crossing | See “grade crossing.” |
| A-weighted decibel (dBA) | Unit for measuring sound in which the sensitivity of the human ear to certain frequencies is taken into account. |

B

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| beneficial impact | An impact that has a positive effect on the environment. |
| best management practice(s) (BMP, BMPs) | Techniques used in various industries to assure that projects, work, or processes meet regulatory or industry standards |
| British thermal unit (BTU) | One BTU is the quantity of energy necessary to raise one pound of water one degree Fahrenheit. |

C

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| cast-in-drilled shafts | Construction method for column foundations where a hole is first drilled into the soil, then the hole is reinforced (such as with a woven-wire cage installed in the hole), and then a concrete foundation is poured and cast in the hole. |
| cast-in-place construction techniques | Construction method that consists of building forms and pouring concrete in the location where it is needed (compared to segmental construction, where components are manufactured elsewhere and assembled at the site). |
| catenary | An electrification system for light rail with overhead wires providing the contact points for the vehicles. Also called “overhead contact system.” |

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| census block group | A subdivision of a census tract (or, prior to 2000, a block numbering area). A block group is the smallest geographic unit for which the Census Bureau tabulates sample data. A block group consists of all the blocks within a census tract with the same beginning number. Example: block group 3 consists of all blocks within a 2000 census tract numbering from 3000 to 3999. In 1990, block group 3 consisted of all blocks numbered from 301 to 399Z. |
| center-platform station | Station with a single platform located between the tracks, which serves trains traveling in both directions. |
| congested | Travel speeds less than 30 miles per hour for a duration of 15 minutes or longer (based on Caltrans' definition). |
| construction easement | An area temporarily needed in addition to the actual project footprint during the construction period. |
| constructive use | Occurs when the project's proximity impacts are so severe that the activities, features, or attributes that qualify a resource for inclusion in the National Register of Historic Places (or other historic registries) are substantially impaired. |
| Cretaceous | The final period of the Mesozoic era, spanning the time between 145 and 65 million years ago. |
| cumulative impact | The effects of two or more individual impact that, when considered together, are considerable or that compound or increase other environmental impacts. |
| cut-and-cover construction | A method of construction that consists of excavating the terrain from ground level, placing a structure in the excavation, and then filling over the structure. |

D

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| day-night noise exposure | The energy average of noise over a continuous 24-hour period with a weighting applied to the nighttime levels. The levels measured during nighttime periods, from 10 PM until 7 AM, are penalized by multiplying the energy by a factor of ten, which is equivalent to a 10 dB increase. (The levels measured during daytime periods from 7 AM until 10 PM are not penalized.) This nighttime penalty accounts for periods when most people are more easily annoyed. |
| decibel (dB) | Unit for measuring sound, based on a logarithmic scale. |
| dewatering | Pumping or draining groundwater and/or stormwater from excavations or other points of accumulation. |
| direct impact | Type of impact caused by a project, occurring at the same time and place as the project. |
| direct use | Occurs when land is permanently incorporated into a transportation facility or a partial acquisition, full acquisition, or easement of the property is required. |
| double crossover tracks | Tracks that allow trains to cross over to another set of tracks to reverse directions or to pass out-of-service vehicles. |
| double tracking | Providing a second set of railroad tracks within a railroad right-of-way. |

- driven piles** Construction method for column foundations where a foundation is driven into the ground by a pile driver (as opposed to cast-in-hole piles).
- dwelt time** The time that a transit vehicle would be stopped at a station to allow boarding and alighting of passengers.

E

- edge treatments** Landscaping that runs along the edge of a street.
- electrical grid** A system by which electrical power is distributed throughout a region.
- Electricity Transmission Capacity** The maximum amount of power that can be carried from the generating source to the utility provider, and is a key component in the electrical power delivery system.
- EMFAC (Emissions Factor Model)** an emission inventory model that calculates emission factors (grams/mile) for motor vehicles operating on roads in California.
- equivalent sound-pressure level** The average of the sound energy in a time-varying signal over a defined period of time.
- exclusive right-of-way** A rail right-of-way that is separated from automobile traffic by elevation.
- extirpated** Locally extinct.

F

- fault/faulting** A fault is a fracture in the crust of the earth along which rocks on one side have moved relative to those on the other side. Most faults are the result of repeated displacements over a long period of time. A fault trace is the line on the earth's surface defining the fault. For the purposes of the CEQA, an active fault is one that has ruptured in the last 11,000 years.
- floor area ratio (FAR)** The ratio of the floor area of a building to the area of the lot on which the building is located.
- frequency** A measure of how rapidly sound pressure fluctuates over one second, in units of hertz.
- fugitive dust** Emissions of windblown dust from sources other than exhaust stacks (e.g., wheel dust from unpaved roads).

G

- g** Estimates of anticipated peak horizontal ground acceleration.
- geomorphic province** A region with distinctive landforms, rock types, and geologic structure.

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| gigawatt | A unit of power equal to 1 billion watts. |
| gigawatt-hour | The expenditure of one gigawatt of power for one hour. |
| grade crossing | (Also known as “at-grade crossing.”) An intersection between a rail right-of-way and a street, where both are at the same elevation. (Note: does not include intersections where the rail right-of-way is located laterally (parallel) within an existing street.) |
| grading | Any land disturbance, excavation, or fill (addition of materials) or any combination of the three. |
| ground-borne vibration | Vibration traveling through the ground. |
| growth-inducing impacts | Impacts that directly or indirectly foster economic or population growth or the constructing of additional housing, removes obstacles to population growth, or taxes community service facilities to the extent that the construction of new facilities would be necessary, or encourages or facilitates other activities that cause significant environmental effects. |
| guideway | In transit systems, a track or other riding surface (including supporting structure) that supports and physically guides transit vehicles specially designed to travel exclusively on it. |

H

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| hazardous substances | Substances, materials, or waste, the exposure to which results, or may result, in adverse effects on health or safety. |
| headway | The scheduled time separation between two trains. |
| high-occupancy vehicle (HOV) lane | A lane designated for cars containing multiple passengers, to promote carpooling. |
| Holocene | An epoch of the Quaternary period, spanning the time from the end of the Pleistocene (8,000 years ago) to the present. |

I

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| impact | The effect of an action on the environment. |
| indirect impact | Type of impact caused by a project that may occur either later in time or at some distance from the project but that is still reasonably foreseeable. |
| in-migration | The act of moving into an area. |
| integrity | The ability of a property to convey its historic significance. |

K

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| kilowatt | A unit of power equal to 1000 watts. |
| kilowatt-hour | The expenditure of one kilowatt of power for one hour. |

L

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| Leq | Equivalent sound pressure level—the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring. |
| level of service (LOS) | A letter grade, similar to grades on report cards, signifying the condition of traffic flow, from A (excellent) to F (failing). LOS F is further defined by a number (LOS F0, LOS F1, LOS F2, etc.), which signifies the amount of time that traffic would be at LOS F. LOS F0 would be less than 1 hour; LOS F1 would be 1 hour or more, but less than 2 hours; LOS F2 would be 2 hours or more, but less than 3 hours; etc. |

M

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| main line trunk system (sewer mains) | Principal pipes in a system that collects sewage. |
| manual train operation | Type of rail operation that requires an operator (a driver). |
| median | The area in the middle of the street between lanes in opposite directions. |
| megawatt | A unit of power equal to 1 million watts. A typical large electrical generating plant can produce 1,000 megawatts. |
| mitigation (mitigation measure) | Methods proposed to avoid, minimize, rectify, reduce, eliminate, or compensate for a significant impact. Permits or similar actions that reduce impact as a requirement of a law are not mitigation. (see regulatory requirement). |
| mobile sources | Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes. |
| mobility gap | The percentage of facilities estimated to be operating below a desired level of service (expressed in terms of freeway and arterial congestion). |
| moment magnitude | Mw, or moment magnitude, is a measurement of the magnitude that is based on the seismic moment at the source of the earthquake, rather than on waves of motion; used to measure moderate to large earthquakes at any distance. |
| multimodal | Those issues or activities which involve or affect more than one mode of transportation, including transportation connections, choices, cooperation and coordination of various modes. |

N

noise Unpleasant, unwanted, undesirable, or disturbingly loud sound that disrupts a person's quality of life by interfering with communication, sleep, and/or leisure.

O

overall regional energy consumption The energy used by the operation of vehicles (automobile, truck, bus, or train) within a region, regardless of the type of fuel used.

overall regional energy supply Overall energy refers to the combination of energy derived from petroleum fuels and electrical energy.

P

paleontology The scientific study of extinct organisms through the examination of fossils.

peak electricity demand Also referred to as peak load; expressed in megawatts, measures the largest electric power requirement during a specified period of time, usually integrated over one hour.

pedestrian-activated traffic signal Demand-type traffic signals that are operated by the pedestrian pushing a button to request a red light for the vehicular traffic and a "walk" phase for the pedestrian movement (after an appropriate waiting time to ensure safety). Until the button is pushed, the signal says green for the vehicles.

perched groundwater Unconfined groundwater separated from an underlying main body of groundwater by an unsaturated zone.

platform The portion of the CenterLine stations where passengers would board the train or disembark.

Pleistocene The Pliocene (3 million–10,000 years ago) is the latest major geological epoch, colloquially known as the "Ice Age" due to the multiple expansion and retreat of glaciers.

Pliocene The Pliocene (5.4–2.4 million years ago) is the uppermost subdivision of the long Tertiary period that began 64 million years ago; it represents the final stages of a global cooling trend that led up to the Quaternary ice ages.

point sources Specific points of origin where pollutants are emitted into the atmosphere such as factory smokestacks.

proximity impacts Impacts that may result if the project is located adjacent to or in close proximity to historic resources.

R

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| regulatory compliance | An action or process, including the filing and receipt of permits, that is required under a law. These are typically standard actions or processes that would take place in implementing a project. For instance, various kinds of permits are needed for construction regardless of whether the construction was determined to be significant under CEQA. Such permits are not mitigation measures. |
| remediation | Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a contaminated site. |
| retained fill | Consists of fill materials (mostly soil) and a retaining system such as a retaining wall. The retaining system stabilizes the soil and minimizes the required width of the system by allowing vertical sides rather than slopes. |
| right-of-way (noun) | Typically used to describe the property in which a transportation feature is located. For example, street right-of-way, rail right-of-way. Can also apply to other types of infrastructure (utility right-of-way) or to routes used by persons (pedestrian right-of-way). |
| riparian habitat | Areas adjacent to rivers and streams with a differing density, diversity, and productivity of plant and animal species relative to nearby uplands. |
| ruderal vegetation | Ruderal vegetation consists of pioneering herbaceous plants that readily colonize disturbed ground and are adapted to living in compact soils where water does not readily penetrate the soil. |

S

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| safety | The protection of people from accidental occurrences that could injure or kill them and protection of property from such accidents. |
| SCAG | Southern California Association of Governments: Council of Government and Metropolitan Planning Organization for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. |
| security | The protection of people from intentional acts that could injure or kill them and protection of property from such deliberate acts. |
| seiche | The seismically induced sloshing of water in a large enclosed basin, such as a lake, reservoir, or bay. |
| semi-exclusive right-of-way | A transit right-of-way that is separated from automobile traffic by various means, such as curbs or painted lane markers, but not by elevation. |
| sensitive receptor | An individual who is more susceptible to the effects of air pollution than the general population. Sensitive receptors generally include children and elderly individuals. |
| side-platform station | Station with platforms on both sides of the tracks so that each platform serves trains traveling in opposite directions. |

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| significant impact | An impact that is greater than or worse than an identified threshold. |
| sound | A pressure disturbance with characteristic frequency or wavelength, amplitude, and duration. |
| split-platform station | Similar to side-platform station, but with platforms for each direction on either side of an intersection. |
| staging area | An area used during construction to store equipment and supplies, manage construction, park employee vehicles, etc. |
| street furniture | Furnishings provided along a street for the use of pedestrians, such as benches and trash cans. |
| street running | Operating a train within a street right-of-way (rather than on separate right-of-way or separated from traffic by grade, such as elevated or underground). |
| superstructure | The part of the elevated alignment that is located above the columns. |

T

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| tertiary | The first period of the Cenozoic era (after the Mesozoic era and before the Quaternary period), spanning the time between 65 and 1.8 million years ago. |
| threshold of significance | The level of impact at which point an impact is considered significant. |
| TMDL | Total maximum daily load. A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. |
| trackbed | The foundation material on which the CenterLine tracks would be mounted. |
| trackway | The CenterLine alignment and tracks. |
| tsunamis | Open sea tidal waves generated by earthquakes. |

W

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| waters of the United States | The jurisdictional limits of the authority of the Corps of Engineers under the Clean Water Act, as defined by 33 CFR Part 328; includes all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; all impoundments of waters otherwise defined as waters of the United States under the definition; tributaries of waters identified as waters of the United States; the territorial seas; and wetlands adjacent to waters (other than waters that are themselves wetlands). (33 CFR Part 328.3). |
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wetlands

Areas “inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” (33 CFR 328.3, 40 CFR 230.3).

**wildlife
movement
corridor**

A wildlife movement corridor is traditionally defined as a linear habitat that has the primary wildlife function of connecting two or more significant habitat areas.

ACRONYMS

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| AAQS | Ambient Air Quality Standards |
| ACHP | Advisory Council on Historic Preservation |
| ADA | Americans with Disabilities Act of 1990 |
| ADT | average daily traffic |
| APE | Area of Potential Effect (applies to cultural resources only) |
| API | Area of Potential Impact |
| AST | aboveground storage tank |
| AT&SF | Atchison Topeka & Santa Fe Railway |
| ATIS | Advanced Traveler Information System |
| BMP | Best Management Practice(s) |
| BNSF | Burlington Northern Santa Fe Railway |
| BRT | Bus Rapid Transit |
| CAAQS | California Ambient Air Quality Standards |
| Caltrans | California Department of Transportation |
| CARB | California Air Resources Board |
| CDFG | California Department of Fish and Game |
| CEC | California Energy Commission |
| CEQA | California Environmental Quality Act |
| CMAQ | Congestion Mitigation and Air Quality Program |
| CNDDB | California Natural Diversity Data Base |
| CO | carbon monoxide |
| COE | (US Army) Corps of Engineers |
| CPUC | California Public Utilities Commission |
| CR | Commuter Rail |
| dB | decibel |
| DEIR | Draft Environmental Impact Report |

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| DEIS | Draft Environmental Impact Statement |
| EIR | Environmental Impact Report |
| EIS | Environmental Impact Statement |
| EPA | (U.S.) Environmental Protection Agency |
| ESA | Environmental Site Assessment |
| FEIS/FEIR | Final Environmental Impact Statement/ Final Environmental Impact Report |
| FHWA | Federal Highway Administration |
| FTA | Federal Transit Administration |
| HCP | Habitat Conservation Plan |
| HOV | high-occupancy vehicle |
| ISTEA | Intermodal Surface Transportation Efficiency Act |
| L_{dn} | level of day-night noise exposure |
| L_{eq} | equivalent sound pressure level |
| LACMTA | Los Angeles County Metropolitan Transit Authority |
| LOS | level of service |
| LPA | locally preferred alternative |
| LRT | light rail transit |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Protection Act |
| NOA | Notice of Availability |
| NOI | Notice of Intent |
| NOP | Notice of Preparation |
| NO_x | nitrous oxides |
| NPDES | National Pollutant Discharge Elimination System |
| O_3 | ozone |
| OSHA | Occupational Safety and Health Administration |
| $PM_{2.5}$ | particulate matter (2.5 microns) |
| PM_{10} | particulate matter (10 microns) |

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| ppm | parts per million |
| ROD | Record of Decision |
| RTIP | Regional Transportation Improvement Program |
| RTP | Regional Transportation Plan |
| SANBAG | San Bernardino Associated Governments |
| SCAG | Southern California Association of Governments |
| SCAQMD | South Coast Air Quality Management District |
| Section 106 | Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470) |
| Section 4(f) | Section 4(f) of the U.S. Department of Transportation Act (USC 1653[f]) |
| SGVCOG | San Gabriel Valley Council of Governments |
| SHPO | State Historic Preservation Officer |
| SOV | single-occupant vehicle |
| STIP | State Transportation Improvement Program |
| SWPPP | Storm Water Pollution Prevention Plan |
| TEA-21 | Transportation Equity Act for the 21 st Century |
| TIA | traffic impact analysis |
| TMDL | total maximum daily load |
| TOD | trans-oriented development |
| TPSS | traction power substation |
| TSM | transportation system management |
| UP or UPRR | Union Pacific Railroad |
| USFWS | U.S. Fish & Wildlife Service |
| UST | underground storage tank |
| V/C | volume-to-capacity |
| VdB | vibration decibel |
| VHT | vehicle hours of travel |
| VMT | vehicle miles of travel |

Chapter 1
Purpose And Need

CHAPTER 1 - PURPOSE AND NEED

1-1 STUDY AREA AND STUDY CORRIDOR

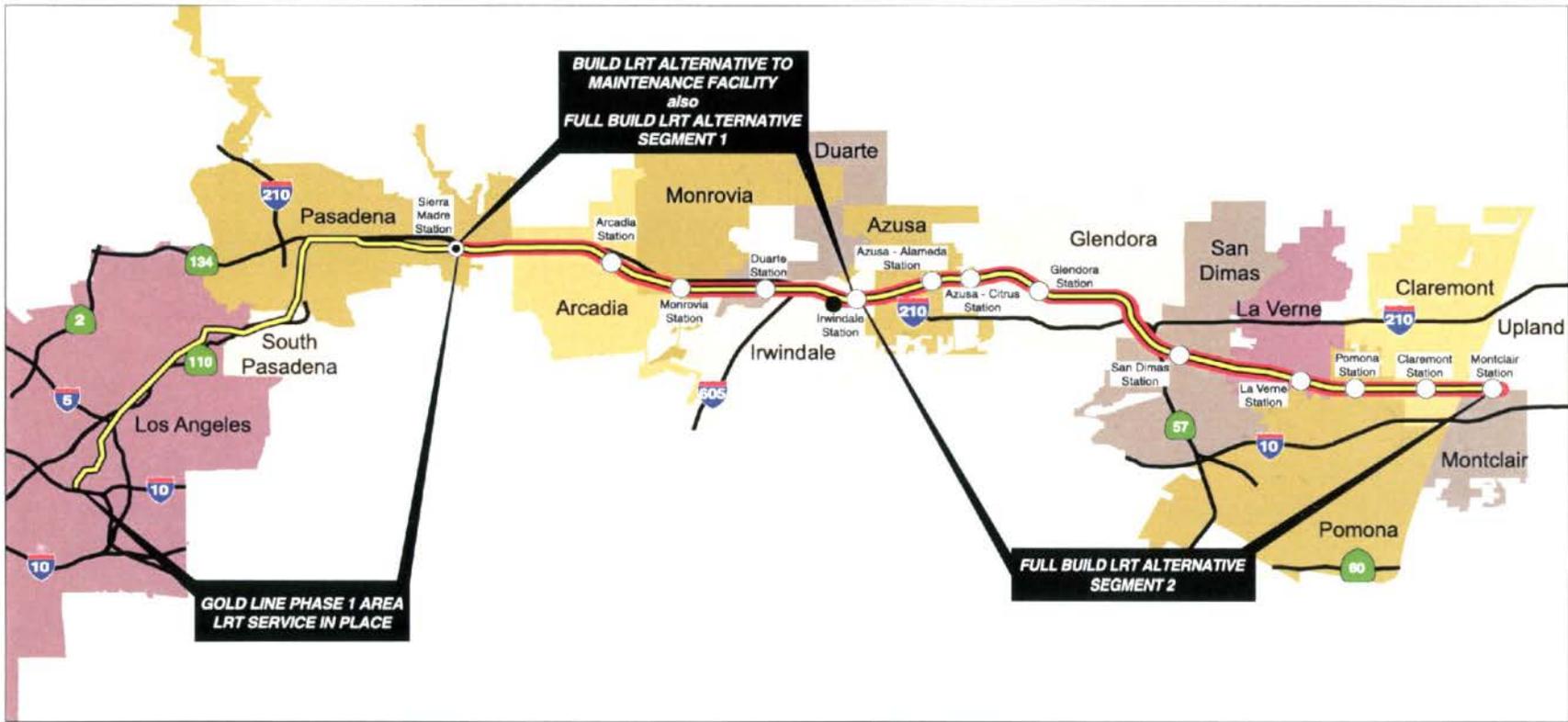
A general Study Area was defined to encompass 13 adjoining cities that lie along I-210 and a railroad right-of-way, between Pasadena on the west and Montclair on the east. The study area includes the cities of Pasadena, Arcadia, Monrovia, Duarte, Irwindale, Azusa, Glendora, San Dimas, La Verne, Pomona, and Claremont in Los Angeles County. In San Bernardino County, it includes the cities of Montclair and Upland.

For the purposes of environmental analysis, a Study Corridor was defined within the broader Study Area. **Figure 1-1** shows the Study Area and Study Corridor.

The Study Corridor was defined to be 1,000 feet in width, along either side of the rail alignment. This 2,000-foot width was selected because most environmental impacts that would potentially be generated by the proposed LRT service would occur within this band. The 2,000-foot band is the area of potential impact (API) for all environmental assessment topics except traffic and cultural resources. For traffic, the API was determined on a case-by case basis in consultation with corridor cities to reflect traffic patterns of the cities around proposed stations. For cultural resources, the Area of Potential Effect (APE) was defined by FTA, with concurrence of the State Historic Preservation Officer, to meet the needs for assessing impacts in accordance with Section 106 of the National Historic Preservation Act. The APE was defined to be the proposed railroad alignment and one parcel beyond sites to be used for stations or parking. This definition included the caveat that the APE could be refined to account for project elements that would not be known until later in the design development process, such as noise barriers.

For convenience and to reflect geographic limits of the two LRT alternatives, the Phase II Study Corridor was divided into two segments. Segment 1 includes Pasadena east of the Sierra Madre Villa Station, and the cities of Arcadia, Monrovia, Duarte, and Irwindale. Segment 2 includes the cities of Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland.

The rail right-of-way in Los Angeles County was acquired by the Los Angeles County Metropolitan Transportation Authority (LACMTA), and is currently under the control of the Los Angeles to Pasadena Blue Line Construction Authority (the Authority). The rail right-of-way within San Bernardino County is owned by the San Bernardino Associated Governments (SANBAG).



Sources: U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2004.

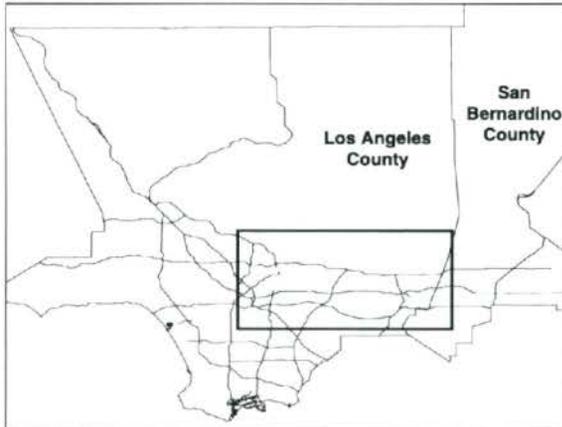


Figure 1-1: Gold Line Phase II Study Area and Study Corridor

1-2 SUMMARY STATEMENT OF PURPOSE AND NEED

The purpose of the proposed Gold Line Phase II project would be to address the transportation problems and deficiencies, as well as the environmental problems and issues, identified in the discussions below. Proposed transportation solutions (either Transportation Systems Management/Transportation Demand Management [TSM/TDM] or rail alternatives) must address the following five basic needs:

- 1. Provide a high-capacity improvement that responds to problems associated with the corridor's only freeway:**
 - *Highway capacity in the study corridor is not sufficient to accommodate current and forecasted peak hour demands.*
 - *Substantial congestion exists during peak periods and will increase over time.*
 - *Travel times on freeways are currently substantial and will increase over time.*
 - *There are no alternative highway routes to provide relief.*
- 2. Provide transportation improvements that respond to transit issues identified in the corridor:**
 - *Commuter rail service is available only in the eastern quarter of the study corridor and is linked only to downtown Los Angeles.*
 - *Transit service between the end points of the study corridor is limited to 3 bus routes.*
 - *The available bus routes do not connect all of the downtowns in the study corridor.*
 - *The available routes do not serve several major activity centers in the corridors.*
 - *Bus service is subject to traffic congestion and incidents, resulting in some trips being of unpredictable durations.*
- 3. Provide transportation improvements that respond to problems associated with the corridor's arterial network:**
 - *East-west arterials that potentially provide alternative routes to I-210 are discontinuous.*
 - *Travel times on arterials are slow and subject to congestion and incidents that affect their viability as alternate routes across the study area.*
- 4. Provide transportation improvements that respond to issues associated with population and employment conditions and forecasts:**
 - *Access between areas of current and forecasted population and locations of current and forecasted employment must utilize transportation facilities that are currently at or over capacity during peak periods.*
 - *Existing transit services connect only some of the activity centers in the corridor.*
 - *Existing transit service between activity centers is infrequent, even during peak hours.*
 - *The corridor is expected to grow substantially in population and employment through 2025, and such growth would place ever-increasing demands on the transportation infrastructure.*
 - *Communities recognize and have undertaken planning to accommodate forecasted growth; many community plans call for transit improvements to help manage that growth.*

5. Provide transportation improvements that respond to environmental goals for the region and corridor:
 - Transportation improvements must support achievement of the region's air quality plan.
 - Transportation improvements should avoid or minimize impacts to natural and manmade environments.

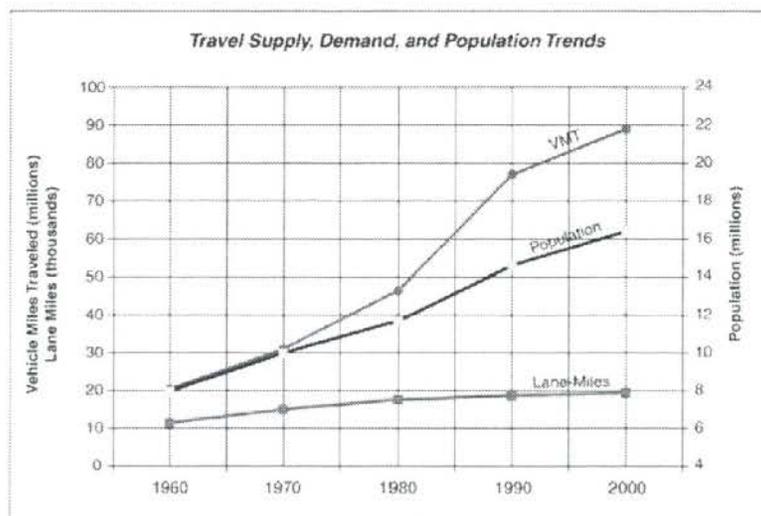
1-3 TRANSPORTATION CONDITIONS, PROBLEMS AND ISSUES

1-3.1 General Transportation Conditions and Problems

1-3.1.1 Highways and Congestion

a. Highway Network Constraints

Southern California suffers from a long-term disparity between population growth and increases in transportation capacity. The Southern California Association of Governments (SCAG) in its adopted 2001 Long Range Transportation Plan (2001 RTP) and Draft 2004 Long Range Transportation Plan (Draft 2004 RTP) notes that population more than doubled between 1960 and 2000, yet freeway miles increased less than 30 percent. Accompanying this disparity are increases in vehicle miles traveled each year, reflecting longer distances traveled between residences and workplaces. **Figure 1-2** from SCAG illustrates this situation. These circumstances cause congestion levels to continue to grow on the region's freeway network. A review of Census 2000 data indicates that the average travel time to work in much of the study corridor is between 26 and 35 minutes.¹



Source: Southern California Association of Governments

FIGURE 1-2: GROWTH IN TRANSPORTATION COMPARED TO POPULATION

¹ SCAG 2002 - State of the Region, Southern California Association of Governments.

b. Highway Congestion and Travel Times

Mobility tracking of the Los Angeles area by the Texas Transportation Institute (TTI) for the past two decades consistently ranks the metropolitan area as having the highest amount of annual travel delay in the country. Data beginning in 1982 show that more than 50 percent of the annual delay is categorized as recurring delay (i.e., delay attributed to system deficiencies and use levels that exceed the design capacity, as opposed to delays caused by incidents). Since 1998, recurring delay has been reported at 57 percent of the total annual delay, which is 52 hours per person per year. Texas Transportation Institute also reports that 75 percent of the freeway and street network was congested in 2000, resulting in daily rush hours spanning 8-hour durations. The cost of congestion was estimated at over \$1,000 per person per year.

As part of the proposed project's initial analysis, efforts were made to determine the existing congestion levels within the study corridor. A congested freeway is defined as a segment with traffic flow at 35 miles per hour or less for three or more hours per day. This analysis revealed that congestion along I-210 can be significant during the PM peak-hour periods, resulting in more than 50 percent of all freeway lanes west of Irwindale Avenue to be operating at a Level of Service (LOS) "F" or worse. (Although LOS F is the lowest level on the LOS scale², congestion and delay can actually be much greater than the thresholds that define LOS F.) Forty-one percent of freeway lanes east of Irwindale Avenue also operate at LOS F or worse. AM peak-period congestion can also be significant.

The SCAG 2001 RTP, which includes the data sources used for transportation planning in this Environmental Impact Statement/Environmental Impact Report (EIS/EIR), includes forecasts of congestion levels in 2025 and compares them to 1997 baseline data. For I-210, SCAG forecasts that AM peak period congestion (prior to implementation of transportation improvements in the 2001 RTP) would increase 25–50 percent on about half of the freeway and 50–75 percent on the remaining portions. Comparing these levels of congestion increase to the 2000 Census data, average travel time to work in 2025 on the I-210 would be expected to range from 32 minutes (26 x 1.25) to 61 minutes (39 x 1.75). Implementation of the transportation improvements in the 2001 RTP is forecasted to lower much of the future congestion on I-210 to the 25–50-percent range, or between 32 minutes (26 x 1.25) and 52 minutes (35 x 1.5). The main projects in this corridor that appear to be the cause of this change in congestion are the opening of Gold Line Phase I and the extension of I-210 from State Route 57 (SR-57) to Interstate 215 (I-215). In addition, high-occupancy vehicle (HOV) improvements on other freeways would likely enable some shifting of east-west regional traffic, resulting in some relief to the I-210.

Mobility is also affected by the fact that there are no other freeways that serve the study corridor. The closest east-west freeway is Interstate 10 (I-10), which is located approximately 3 to 7 miles south of the project (depending on the route segment) and does not serve many of the corridor communities. In addition, I-10 is itself heavily congested. State Route (SR-60) is between 6 and 9 miles south of I-210.

I-210 not only provides the main east-west highway for automobile traffic, it is also a key link in the state and regional goods movement network. From its connection with Interstate 5 (I-5) on the north side of Los Angeles, to its current connection with I-15 in Rancho Cucamonga, the freeway is the northernmost of three east-west freeways (I-210, I-10, and SR-60) that provide for goods movement from central Los Angeles to the Inland Empire and connect to the I-15 and I-215. With the recent extension of I-210 from San Dimas to Rancho Cucamonga (I-15), a notable portion of the truck traffic that previously used I-10 appears to have shifted to I-210. When I-210 is extended further east to I-215, the volume of trucks using this northernmost route is likely to increase. Additional truck traffic would contribute to increased overall congestion, causing higher peak hour congestion levels and slower peak hour speeds.

² Level of Service is a scale used to report the condition of traffic flow, from A (excellent) to F (failing).

There are no plans for substantially increasing I-210's capacity to the west of its intersection with SR 57 since freeway widening would result in substantial impacts to adjoining communities. Potential impacts include numerous residential and commercial property acquisitions, loss of revenue to local communities from commercial properties that lie adjacent to the freeway, and substantial traffic impacts during the construction period. Modest increases in capacity can be expected from the addition of HOV connections, higher HOV vehicle occupancy requirements (i.e., a change from 2+ to 3+), or from operational improvements such as Intelligent Transportation Systems (ITS) projects.

Highway and Congestion Problems:

Highway capacity in the study corridor is not sufficient to accommodate current and forecasted peak hour demands.

Substantial congestion exists during peak periods and will increase over time.

Travel times on freeways are currently substantial and will increase over time.

There are no alternative highway routes to provide relief.

1-3.1.2 Transit

a. Transit Network

Transit service in the study area is provided by LACMTA, Foothill Transit, and some local communities. The primary orientation of transit service is east-west and occurs mostly along major thoroughfares. **Table 1-1** reports the thoroughfares on which transit service occurs. For the purposes of this table, service areas were defined to follow the study corridor from west to east. Service area 1 is bordered on the west by the Sierra Madre Villa Station and I-605 on the east. Service area 2 begins at I-605 on the west and North Lone Hill Avenue on the east. Service area 3 is bordered by North Lone Hill Avenue on the west, and the Claremont Transfer Station on the east. Service area 4 is the portion of the study corridor in San Bernardino County. **Figure 1-3** provides an overview of transit service serving the corridor. Please refer to Chapter 2, Section 2-2 for more detail on current fixed-route transit service, including maps of the routes that serve the study area.

| Name of Arterial | Direction of Travel | Location in Study Corridor |
|---------------------------------------|----------------------------|----------------------------|
| Rosemead Blvd (State Route 19) | North/South | Area 1 |
| E. Colorado Blvd. (Historic Route 66) | East/West | Area 1 |
| Santa Anita Ave | North/South | Area 1 |
| Myrtle Ave | North/South | Area 1 |
| Baldwin Ave | North/South | Area 1 |
| E. Huntington Dr. (Historic Route 66) | East/West <i>continued</i> | Area 1 and 2 |
| Azusa Ave (State Route 39) | North/South | Area 2 |
| Citrus Ave | North/South | Area 2 |
| Irwindale Ave | North/South | Area 2 |
| S. Grand Ave | North/South | Area 2 |

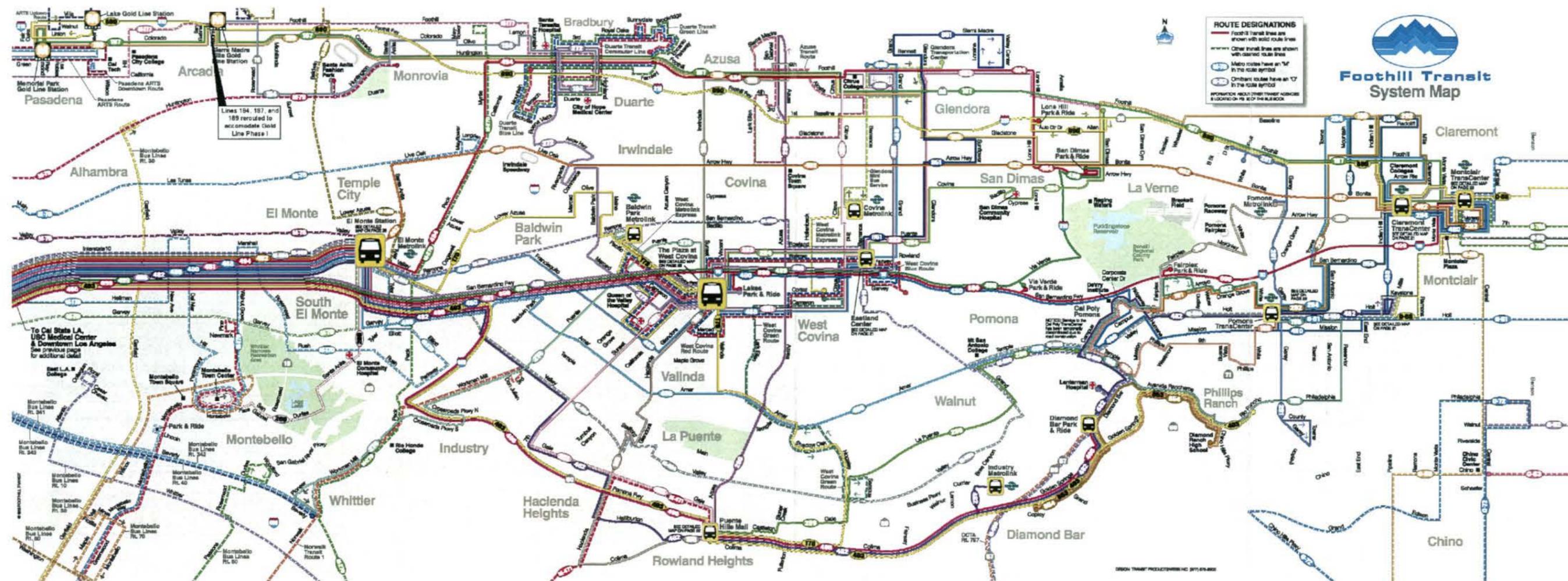
**TABLE 1-1
TRANSIT SERVICE LOCATIONS**

| Name of Arterial | Direction of Travel | Location in Study Corridor |
|-----------------------------------|----------------------------|-----------------------------------|
| S. Glendora Ave | North/South | Area 2 |
| Arrow Highway | East/West | Area 2 and 3 |
| W. Alosta Ave (Historic Route 66) | East/West | Area 2 and 3 |
| N. Lone Hill Ave | North/South | 2 and 3 (Border) |
| W. Foothill Blvd (State Route 66) | East/West | Area 2 and 3 |
| Bonita Ave | East/West | Area 3 |
| S. San Dimas Ave | North/South | Area 3 |
| N. White Ave | North/South | Area 3 |
| N. Garey Ave | North/South | Area 3 |
| N. Towne Ave | North/South | Area 3 |
| S. Indian Hill Ave | North/South | Area 3 |
| Monte Vista | North/South | Area 4 |
| Central Avenue | North/South | Area 4 |
| 7 th Street | East/West | Area 4 |
| Arrow Highway | East/West | Area 4 |
| Foothill Blvd. | East/West | Area 4 |

Sources: Foothill Transit 2003, Omni Trans, 2003

Public transportation needs in the study corridor are fulfilled by a combination of traditional transit service (fixed-route bus service with scheduled stops), non-traditional transit service (special shuttle systems and demand-responsive services), and rail service (commuter and inter-city rail). Generally, the cities in the corridor contract with Foothill Transit to fulfill the sub-regional transportation needs of their citizens. **Table 1-2** provides information on the transit operators in the corridor.

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**TABLE 1-2
TRANSIT OPERATORS IN GOLD LINE PHASE II STUDY CORRIDOR**

| Operator | Service Objective | Type of Operation | Service Area |
|--|--|-------------------|---|
| Regional | | | |
| Amtrak | Commuter and Travel Rail | Fixed Route | National and Intercity |
| Access Services | Specialized for the Disabled Citizens. Sponsored by Los Angeles County, Los Angeles County Metropolitan Transportation Authority, Azusa Transit, Pomona Valley Transportation Authority, Foothill Transit, Omnitrans and Member Cities | As Reserved | Los Angeles County, San Bernardino County and member cities |
| Los Angeles County Metropolitan Transportation Authority | Public Mass Transportation (Operator and Transportation Planning Organization) | Fixed Route | Los Angeles County |
| | Rail | Fixed Route | Gold Line Phase I |
| | Bus | Fixed Route | Pasadena, Arcadia, Monrovia, Duarte only |
| Metrolink | Commuter Rail | Fixed Route | Regional; service only in eastern quarter of study corridor |
| Foothill Transit | Public Bus Transit (Operator Only) | Fixed Route | Regional; primarily within Los Angeles County |
| Omnitrans | Bus | Fixed Route | Regional; primarily within San Bernardino County |
| Local | | | |
| Arcadia Transit | Public Shuttle | As Reserved | Arcadia |
| Azusa Transit | Public Bus System | Fixed Route | Azusa |
| Azusa Dial-A-Ride | Senior Citizens Shuttle | As Reserved | Azusa |
| Azusa Pacific University Shuttle | Student Shuttle between Azusa Pacific campuses | Fixed Route | Azusa and Glendora |
| Claremont Dial-A-Ride | Public Shuttle | As Reserved | Claremont |
| Get About | Senior and Disabled Citizens Shuttle | As Reserved | Claremont |
| Duarte Transit Service | Public Bus System | Fixed Route | Duarte |
| Glendora Mini-Bus | Senior and Disabled Citizens Shuttle | Per Reservation | Glendora |
| City of Irwindale | Senior Citizens Shuttle | Per Reservation | Irwindale |

TABLE 1-2 *continued*
TRANSIT OPERATORS IN GOLD LINE PHASE II STUDY CORRIDOR

| Operator | Service Objective | Type of Operation | Service Area |
|-------------------------------------|--|-------------------|---|
| Get About | Senior and Disabled Citizens Shuttle | Per Reservation | La Verne |
| City of La Verne | Senior Citizens Shuttle | Per Reservation | For Brethren Hillcrest Homes to locations within La Verne |
| University of La Verne Shuttle | Public Shuttle | Fixed Route | University of La Verne and a Childcare Center at the Fairplex in Pomona |
| Monrovia Transit | Public Shuttle | As Reserved | Monrovia |
| Pasadena Area Rapid Transit System | Public Shuttle | Fixed Route | Pasadena |
| Dial-A-Ride | Shuttle for Senior Citizens and Disabled | As Reserved | Pasadena |
| Get About | Shuttle for Senior Citizens and Disabled | As Reserved | Pomona |
| Pomona Dial-A-Ride | Shuttle for Senior Citizens and Disabled | As Reserved | Pomona |
| Foothill Transit | Subsidizes Service for Senior Citizens | Fixed Schedules | San Dimas |
| Get About | Senior & Disabled Citizens Shuttle | As Reserved | San Dimas |
| Dial-a-Cab | Public Transportation | As Reserved | San Dimas |
| Gateway Coach (formerly Roundabout) | Public Transportation | Fixed Routes | Sierra Madre |
| Dial-A-Ride | Senior and Disabled | As Reserved | Sierra Madre |

Sources: Service providers, 2003

A review of the transit routes in the study corridor indicates that the main transit demand is for east-west travel, which is the same as the travel demand on I-210 and arterial streets. This east-west demand can be attributed to several factors associated with development of the study area:

- *The presence of the San Gabriel Mountains to the north serves as a barrier.*
- *The communities in the study corridor originally arose around station stops along the Atchison Topeka and Santa Fe Railroad.*
- *Historic Route 66, the primary national highway route into Los Angeles from the 1930s until the 1960s, traversed many of the communities. The highway was also important for goods movement within the region. Both employment centers and residential growth tended to be located along the route, expanding upon the initial development that had been driven by the railroad.*

- *The creation of I-210 reinforced the growth of employment centers and residential areas along the freeway spine.*

b. Transit Travel Times

Commuter rail service is available from the eastern part of the study corridor to downtown Los Angeles. There are Metrolink commuter rail stations in Pomona, Claremont, and Montclair; there are no commuter rail stations in the communities west of Pomona along the study corridor. The scheduled weekday travel time from Montclair (the most easterly station in the study corridor) to downtown Los Angeles is approximately 55 minutes; from Pomona the scheduled travel time is approximately 47 minutes. The scheduled travel time for express bus service from Montclair to downtown Los Angeles is approximately 126 minutes; this route (Foothill 480/481) includes travel in areas well south and outside of the Phase II study corridor and uses I-10 to reach downtown.

Foothill Transit currently operates twelve bus lines that are contained either entirely or partially within the study corridor. Three of them run east/west along Foothill Boulevard, Huntington Drive, and Arrow Highway for substantial portions of their routes across the Pasadena Gold Line Phase II study corridor. Bus Lines 187 and 189 from Pasadena to Montclair operates in the traditional, frequent-stop mode. The weekday Express Bus Line 690, uses I-210 for some segments of its route, and makes only four stops between Pasadena to Montclair. Each of these bus lines serve only a portion of the Phase II study corridor, thus linking only some of the individual downtowns and activity centers, and also leaving some sections of the study corridor unlinked by public transportation. The scheduled travel time on Lines 187/189 from Colorado Boulevard and Sierra Madre Boulevard to the Montclair TransCenter is approximately one and one-half hours during the weekday, and just over one hour on the weekend. The scheduled travel time from Lake Avenue and I-210 to the Montclair TransCenter is approximately one and one-quarter hour on weekdays on Line 690. Line 690 does not operate on the weekend. It should be noted that transit trips along arterials and the freeways are subject to the same delays as other traffic using those facilities.

Transit Problems:

Commuter rail service is available only in the eastern quarter of the study corridor and is linked only to downtown Los Angeles.

Transit service between the end points of the study corridor is limited to 3 bus routes.

The available bus routes do not connect all of the downtowns in the study corridor.

The available routes do not serve several major activity centers in the corridors.

Bus service is subject to traffic congestion and incidents, resulting in some trips being of unpredictable durations.

1-3.1.3 Arterials

a. Arterial Network

The study corridor includes an extensive network of arterial streets, which generally form a grid pattern. This grid offers some opportunities for travel that are alternatives to the use of I-210. However, despite the presence of very long east-west arterials such as Route 66/Foothill Boulevard/ Huntington Drive or Arrow Highway/ Live Oak Avenue/Las Tunas Drive, these east-west arterials are not continuous. The

longest segments of the major east-west arterials cross a few communities before a break occurs, usually requiring trip-makers to drive about a mile north or south to connect to another long segment. As a result, there are no street arterials, or linked arterials, that create an uninterrupted route across the study corridor. This discontinuity affects automobile and truck movements, as well as transit service, and tends to push those drivers who need to make longer trips onto I-210.

The arterial network serves two, sometimes competing, functions. In addition to providing access across the general area, the arterials also function as primary distributors for traffic in each city. The mix of through traffic, traffic bound for local destinations, and traffic bound for activity centers located adjacent to arterials, can overburden the network in some locations or at particular times.

Arterial Travel Times

Posted speed limits on arterials in the study area are generally 35 MPH. However, actual travel speed through the corridor is greatly influenced by frequently occurring intersections and congestion at intersections. Travel data gathered in Fall 2003 for 117 intersections throughout the study area indicate that 13 percent of them functioned as a level of service with substantial amounts of delay (LOS D, E or F) in the morning period, with congestion increasing to about 16 of the intersections in the afternoon period. Data were not gathered for all roadways on which transit occurs, but the conditions identified are consistent with field observations.

Arterial Network Problems:

East-west arterials that potentially provide alternative routes to I-210 are discontinuous.

Travel times on arterials are slow and subject to congestion and incidents that affect their viability as alternate routes across the study area.

1-3.2 Population and Employment Factors

Among the indicators of demand for transportation improvements are the population and employment characteristics of a corridor. The Phase II study area has continually increased in population over time and is forecasted to have substantial growth through 2025. In addition to population growth, the corridor has had a strong increase in employment over time, with a forecast of robust increases in employment throughout the corridor.

1-3.2.1 Population

The study area includes 13 cities, each of which is a well-established community that is intricately linked to the Los Angeles metropolitan area's characteristic of widespread, decentralized employment and residential areas. As shown in **Table 1-3**, these communities grew in population between 1990 and 2000 and are forecast to continue to grow through 2025. In total, the cities in the study corridor contain more than 690,000 persons, with a predicted increase of almost 23 percent by 2025. Individual communities are expected to grow between 3 and 56 percent, with about half of them in the 20-30 percent range. These levels of growth are a result of planned expansions or redevelopment at higher densities. The data reflect the situation pointed out in Figure 1-2, a growing population that has and will outstrip planned increases in the transportation network.

**TABLE 1-3
LOCAL AND REGIONAL POPULATION CHANGE**

| City | 1990 Population | 2000 Population | Percent Change 1990 to 2000 | Forecasted Population | Percent Change 2000 to 2025 |
|------------|-----------------|-----------------|-----------------------------|-----------------------|-----------------------------|
| Arcadia | 48,290 | 53,054 | +9.9 | 54,783 | +3.1 |
| Azusa | 41,333 | 44,712 | +8.2 | 51,595 | +15.4 |
| Claremont | 32,503 | 33,998 | +4.6 | 39,575 | +16.4 |
| Duarte | 20,688 | 21,486 | +3.9 | 27,101 | +26.1 |
| Glendora | 47,828 | 49,415 | +3.3 | 56,992 | +15.3 |
| Irwindale | 1,050 | 1,446 | +37.7 | 2,256 | +56.0 |
| La Verne | 30,897 | 31,638 | +2.4 | 37,411 | +18.2 |
| Montclair | 28,434 | 33,049 | +16.2 | 41,464 | +25.5 |
| Monrovia | 35,761 | 36,929 | +3.3 | 45,743 | +23.9 |
| Pasadena | 131,591 | 133,936 | +1.8 | 173,643 | +29.6 |
| Pomona | 131,723 | 149,473 | +13.5 | 189,687 | +26.9 |
| San Dimas | 32,397 | 34,980 | +8.0 | 40,488 | +22.6 |
| Upland | 63,374 | 68,393 | +7.9 | 88,166 | +28.9 |
| Study Area | 645,869 | 692,509 | +7.2 | 848,904 | +22.6 |
| LA County | 8,863,164 | 9,519,338 | +7.4 | 12,338,000 | +29.6 |
| SB County | 1,418,380 | 1,709,434 | +20.5 | 2,787,000 | 63.0 |

Sources: U.S. Bureau of the Census, 2000 (SF1). Forecasts: 2001 SCAG RTP Update

1-3.2.2 Employment

It is important to note that the study corridor is not composed of bedroom communities. Rather, there are substantial areas of employment, as shown in **Table 1-4**. The study corridor contained more than 346,000 jobs in 2000. The employment forecasts from SCAG indicate that by 2025 an additional 85,425 jobs will be created within the corridor, a 24.6 percent increase over 2000. **Table 1-5** describes the activity centers located in the corridor within one mile of the proposed alignment. This impressive number of activity centers along the study corridor is a reflection of the historic development pattern that occurred in the San Gabriel Valley. The individual towns, built along and linked by the railroad, originally created a series of individual residential and employment nodes. Over time, as these towns expanded, additional employment and activity centers developed along the rail line and the communities' arterial street network.

Notable among these employment centers are historic downtowns, as well as major activity areas such as the Los Angeles County Arboretum, Santa Anita Park, Westfield Shoppingtown Santa Anita Mall, City of Hope National Medical Center, Miller Brewing, Azusa Pacific and Citrus Colleges, University of La Verne, the Pomona Fairplex, and the Claremont Colleges. This series of closely-spaced activity centers provide an unusual opportunity to create a regional employment corridor linked by transit. Within this employment corridor, the institutional and recreation resources provide a set of particularly stable set of

employment and activity generators. The range of employment locations across the corridor creates the proverbial two-edged sword: opportunities for some people to live near where they work, and the need for others to travel substantial distances to jobs located within the corridor or in other employment centers located outside of the Phase II study area.

These activity centers are indicative of demand for improved transportation facilities. For instance, the recreational resources at Santa Anita and Fairplex are on-going sources of high-volume visits and special events. The three hospitals in the corridor have high employment levels per square foot, partly as a result of their 24-hour operations. The four colleges provide substantial employment opportunities, plus student populations that often make multiple trips per day (including the evening) to and from the campuses.

| City | 2000 | 2005 | 2010 | 2015 | 2020 | 2025 | Percent Change 2000 to 2025 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|
| Arcadia | 23,744 | 24,274 | 24,800 | 25,172 | 25,393 | 25,644 | +8.0 |
| Azusa | 14,505 | 15,047 | 15,635 | 15,998 | 16,282 | 16,613 | +14.5 |
| Claremont | 11,960 | 12,246 | 12,563 | 12,797 | 12,940 | 13,104 | +9.5 |
| Duarte | 9,914 | 10,824 | 11,758 | 12,338 | 12,816 | 13,330 | +34.4 |
| Glendora | 18,018 | 18,444 | 19,157 | 19,607 | 19,925 | 20,269 | +12.5 |
| Irwindale | 32,550 | 37,886 | 43,322 | 46,550 | 49,432 | 51,512 | +58.2 |
| La Verne | 8,996 | 9,504 | 10,130 | 10,523 | 10,835 | 11,172 | +24.2 |
| Montclair | 17,357 | 19,649 | 22,296 | 23,833 | 25,198 | 26,653 | +53.5 |
| Monrovia | 22,083 | 23,046 | 23,978 | 24,588 | 25,038 | 25,525 | +15.6 |
| Pasadena | 93,287 | 96,502 | 99,749 | 101,977 | 103,578 | 105,366 | +12.9 |
| Pomona | 50,609 | 52,726 | 54,948 | 56,404 | 57,453 | 58,644 | +15.9 |
| San Dimas | 15,422 | 16,549 | 17,641 | 18,326 | 18,854 | 19,476 | +26.3 |
| Upland | 28,313 | 32,398 | 37,080 | 39,821 | 42,263 | 44,875 | +58.5 |
| Study Area | 346,758 | 369,096 | 393,057 | 407,934 | 420,007 | 432,183 | +24.6 |
| LA County | 4,312,264 | 4,655,000 | 4,890,000 | 5,029,000 | 5,156,000 | 5,291,000 | +22.7 |
| SB County | 735,589 | 715,000 | 852,000 | 933,000 | 1,007,000 | 1,086,000 | +47.6 |

Sources: U.S. Bureau of the Census, 2000; Forecasts: 2001 SCAG RTP Update.

**TABLE 1-5
MAJOR ACTIVITY CENTERS**

| City | Name | Type of Usage |
|-------------|---|---|
| Pasadena | East Foothill Industrial Center | Manufacturing & Employment |
| | Hastings Village | Commercial and Employment |
| Arcadia | Los Angeles County and State Arboretum | Recreation and Special Events |
| | Santa Anita Race Track | Recreation and Employment |
| | Arcadia County Park and Santa Anita Golf Course | Recreation and Special Events |
| | Westfield Shoppingtown Santa Anita Mall | Commercial and Employment |
| | Arcadia Civic Center | Public Service & Employment |
| | Civic Center Athletic Field and Recreation Area | Recreation |
| | Huntington Shopping Center | Commercial and Employment |
| | Huntington Drive Redevelopment Area | Commercial and Employment |
| | Methodist Hospital of Southern California | Public Service & Employment |
| Monrovia | Old Town Monrovia | Commercial and Employment |
| | Monrovia Center | Commercial and Employment |
| | Huntington Oaks Center | Commercial and Employment |
| | *Hi-Tech Corridor | Industrial and Employment |
| Duarte | City of Hope National Medical & Research Center | Public Service and Employment |
| | Duarte Performing Arts Center | Recreation and Employment |
| | Santa Teresita Hospital | Public Service & Employment |
| | Rancho Duarte Golf Course | Recreation |
| | Duarte Sports Park | Recreation |
| | Otis Gordon Sports Park | Recreation |
| Irwindale | Santa Fe Flood Control Basin | Public Service & Employment |
| | Santa Fe Dam Recreation Area | Recreation and Employment |
| | Miller Brewery | Employment |
| Azusa | Azusa Square | Commercial and Employment |
| | Azusa-Pacific University | Education and Employment |
| | Foothill Center | Commercial and Employment |
| | Costco | Commercial and Employment |
| | Rainbird | Manufacturing & Employment |
| | Wynn Oil Company | Manufacturing & Employment |
| | Morris International | Manufacturing & Employment |
| | Monrovia Nursery | Agriculture / Commercial and Employment |
| | Aerojet Gencorp. | Manufacturing & Employment |
| | TH Molding | Manufacturing & Employment |
| | Pierre Fabre | Manufacturing & Employment |

TABLE 1-5 *continued (page 2 of 4)*
MAJOR ACTIVITY CENTERS

| City | Name | Type of Usage |
|-----------|---|-------------------------------|
| | Best Quality Furniture | Manufacturing & Employment |
| | Tru Wood Products | Manufacturing & Employment |
| | Artisan Screen Process | Manufacturing & Employment |
| | California Amforge | Manufacturing & Employment |
| | Hansen's Juices, Inc. | Manufacturing & Employment |
| Glendora | Citrus College | Education and Employment |
| | Foothill Presbyterian Memorial Hospital | Public Service and Employment |
| | Glendora Community Hospital | Public Service & Employment |
| | Glendora Auto Centre | Commercial and Employment |
| | Mayflower Center | Commercial and Employment |
| | Lone Hill Center | Commercial and Employment |
| | Louis Pompei Sports Park | Recreation |
| | South Hills Park | Recreation |
| | Glendora County Club | Recreation and Employment |
| | Huntington East Valley Hospital | Public Service and Employment |
| | Wal-mart | Commercial and Employment |
| | Glendora Market Place | Commercial and Employment |
| | Caltrol, Inc. | Manufacturing & Employment |
| | National Hotrod Association | Manufacturing & Employment |
| | CCC Information Services | Manufacturing & Employment |
| San Dimas | Target Shopping Center | Commercial and Employment |
| | Frank G. Bonelli Regional County Park | Recreation |
| | Frontier Village | Commercial and Employment |
| | Lowes/Levitz Center | Commercial and Employment |
| | ADP/Gilead Sciences | Manufacturing & Employment |
| | Bausch & Lomb | Manufacturing & Employment |
| | Overland Court Corporate Center | Manufacturing & Employment |
| | San Dimas Sheriff's Dept. | Public Service & Employment |
| | San Dimas Community Hospital | Public Service & Employment |
| | Life Bible College | Education and Employment |
| | Raging Waters | Recreation and Employment |
| La Verne | University of La Verne | Education and Employment |
| | Brackett Field | Airport and Employment |
| | Classic Canvas | Manufacturing & Employment |
| | San Polo Business Park | Manufacturing & Employment |
| | Old Town La Verne | Commercial & Employment |

TABLE 1-5 *continued (page 3 of 4)*
MAJOR ACTIVITY CENTERS

| City | Name | Type of Usage |
|-----------|--|---|
| | Arrow Corridor Businesses | Manufacturing & Employment |
| | Hillcrest Homes | Public Service & Employment |
| | Metropolitan Water District, Weymouth Treatment Facility | Public Service & Employment |
| | Princeland Properties | Manufacturing & Employment |
| | Paper Pak Industries | Manufacturing & Employment |
| | La Verne Recreation Park | Recreation |
| | David and Margaret Home | Public Service & Employment |
| | Damien High School | Public Service & Employment |
| | 1300 Palomares Industrial Park | Manufacturing & Employment |
| Pomona | Los Angeles County Fairplex | Recreation, Employment and Special Events |
| | Garey Center | Commercial and Employment |
| | The Valley Center | Commercial and Employment |
| | Martin-Lockheed Electro-Optical | Manufacturing & Employment |
| | Verizon Communications | Commercial and Employment |
| | Pomona Paper Stock Company | Commercial and Employment |
| | Coast Foundry and Manufacturing | Manufacturing & Employment |
| Claremont | Claremont Village | Commercial and Employment |
| | Claremont Colleges | Education and Employment |
| | Claremont Auto Center | Commercial and Employment |
| | Visiting Nurses Association and Hospice | Public Service & Employment |
| | Hi-Rel Connectors, Inc. | Manufacturing & Employment |
| | **Claremont Manor | Public Service and Employment |
| | Pilgrim Place | Public Service and Employment |
| | Blaisdell Community Building | Recreation and Public Service |
| | Blaisdell Park | Recreation |
| | College Park | Recreation |
| Montclair | Town Square Center | Commercial and Employment |
| | Montclair Plaza | Commercial and Employment |
| | Doctors Hospital Medical Center of Montclair | Public Service and Employment |
| | Mountain Green Center | Commercial and Employment |
| | Mountain Square | Commercial and Employment |
| Upland | Cable Airport | Airport and Employment |

| TABLE 1-5 <i>continued (page 4 of 4)</i> MAJOR ACTIVITY CENTERS | | |
|--|--------------------|---------------------------|
| City | Name | Type of Usage |
| | Upland Center | Commercial and Employment |
| | New Orleans Square | Commercial and Employment |
| | Upland Square | Commercial and Employment |
| | The Plaza | Commercial and Employment |
| * There are over 48 hi-tech businesses located in this corridor. ** There are two Claremont Manors. | | |

Population and Employment Issues:

Access between areas of current and forecasted population and locations of current and forecasted employment must utilize transportation facilities that are currently at or over capacity during peak periods.

Only some of the activity centers in the corridor are connected to existing transit services, affecting potential access to employment for persons without automobiles

Existing transit service between activity centers is infrequent, even during peak hours.

The corridor is expected to grow substantially in population and employment through 2025, and such growth would place ever-increasing demands on the transportation infrastructure.

Communities recognize and have undertaken planning to accommodate forecasted growth; many community plans call for transit improvements to help manage that growth.

1-3.3 Environmental Considerations

The Los Angeles metropolitan area has the unfortunate distinction of having some of the most serious air quality problems in the nation. SCAG’s 2004 RTP reports that during the 1990s, the region achieved consistent improvements in the number of days exceeding federal or state standards for ozone and carbon monoxide. The region exceeded the federal one-hour standard for ozone during 40 days in 2000 compared to 130 days in 1990. However, in 2002, the number of days exceeding the federal one-hour standard for ozone increased to 49 days from 36 days in 2001. The number of days for health advisory also increased from 15 to 18 days between 2001 and 2002. SCAG reports that available data for 2003 indicated that it would be even worse than in 2002.

The strategy for addressing the region’s air quality concerns includes transit improvements that provide increased mobility while simultaneously reducing air emissions. Accordingly, the proposed Gold Line Phase II project has been incorporated into the 2030 Regional Transportation Plan and into the near term Regional Transportation Improvement Plan.

In addition, goals and objectives identified for transportation planning in the corridor (discussed below) call for improving air quality and preserving and protecting the natural and man-made environments.

Environmental Issues:

Transportation improvements must support achievement of the region's air quality plan.

Transportation improvements should avoid or minimize impacts to natural and manmade environments.

1-3.4 Corridor Transportation Planning Guidance

1-3.4.1 Goals and Objectives

During initial corridor planning undertaken in 2001 by the Construction Authority and the San Gabriel Valley Council of Governments, representatives of local governments established goals and objectives for transportation improvements in the study corridor. These goals and objectives are shown in **Table 1-6**. A range of transportation improvements, including those in this environmental document, could address these goals and objectives.

| Category | Goal | Objective |
|---|--|---|
| Land Use & City Vision | To locate stations that facilitate cities' visions for land use and development around transit stations and adjoining activity centers | Cities and transit providers to jointly select station locations that maximize transit use and further cities' plans for transit oriented development (infrastructure, parking, development, redevelopment, etc.) |
| | To create a system that creates/adds identity and attractiveness to San Gabriel Valley cities | To provide highly visible stations that represent the cities' senses of place |
| | | To respect community architectural and urban design standards |
| | | To provide safe access for pedestrians, and bicycles |
| | | To enhances community identity |
| To take advantage of the high visibility of the Corridor to promote transit use | | |
| Transit Usefulness | To complement other existing transit in the corridor and optimize previous investments | To provide efficient intra-corridor service not currently met by Metrolink, Foothill Transit or the Pasadena Gold Line Phase I |
| | | To make good use of the right-of-way already purchased |
| | To reduce auto dependency | To create a system with the capability to carry at least 25 percent as many people as are carried in all I-210 travel during the day, and to offer a level-of-service capable of attracting this percent of travel. |

TABLE 1-6 *continued*
GOALS AND OBJECTIVES

| Category | Goal | Objective |
|--------------------|--|--|
| | To improve mobility and provide connectivity to regional and local transit systems | To provide good connections to Metrolink, Foothill Transit, and the Pasadena Gold Line Phase I at Sierra Madre Villa Avenue |
| | To implement a project within a reasonable period of time | To implement new transit service in the corridor by 2008. |
| Cost Effectiveness | To develop a cost-effective transit system | To incur capital costs of less than the cost of increasing the capacity of I-210 by 25%. |
| | | To be capable of being operated and maintained at or better than the average cost of other rapid transit systems in Los Angeles County |
| Environmental | To improve air quality and preserve and protect the natural and man-made environment | To avoid potential impacts by utilizing existing disturbed right-of-way |
| | | To avoid property acquisitions to the extent possible |
| | | To work jointly with the cities to identify potential impacts and feasible mitigation measures in order to minimize impacts |
| | | To reduce, not add to, tailpipe emissions |
| Study Process | To work collaboratively with local cities throughout the Alternatives Analysis process | To ensure that the desires, policies, and concerns of corridor cities and citizens are considered in the LPA process |
| | | To develop a public participation program in collaboration with corridor cities |
| | | To listen to the community and explain how we have responded to comments as the study progressed |

1-3.4.2 Previous Analysis

An Alternatives Analysis was conducted between September 2001 and June 2002 by the Construction Authority and the San Gabriel Valley Council of Governments (SGVCOG). The Alternatives Analysis looked at transportation conditions and possible solutions for improving mobility across the corridor from Pasadena to Claremont. Seven alternatives were examined in this study and screened down to an

Alternatives Analysis Locally Preferred Alternative (LPA-AA) selected by the Construction Authority and the SGVCOG in 2002. The LPA-AA is a continuation of the light rail transit (LRT) technology from the existing Sierra Madre Villa LRT station in Pasadena to the Claremont Transit Center³. Although not sponsored by the Federal Transit Administration (FTA), the Alternatives Analysis followed FTA study procedures in assessing potential transportation solutions. The study identified transportation conditions to be addressed, developed a range of potential solutions, and systematically evaluated and compared those potential solutions.

Issues from Previous Analysis:

Alternative transportation modes have been previously assessed. Rail modes were shown to be more effective in dealing with corridor transportation problems than either highway improvements or bus-based improvements.

Cities in the study corridor have expressed their support for extending LRT service along an available right-of-way, as opposed to commuter rail service.

³ The eastern terminus was extended to the Montclair TransCenter subsequent to the adoption of the LPA-AA.

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CHAPTER 2 - ALTERNATIVES

Background

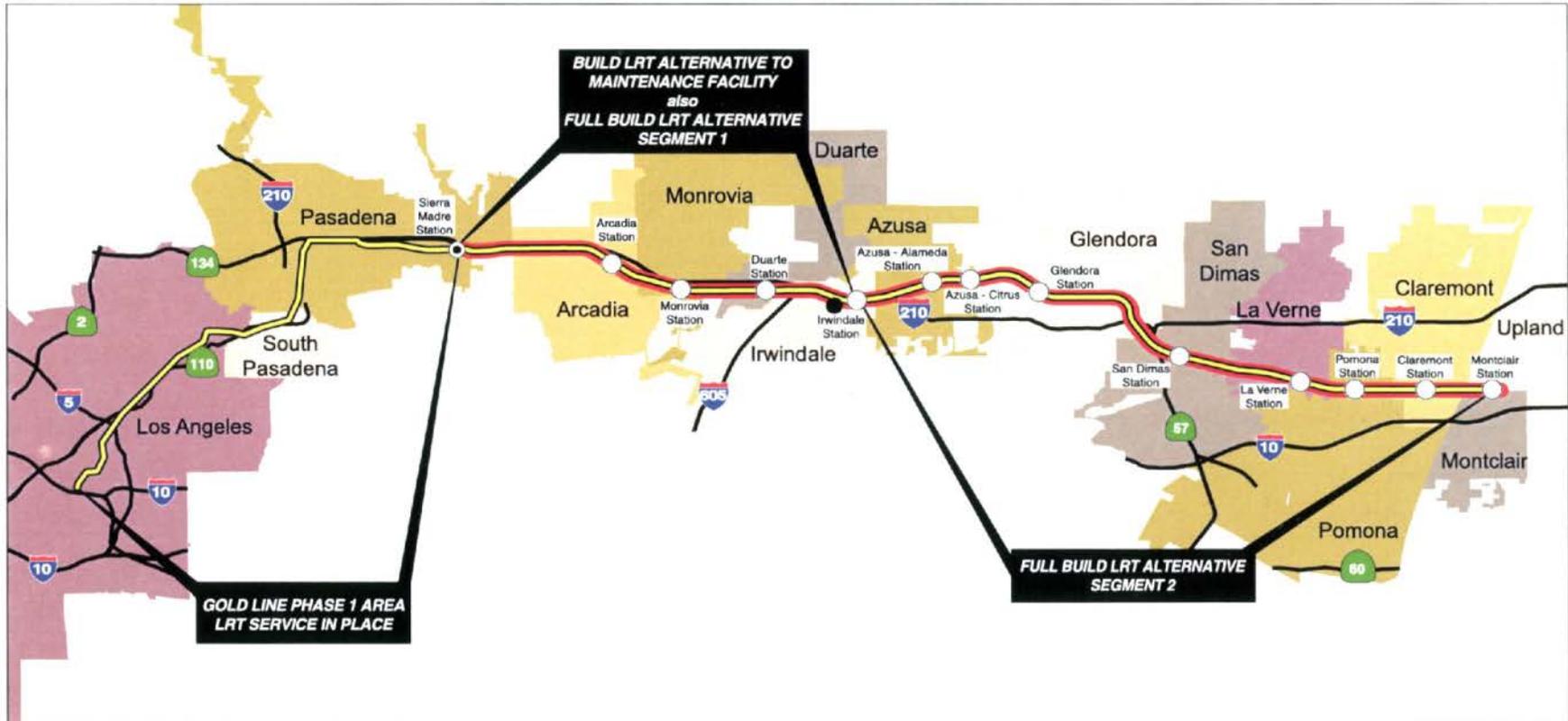
Transportation improvements for the San Gabriel Valley and adjoining areas have been the subject of study for several decades. Among past efforts was the creation of I-210, the Foothill Freeway, for which planning was initiated in 1955. Implementation of that freeway plan continues today.

As early as 1980, transportation planners envisioned the use of the former Atchison Topeka-Santa Fe Railroad's Pasadena Subdivision alignment as part of a countywide rapid rail network. The first outgrowth of this vision was the initiation of planning for Phase I of the Gold Line in the late 1980's.

Local governments have been keenly interested in how that right-of-way might be best used to improve mobility. In light of the pending acquisition of the former Atchison Topeka-Santa Fe railroad right-of-way (completed in 1992 with Proposition C funds), the Los Angeles County Metropolitan Transportation Authority (LACMTA), in cooperation with the Foothill Cities Transportation Task Force and the San Bernardino Associated Governments prepared a study that resulted in issuance of the *Northern San Gabriel-San Bernardino Valley Transportation Corridor Preliminary Planning Study* in 1992. In 1993, LACMTA and the Foothill Task Force Cities commissioned an Environmental Impact Report (EIR) to evaluate the impacts of light rail and commuter rail east of the planned Sierra Madre Villa LRT station. The EIR was completed in 1994.

After implementation of Phase I of the Gold Line began in 1999, attention was again focused on potential use of the remainder of the former Pasadena Subdivision railroad right-of-way to extend service eastward from Pasadena. The Los Angeles to Pasadena Metro Blue Line Construction Authority and the San Gabriel Valley Association of Governments, with the participation of cities along the rail right-of-way, initiated an Alternatives Analysis study to bring corridor planning up to date.

This chapter begins with an overview of the Alternatives Analysis process, conducted during 2001 and 2002, during which numerous alternatives were considered and evaluated. The outcome of the Alternatives Analysis process was a Locally Preferred Alternative (LPA-AA), which is now the focus of the Build Alternatives evaluated in this EIS/EIR. The remainder of this chapter describes the Alternatives that are evaluated in this EIS/EIR for the Gold Line Phase II Extension Project. Four Alternatives are presented in this chapter: (1) the No Build Alternative, (2) the Transportation Systems Management (TSM) Alternative, (3) the Full Build LRT Alternative, and (4) the Build LRT Alternative to Maintenance Facility. **Figure 2-1** shows the 13-city study area and the study corridor along either side of the rail right-of-way.



Sources: U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2004.

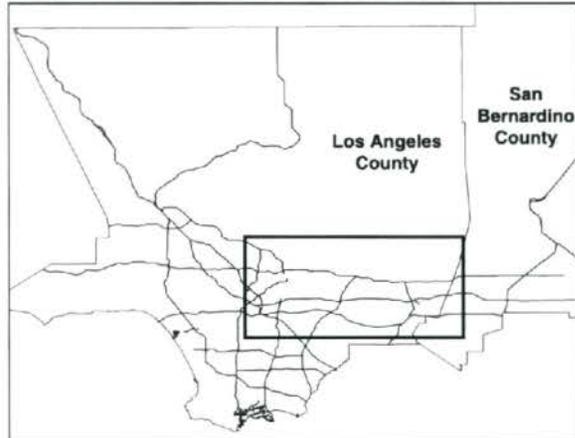


Figure 2-1: Gold Line Phase II Study Area and Study Corridor

2-1 ALTERNATIVES ANALYSIS

A number of alternatives were initially evaluated during the Alternatives Analysis portion of this study (Gold Line Phase II Extension Pasadena to Claremont Alternatives Analysis, Final Draft Report, dated January 9, 2003). Conducted during 2002, the Alternatives Analysis process essentially was a three-tiered screening process where a full range of alternatives was narrowed down during three levels of screening to ultimately arrive at a LPA-AA. **Figure 2-2** illustrates this process. As the number of alternatives decreased, the level of technical detail with which the alternatives were analyzed and evaluated increased.

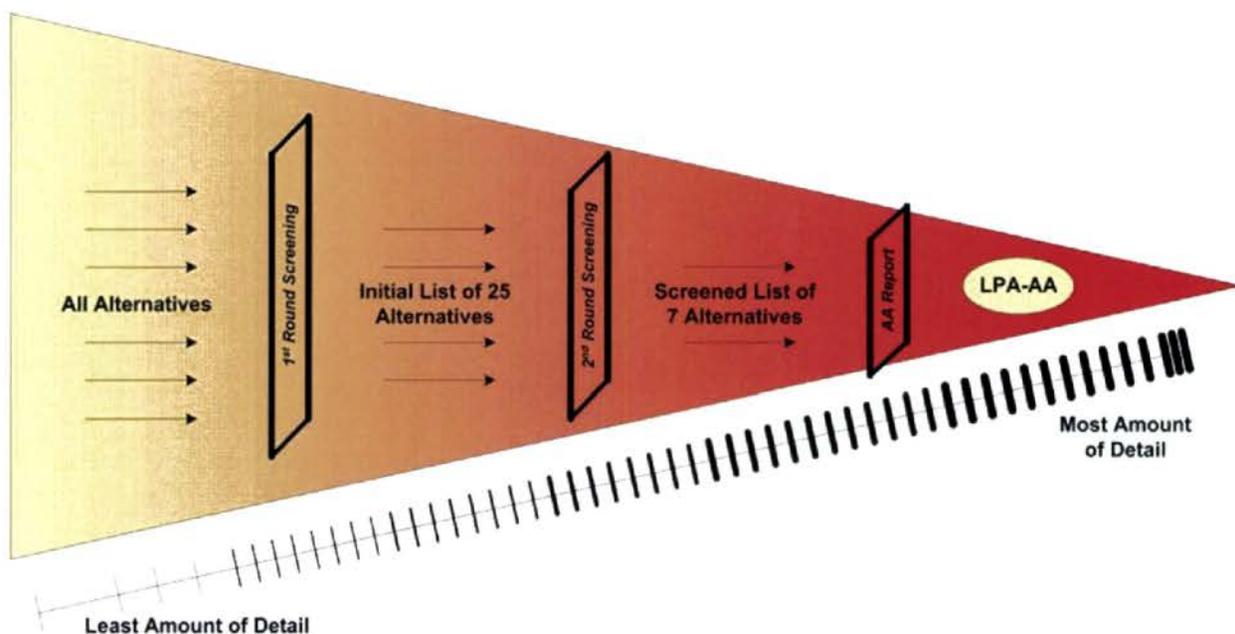


FIGURE 2-2: THE ALTERNATIVES ANALYSIS PROCESS

2-1.1 Alternatives Analysis Process

2-1.1.1 Initial List of Alternatives

The Alternatives Analysis looked at a wide range of alignment and technology options aimed at serving the study corridor's transportation needs. The initial list of 25 alternatives was identified from all possible alternatives using the 1993 EIR¹ produced for this corridor as a guide, as well as input from the public. These included a No Build Alternative, a TSM Alternative, as well as various modal alternatives:

¹ Northern San Gabriel-San Bernardino Rail Transit Corridor Draft Environmental Impact Report, SCH# 93021062, September 1993. Los Angeles County Metropolitan Transportation Authority.

Bus Rapid Transit (BRT), Light Rail Transit (LRT), Commuter Rail, High Occupancy Vehicle (HOV) Lanes, and other guideway-based alternatives. **Table 2-1** outlines the extensive initial list of alternatives as described in the Alternatives Analysis Report, which is incorporated and made a part of this EIS/EIR.

As **Table 2-1** illustrates, these alternatives encompassed a variety of options, including differing technologies, alignments, and operations. Technologies looked at in the initial analysis included enhanced bus service, BRT, LRT, commuter rail, diesel multiple units (DMUs), HOV lanes, and other fixed guideway technologies. The alignment alternatives included the existing railroad right-of-way, Interstate 210 (I-210), and local major arterials. Operations alternatives varied by mode or utilized a combination of technologies.

| TABLE 2-1 INITIAL LIST OF ALTERNATIVES TO ADDRESS CORRIDOR TRANSPORTATION PROBLEMS (ALTERNATIVES ANALYSIS REPORT) | | | | |
|--|-------------------|--|---|--|
| Alternative | Technology | Description | Western Terminus / Eastern Terminus | |
| 0 | Baseline/ TSM | Future bus network with Foothill Transit Express Bus on I-210, plus other transportation improvements in Regional Transportation Plan, Package G | Sierra Madre Villa Ave./Indian Hill Blvd. | |
| 1 | BRT-1 | Bus Rapid Transit (BRT) | Widen I-210 for BRT lanes | Sierra Madre Villa Ave./Indian Hill Blvd. |
| 2 | BRT-2 | BRT | Elevated BRT lanes on I-210 | Sierra Madre Villa Ave./Indian Hill Blvd. |
| 3 | BRT-3 | BRT | BRT on I-210 Shoulder | Sierra Madre Villa Ave./Indian Hill Blvd. |
| 4 | BRT-4 | BRT | BRT-only HOV lanes | Sierra Madre Villa Ave./Indian Hill Blvd. |
| 5 | BRT-5 | BRT | BRT on I-210 and street right-of-way | Sierra Madre Villa Ave./ Claremont Metrolink Station |
| 6 | BRT-6 | BRT | Rapid bus on streets | Local Streets from Pasadena to Claremont |
| 7 | BRT-7 | BRT | BRT on exclusive street right-of-way | Foothill Blvd. from Pasadena to Huntington Blvd. to Foothill Blvd. (Azusa) to Alostia Ave. to Lone Hill Ave. to Arrow Highway/Claremont. |
| 8 | BRT-8 | BRT | BRT on I-210 and rail right-of-way | Sierra Madre Villa Ave. on I-210, exit at Irwindale into rail right-of-way/Claremont |
| 9 | BRT-9 | BRT | BRT on rail right-of-way (two lanes) Bus on pavement Guided bus | Rail right-of-way/Claremont |

TABLE 2-1 *continued (page 2 of 3)*
INITIAL LIST OF ALTERNATIVES
TO ADDRESS CORRIDOR TRANSPORTATION PROBLEMS
(ALTERNATIVES ANALYSIS REPORT)

| Alternative | | Technology | Description | Western Terminus / Eastern Terminus |
|-------------|-------|-----------------------------|---|-------------------------------------|
| 10 | LRT-1 | Light Rail Transit (LRT) | LRT single track using existing rail for both LRT and freight with new sidings | Rail right-of-way/Claremont |
| 11 | LRT-2 | LRT | LRT double track (may include some sections of single track) With no freight—buy remaining interests With freight—run freight operations off-peak Test a Segment 1 Minimum Operable Segment that extends LRT to, for example, Irwindale, with DMU to Claremont on double track | Rail right-of-way/Claremont |
| 12 | LRT-3 | LRT | LRT double track and dedicated freight track Test a Segment 1 Minimum Operable Segment that extends LRT to, for example, Irwindale, with DMU to Claremont on double track | Rail right-of-way/Claremont |
| 13 | LRT-4 | LRT/BRT | LRT on rail right-of-way and Express buses use sections of the rail right-of-way | Rail right-of-way/Claremont |
| 14 | CR-1 | Conventional Commuter Rail | Conventional Metrolink-type commuter rail using rail right-of-way | Rail right-of-way/Claremont |
| 15 | CR-2 | Diesel Multiple Units (DMU) | FRA-compliant single track using existing rail for both DMU and freight with new sidings | Rail right-of-way/Claremont |
| 16 | CR-3 | DMU | FRA non-compliant double track With no freight—buy remaining interests With freight—run freight operations off-peak | Rail right-of-way/Claremont |
| 17 | CR-4 | DMU | FRA non-compliant double track and dedicated freight track | Rail right-of-way/Claremont |
| 18 | CR-5 | DMU | FRA-compliant double track with occasional single track in narrow sections | Rail right-of-way/Claremont |

TABLE 2-1 *continued (page 3 of 3)*
**INITIAL LIST OF ALTERNATIVES
 TO ADDRESS CORRIDOR TRANSPORTATION PROBLEMS
 (ALTERNATIVES ANALYSIS REPORT)**

| Alternative | | Technology | Description | Western Terminus / Eastern Terminus |
|-------------|------------|----------------------------------|---|--|
| 19 | HOV-1 | High Occupancy Vehicle (HOV) | HOV Direct Connector to Sierra Madre Villa Station (Gold Line Phase I Terminus) | Sierra Madre Villa Ave. to Indian Hill Blvd. |
| 20 | HOV-2 | HOV with Bus | Bus operations in HOV lanes with online stations | I-210 to end of HOV Lane |
| 21 | HOV-3 | HOV with Bus | Bus operations in HOV lanes with offline stations and new connector ramps | I-210 to end of HOV Lane |
| 22 | Guideway-1 | Monorail | Monorail using rail right-of-way | Sierra Madre Villa Ave./Claremont |
| 23 | Guideway-2 | Maglev | Magnetic Levitation System using rail right-of-way | Sierra Madre Villa Ave./Claremont |
| 24 | Guideway-3 | Automated Guideway Transit (AGT) | AGT using rail right-of-way | Sierra Madre Villa Ave./Claremont |
| 25 | Guideway-4 | Personal Rapid Transit (PRT) | PRT using rail right-of-way | Sierra Madre Villa Ave./Claremont |

Source: Gold Line Phase II Extension, Pasadena To Claremont Alternatives Analysis, Final Draft Report, Metro Blue Line Construction Authority. January 8, 2003.

2-1.1.2 Screened List of Alternatives

Once the initial list of potential alternatives was developed (Table 2-1), alternatives were screened for flaws that would prevent their implementation, or that would seriously limit their ability to service the needs of the study corridor. Screening criteria were created and applied to the 25 potential alternatives during this second round of screening. The basis for eliminating alternatives in this round of screening included these basic reasons:

- Was estimated not to be cost-effective
- Posed significant environmental disadvantages
- Offered no advantages over less-costly technologies
- Would not be likely to meet projected travel demand
- Would not be likely to reduce travel times
- Would be more costly to construct and/or operate than TSM or 10 build alternatives
- Would not meet or would conflict with goals and objectives established for the Alternatives Analysis.

During the second round of screening, as shown previously in **Figure 2-2**, alternatives were also analyzed using a number of additional factors, including engineering or environmental “fatal flaws,” potential to service existing land uses, transit-oriented development potential, implementation time, and financial capacity. Refer to the Development and Screening Analysis Report, dated November 30, 2001, for more information.

As a result of the second round screening analysis and input from the Technical Advisory Committee, which had been established for the Alternatives Analysis process, the list of 25 alternatives was reduced to seven, as outlined in **Table 2-2**. All seven alternatives utilize a single alignment on property currently owned by the LACMTA and used by the Burlington Northern Santa Fe (BNSF) Railway for freight rail service to a small number of customers along the alignment.

| TABLE 2-2 SCREENED LIST OF ALTERNATIVES | | | | |
|--|---|-------------------|---|--|
| Alternative | | Technology | Description | Route / Western Terminus / Eastern Terminus |
| 1 | Baseline/ TSM | Baseline | Future bus network with Foothill Transit Express Bus on I-210, plus other transportation improvements in Regional Transportation Plan, Package G | Existing street network Sierra Madre Villa Ave./Indian Hill Blvd. |
| 2 | (BRT-9) BRT on rail right-of-way | BRT | BRT on Rail right-of-way (two lanes) Bus on pavement Guided bus | Rail right-of-way Sierra Madre Villa Ave./Claremont |
| 3 | (LRT-2) LRT no Freight | LRT | LRT double track (may include some sections of single track) With no freight—buy remaining interests With freight—run freight operations off-peak Test a Segment 1 Minimum Operable Segment that extends LRT to, for example, Irwindale, with DMU to Claremont on double track | Rail right-of-way Sierra Madre Villa Ave./Claremont |
| 4 | (LRT-3) LRT on Two Tracks + Freight | LRT | LRT double track and dedicated freight track Test a Segment 1 Minimum Operable Segment that extends LRT to, for example, Irwindale, with DMU to Claremont on double track | Rail right-of-way Sierra Madre Villa Ave./Claremont |
| 5 | (CR-3) Non-compliant DMU shared with Freight | DMU | FRA non-compliant double track With no freight—buy remaining interests With freight—run freight operations off-peak | Rail right-of-way Sierra Madre Villa Ave./Claremont |

| TABLE 2-2 <i>continued</i> SCREENED LIST OF ALTERNATIVES | | | | |
|---|---|------------|--|--|
| Alternative | | Technology | Description | Route / Western Terminus / Eastern Terminus |
| 6 | (CR-4) Non-compliant DMU + Separated Freight | DMU | FRA non-compliant vehicle, double tracked, and dedicated freight track | Rail right-of-way Sierra Madre Villa Ave./Claremont |
| 7 | (CR-5) Compliant DMU + Single Track Sections | DMU | FRA-compliant double track with occasional single track in narrow sections | Rail right-of-way Sierra Madre Villa Ave./Claremont |
| Source: Gold Line Phase II Extension, Pasadena To Claremont Alternatives Analysis, Final Draft Report, Metro Blue Line Construction Authority, January 8, 2003. | | | | |

These seven alternatives were analyzed using criteria developed for the proposed project and identified in the Alternatives Analysis Report.

2-1.1.3 Locally Preferred Alternative from Alternatives Analysis

Utilizing the findings of the Alternatives Analysis Report, the Technical Advisory Committee identified Alternative 4, double track LRT with either a separate freight track or with no freight as the preferred alignment and mode choice in June 2002. Subsequently, this preference was defined in this EIS/EIR document as the “Double Track Configurations” for both the LRT Full Build Alternative and the Build Alternative to Maintenance Facility.

2-1.2 Alternatives Screening Process

2-1.2.1 Public Input Into Defining Alternatives for Consideration

As a part of the federal and local project development and environmental clearance process, the Scoping process was initiated to begin the environmental analysis of this proposed project. A component of the Scoping meetings was to ask the public about alternatives to be considered. A very aggressive public outreach effort to support the Scoping meetings was begun, including newspaper notices and mailings to approximately 23,000 residents, elected officials, government officials, and interested parties. The Scoping process was initiated with the cooperation of the Federal Transit Administration (FTA). Required public notifications were made through publication of a Notice of Intent by FTA in the Federal Register (July 9, 2003) and issuance of the state-required Notice of Preparation (June 27, 2003) by the Construction Authority. The purpose of the intensive Scoping process was to invite interested individuals, organizations, and federal, state, and local agencies to participate in defining the alternatives to be evaluated in the EIS/EIR and identify any significant social, economic, or environmental issues related to the alternatives. The study area was defined in the Scoping information booklets and the seven alternatives resulting from Alternative Analysis were shown at the Scoping meetings.

Four community Scoping meetings were noticed and conducted on July 15, 16, 17, and 21, 2003. A separate governmental agency Scoping meeting was conducted on July 22, 2003, at the Construction Authority offices. More than 200 persons attended the five meetings, and the comments are fully documented in the Scoping Meeting Summary Report dated September 5, 2003.

2-1.2.2 Screening of Technologies

The range of technologies initially considered included BRT, LRT, commuter rail, DMUs, HOV lanes, and fixed guideway facilities. After the long list of alternatives was screened down to seven, the three technologies associated with the remaining alternatives and evaluated in the Alternatives Analysis Report were BRT, LRT, and DMU. The preferred alignment and mode utilized LRT technology as an extension of the existing Gold Line light rail line from downtown Los Angeles to Pasadena. It was selected for the following reasons:

- LACMTA is familiar with this type of transit technology, and has successfully implemented three light rail services within the last 20 years (Blue, Green, and Gold Lines). LACMTA has invested substantial amounts in the supporting maintenance and operating infrastructure for LRT service.
- Phase II is an extension of the existing Gold Line light rail service, thus eliminating transfers between modes. Avoiding transfer increases the potential for shifting patrons from automobile to transit.

The two other technologies (BRT and DMU) were dismissed mainly due to the fact that the existing technology of Phase I is LRT. Transferring to a different mode at the beginning or end of the Phase II corridor impacted projected travel times and service levels when modeled. Street-running BRT would not offer the travel time savings that LRT could offer, and a dedicated BRT lane, BRT alignment on the right-of-way, or DMU would offer service similar to the LRT but include a mode transfer at Sierra Madre Villa Station. The three technologies evaluated are described below.

a. Bus Rapid Transit

BRT utilizes buses to provide high-quality, rapid transportation in a defined corridor and primarily on dedicated bus lanes. As the FTA describes it,² BRT “combines the quality of rail transit and the flexibility of buses.” BRT takes advantage of such innovations as intelligent transportation systems technologies, signal priority for transit vehicles, convenient fare collection systems, and integration with local land use policies, all with the goal of reducing travel time. BRT often, but not necessarily, include busways, which are exclusive lanes for buses or separate rights-of-way. In Los Angeles County, a modified system of BRT called the Metro Rapid runs along several routes, such as the Wilshire Corridor. This modified BRT does not have dedicated lanes, but does utilize priority traffic signals and limited stops.

BRT provides fast, longer distance trips, as well as collection and distribution functions. Buses can pick up and distribute passengers, get on the busway, and proceed to other destinations before exiting the busway again. Therefore, BRT alignments can be used by local bus routes as well as longer commute-type routes. At grade crossings, the busway alternative would include gates as an added safety measure.

² FTA. BRT Reference Guide. Available at: www.fta.dot.gov/brt.

b. Light Rail Transit

LRT uses lightweight passenger railcars operating on tracks. Along the proposed project corridor, a dedicated right-of-way ensures that the LRT would be separated from vehicular traffic; however, LRT vehicles can also be street running. LRT is an electrically-powered system, obtaining its power using an overhead wire. In Los Angeles County, the Metro Blue Line, Green Line, and Gold Line Phase I, all completed within the last decade, are LRT systems.

LRT vehicles can accelerate and decelerate quickly and, therefore, can efficiently serve closely spaced stations. Because of their lighter weight, LRT vehicles can often be accommodated on bridges designed for automobile traffic.

c. Diesel Multiple Units

DMUs are diesel-powered, self-propelled passenger cars operating on rail tracks. Since a power unit is located in the undercarriage of each passenger car, a locomotive is not needed. A DMU looks much like a passenger railcar, but without a locomotive to pull it. DMU systems accelerate and decelerate much like LRT systems. Cars can be coupled together or run individually, depending upon required capacity. They tend to be more efficient than conventional commuter rail alternatives for smaller passenger loads because they do not require a locomotive to pull only one or two cars.

DMUs are classified into two categories: Federal Railroad Administration (FRA)-compliant or FRA non-compliant. Operating DMUs on the same time schedule and on the same tracks as freight operations requires that the DMU be FRA-compliant, meaning that the DMU meets the FRA safety standards (structural strength) for crashworthiness. Otherwise, DMU and freight operations must be time-separated in order to avoid potential accidental crashes.

2-1.2.3 Screening of Primary Alignments

Several alignments were considered in the Alternatives Analysis process, including using the rail right-of-way formerly owned by BNSF and currently owned by LACMTA, running on I-210, or utilizing local major arterials.

The rail right-of-way alignment was deemed the most promising for development of transit service for the following reasons:

- A limited amount of land acquisition would be necessary to support rail service along the existing right-of-way.
- Implementing service would maximize the previous investment made in purchasing the right-of-way.
- Rail service would be consistent with the goals of locating stations that facilitate many corridor cities' vision for land use and development around transit stations and adjoining activity centers.
- Rail service on existing right-of-way would have relatively shorter construction time than on new right-of-way.
- Use of a pre-existing right-of-way that included current train movements would generate fewer and less significant impacts on existing natural and manmade environments than on new right-of-way.

The freeway alignment was not considered for further analysis for the following reasons: high costs associated with widening the freeway; inability to implement transit by the goal service date of 2008 due to extensive widening and construction; significant impacts to the natural and manmade environment; inconsistency with the goal of locating stations that facilitate corridor cities' vision for land use and development around transit stations and adjoining activity centers within cities' downtowns; and community resistance to further construction on I-210, which has been ongoing for a number of years. Communities along the proposed project corridor are resistant to additional right-of-way and construction impacts.

The local major arterials alignments were not considered further for the following reasons: no reduction in travel times, high costs associated with widening local streets, significant impacts to environmental and community resources associated with widening streets, and impacts to residential neighborhoods along local streets during construction and potentially during operation.

a. Rail Right-of-Way

In 1991, LACMTA acquired BNSF's Pasadena subdivision right-of-way. This rail right-of-way is the historic link between San Gabriel Valley cities. Amtrak service connected from downtown Los Angeles through Pasadena to San Bernardino County and beyond along this route up until the late 80s. BNSF continues to run limited freight operations along the portion of this line between Monrovia and Montclair.

b. I-210 Freeway

Expanding I-210 to accommodate bus or HOV lanes would entail widening the freeway right-of-way, elevating a busway above the freeway, or running buses on the shoulders or in the HOV lanes.

c. Local Major Arterials

The BRT and Metro Rapid Alternatives were examined that utilized local major arterials, dedicated local streets, or a combination of freeway and local streets in an east-west orientation. Specific routes are described further in the Alternatives Analysis Report.

2-1.3 Candidate Alternatives for Environmental Analysis

Based on input from the community, FTA, Construction Authority, LACMTA technical staff, and the consultant team, a No Build Alternative, a TSM Alternative, and two fixed-guideway Build Alternatives were developed for technical analysis. These alternatives include a refinement and expansion of Alternatives 3 and 4 from Table 2-2. They are summarized below. The detailed project descriptions for each alternative are covered in Section 2-2.

The **No Build Alternative** includes all highway and transit projects and operations that the region and LACMTA expect to be in place in 2025 (the horizon year for this EIS/EIR). These include improvements to the local bus system and regional commuter rail system (Metrolink), as well as planned highway improvements in the region.

The **TSM Alternative** is defined by FTA as the No Build Alternative plus lower cost transit capital and operational improvements that are intended to enhance the performance of the transportation system within the study corridor. Compared with the Build Alternatives, the TSM Alternative would be a relatively low-cost approach to addressing transportation needs. The TSM Alternative should represent

the best that can be done to improve transit mobility in the corridor without the construction of major new fixed guideway transit facilities. The TSM Alternative for the proposed project includes additions in bus service frequencies to the major east-west and north-south existing transit routes run by LACMTA and Foothill Transit.

The two Build Alternatives utilize existing LACMTA right-of-way through the San Gabriel Valley for LRT lines from Sierra Madre Villa Station to the east. The major difference between the two Alternatives is the terminus: the **Full Build LRT Alternative** extends 24 miles east to the City of Montclair in San Bernardino County, while the **Build LRT Alternative to the Maintenance Facility** extends from the Sierra Madre Villa Station to the City of Irwindale.

2-1.3.1 Station Location Considerations

Station locations were determined through discourse with each city along the proposed route. Meetings with the cities took place during both the Alternatives Analysis process and the EIS/EIR process. Cities called attention to a number of important issues related to the location of a station. For the most part, the alignment runs through the downtown areas of each city, which creates a natural location for a station. Additionally, many cities have historic depots from the original passenger and freight line that used to run through this area. The cities of Monrovia, Azusa, San Dimas, and Claremont plan to utilize their historic structure in some manner as a part of their LRT station areas. Other cities, without this historic resource, have plans for transit plazas, mixed-use or joint development, or other methods of incorporating the new station into the community.

For the most part, cities came to the meetings with a first choice station location identified, and in most cases, this was a location that was technically acceptable to the consultant team's engineers, planners, and architects. For cities that had a number of station location options, some were screened out for the following reasons:

- Track curvature, horizontal alignment, or vertical alignment did not allow for conformance with LACMTA Design Criteria and/or Americans with Disabilities Act (ADA) regulations.
- The neighborhood in which the station was to be located was not conducive for transit use (i.e., residential and industrial).
- The right-of-way was too narrow at the proposed location, thus requiring additional land to be purchased.

In some cases, cities have two or three potential station locations that are identified and analyzed within this EIS/EIR. In such cases, the city was unable to identify a single acceptable location, and requested that the study look at a number of options. This will allow the city to make a decision on the station location later in the environmental process, when the impacts associated with the site options (such as those reported in this DEIS/DEIR) are known to them.

2-1.3.2 Freight Rail Considerations

The two LRT Alternatives utilize an existing BNSF right-of-way currently owned by LACMTA. BNSF runs daily freight operations between Montclair and Irwindale, and weekly operations between Irwindale and Monrovia, with the majority of freight heading to the Miller Brewing Company facility in Irwindale.

Both Build Alternatives include three operational configuration options for handling the existing freight traffic while also implementing LRT:

- **Triple Track Configuration:** This operational configuration would provide two light rail tracks and one freight rail track for most of the alignment length. Two light rail tracks would extend from the existing Sierra Madre Villa Station to the proposed terminus at Montclair. A single freight rail track would extend from Monrovia, where the western-most freight customer is located, to the eastern border of the City of La Verne, where it would link with the existing BNSF freight tracks. The existing single freight track between Monrovia and La Verne would have to be relocated within the right-of-way in order to provide room for the two light rail tracks. Between La Verne and Montclair, the rail right-of-way includes tracks jointly used by Metrolink and BNSF. In the segment, which is a wide right-of-way, the LRT tracks would be located on the northern portion of the right-of-way, while Metrolink/freight tracks would be located on the southern portion.
- **Double Track Configuration without Freight:** This operational configuration assumes that the freight interests along this corridor would be negotiated to move to other modes of access. This would result in there being two LRT tracks along the corridor from Sierra Madre Villa Station to the eastern border of the City of La Verne. East of La Verne, freight would continue to operate on the existing Metrolink/freight tracks that share the right-of-way.
- **Double Track Configuration with Freight:** This operational configuration would have freight and light rail vehicles sharing the same tracks along the right-of-way between Monrovia and La Verne. Freight operations would occur during a time-separated window from when LRT services would be occurring. LRT operations are assumed to begin at approximately 4 a.m. and end at about 2 a.m.; freight operations would typically be restricted to hours when LRT service is not in operation. Under this operational configuration, freight service to the east of La Verne would operate on the existing (and separate) Metrolink/freight tracks, and would not be required to be time-separated.

All three options will be examined and analyzed in this EIS/EIR.

2-2 DETAILED DESCRIPTION OF ALTERNATIVES

Four candidate Alternatives are examined in this EIS/EIR. These include:

- No Build Alternative
- Transportation Systems Management (TSM) Alternative
- Full Build LRT Alternative
- Build LRT Alternative to the Maintenance Facility.

2-2.1 No-Build Alternative

The No Build Alternative as defined by FTA should represent the baseline case consisting of existing and committed elements of the region's transportation plan. The No Build Alternative for the proposed project assumes that no extension to the Gold Line would be built. The No Build Alternative includes all highway and transit projects and operations that the region and MTA expect to be in place by 2025. This section includes descriptions of the general types of projects included in the No Build Alternative and describes some of the larger projects, along with those located very close to the Gold Line Phase II Extension Project.

2-2.1.1 Transportation Projects in the No-Build Alternative

The No Build Alternative includes transportation projects throughout Los Angeles County that are approved and funded. Transportation projects include transit projects, freeway improvements, new smart street projects, and arterial improvement projects. The No Build Alternative is LACMTA's Long Range Transportation Plan 2025 (RTP 2025) Constrained Alternative (Package G). This alternative/package includes a balance of vehicle and transit improvements, including an expanded bus network. Projects within RTP 2025 that are relevant to the proposed project are stated below:

- Transit projects include countywide (Los Angeles and San Bernardino Counties) bus service improvements; commuter rail (Metrolink) improvements; Gold Line Phase I LRT service at planned headways of 5 minutes peak, 10 minutes off-peak (currently operating at 10 minutes peak and 12 minutes off-peak); and the construction of the Gold Line Eastside Extension with service headways of 5 minutes peak and 10 minutes off-peak.
- Freeway improvements include projects on freeways, such as the extension of State Route 30/I-210 from Foothill Boulevard to Sierra Avenue (now completed), and the continuing extension from Sierra Avenue to Interstate 215 (I-215) in the future.
- Smart street projects include improvements such as synchronized traffic signals, on-street parking removal, frontage road and grade separation construction, and key intersection improvements to improve traffic flow.
- Arterial improvement projects include improvements to existing roadways.

Details can be found in Appendix B of RTP 2025, adopted by the LACMTA in April 2001.

a. Transit Service Under No Build Alternative

Gold Line Phase I Light Rail Transit

Phase I of the Gold Line opened in July 2003 to better than expected ridership. Extending from Union Station north to Pasadena's Sierra Madre Villa Station, the 13 miles of Phase I traverse numerous neighborhoods such as Chinatown and Highland Park, and the cities of South Pasadena and Pasadena. Currently operating 2-car trains at 10 minute headways, this line was designed and environmentally cleared for ultimate operations of 3-car trains at 5-minute headways. The Operating Plan for Phase I and the Eastside LRT Extension (see below) will be 3-car trains at 5-minute headways once the Eastside project is completed in 2009. This Operating Plan dictates the basis for the Phase II impact analyses. The environmental impacts of Phase I were addressed through a series of documents prepared by LACMTA and the Construction Authority that met the requirements of the California Environmental Quality Act (CEQA). Since the first phase of LRT construction on the Gold Line did not include federal funds, no National Environmental Policy Act (NEPA) documents were required. Phase I of the Gold Line traverses 13 stations during its 36-minute run time from downtown Los Angeles to East Pasadena.

Gold Line Eastside Light Rail Transit Extension

Currently out to bid for design/build construction, the Eastside Extension of the Gold Line extends from Union Station along First and Third Streets to a terminus at Pomona Boulevard/Atlantic Boulevard in East Los Angeles. Partly tunnel and partly street running, the Eastside LRT Extension is projected, and environmentally cleared, to ultimately run at headways of 5 minutes peak and 10 minutes off-peak. This LRT is projected to begin operation in 2009.

Countywide Bus Service Improvements

RTP 2025 calls for additional countywide bus service improvements (including a total countywide fleet of approximately 4,400 buses), and to implement 22 additional Metro Rapid bus lines. Refer to **Figures 2-3 through 2-7** for existing bus service routes.

SCRRA Metrolink Service Improvements

The Southern California Regional Rail Authority (SCRRA) has planned for future Metrolink commuter rail service expansions along the San Bernardino line. This commuter rail service is currently expanding to six-car platforms and SCRRA is building double tracking through the eastern end of the study corridor (i.e., east of La Verne).

b. Highway/Roadway Improvements Under No Build Alternative

Proposed freeway improvements and gap closures in or affecting the proposed project area under RTP 2025 include the I-210 Gap Closure to I-215 and HOV projects. HOV lanes are proposed for State Route 60 from Interstate 605 (I-605) to Brea Canyon Road, for I-10 from Baldwin Avenue in El Monte to the San Bernardino County line, and for I-605 from the Orange County line to South Street in Cerritos. Noise barriers, project development support, highway operations, freeway rehabilitation, and environmental enforcement and mitigation are also included in RTP 2025.

c. Other Committed Transportation Improvements

There are no other committed transportation projects that affect the overall study area or study corridor.

2-2.1.2 Non-Transportation Projects in the No Build Alternative

Non-transportation projects in the No Build Alternative consist of land development projects within the corridor cities that have been funded and approved and are scheduled for development. These projects include those that will be undertaken or have been approved by the corridor cities, the County of Los Angeles, and the County of San Bernardino.

a. Monrovia Nursery Site—Azusa/Glendora

A Specific Plan for the development of the 500-acre Monrovia Nursery site, located northwest of the intersection of Foothill Boulevard/Citrus Avenue, has been submitted to the City of Azusa. Portions of the proposed development are within the boundaries of the City of Glendora. The development would contain up to 1,250 residential units; a K-8 school; a system of parks, open spaces, and trails; and 50,000 square feet of commercial uses. The project has been approved in concept by the Azusa City Council and the EIR is underway. The developer plans to create a transit plaza near Citrus Avenue with an LRT station and parking. The developer also plans to grade separate both Palm and Citrus Avenues, such that automobile traffic would pass underneath the railroad tracks.

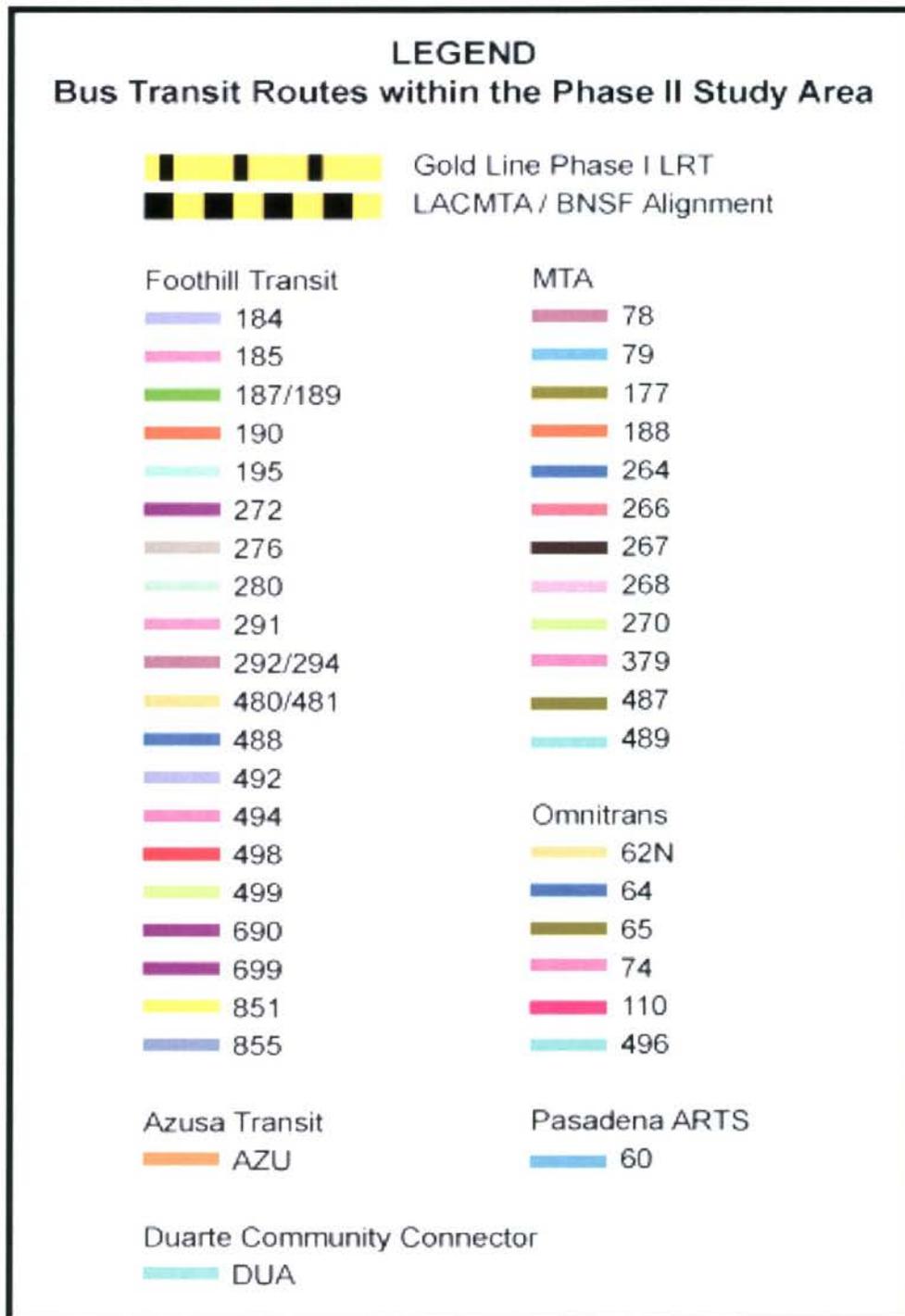


Figure 2-3: Legend for Figures 2-4 to 2-7

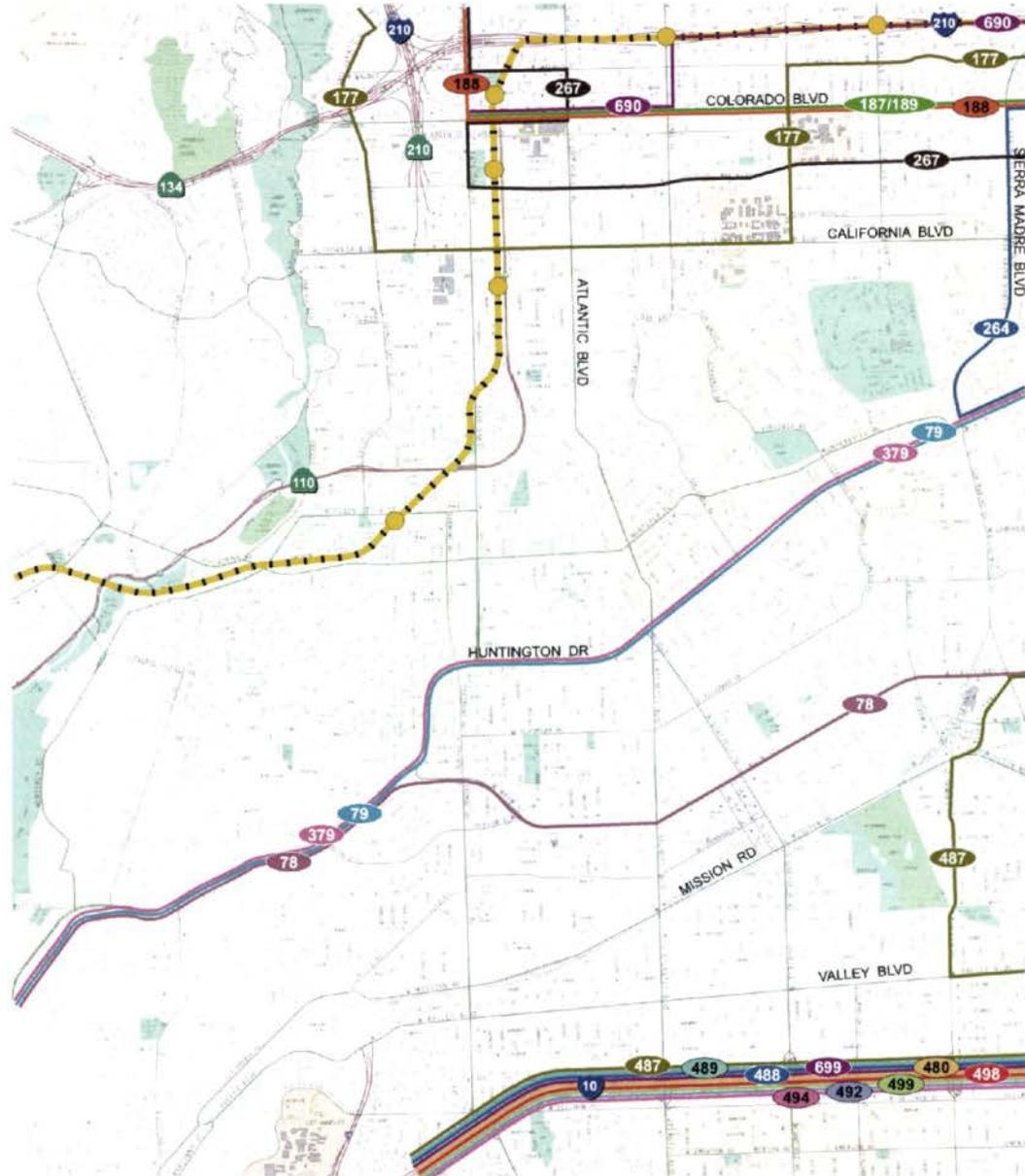


Figure 2-4: Transit Service, No Build Alternative, Map 1 of 4



Figure 2-7: Transit Service, No Build Alternative, Map 4 of 4

b. Hutton Mixed-Use Development—Upland

Hutton Development is currently planning a mixed-use development in the City of Upland, located in the block south of Arrow Route, west of Monte Vista Avenue, north of the old Union Pacific right-of-way, and east of the San Bernardino County line. This development is directly adjacent to the existing Montclair TransCenter. The proposed development will include approximately 450 apartments, 50 single-family homes, and a hotel, office space, and a commercial center on 37 acres. A draft EIR for the proposed project is in progress.

2-2.2 Transportation System Management Alternative

Building on the No Build Alternative, the TSM Alternative (which meets the FTA baseline definition³) enhances bus service in the proposed project corridor by providing or improving connecting service to the Sierra Madre Villa Station, as well as increasing peak period and off-peak period service frequencies to downtown Pasadena (the study area’s largest employment center) and among the cities and major activity centers within the study area. In addition to the enhanced bus service described in more detail below, the TSM Alternative includes all projects identified as a part of the No Build Alternative.

2-2.2.1 Transportation Projects Included in the TSM Alternative

The major component of the TSM Alternative is enhanced transit service within the San Gabriel Valley.

a. Transit Service Under TSM Alternative

The TSM Alternative would provide enhanced bus service in the proposed project corridor by creating or improving connecting service to the Sierra Madre Villa Station, as well as increasing peak period and off-peak period service frequencies to downtown Pasadena and among the cities and major activity centers within the study area. Other transit improvements include transportation center improvements within each city and along the corridor, and implementation of an Advanced Travelers Information System. Refer to **Table 2-3** for the headways under the TSM Alternative. The routes affected by the TSM Alternative are defined below.

³ The FTA uses the New Starts Baseline Alternative for comparing the costs and benefits of a proposed major transit capital investment (the Build alternatives). FTA defines the Baseline Alternative as an alternative that includes relatively low-cost actions, such as enhanced bus service and other transit operational changes, and modest capital improvements, such as additional buses, park-and-ride lots, and transit terminals. The Baseline Alternative should also serve the same travel markets and provide as close a level of service as the Build alternatives under study. The TSM Alternative meets the definition of the Baseline Alternative and is used for comparing the costs and benefits of the Build Alternatives.

| Route | Description | Headways–No Build | | Headways–TSM | |
|---------------------------|---|-------------------|----------|--------------|----------|
| | | Peak | Off-Peak | Peak | Off-Peak |
| MTA 177 | La Cañada Flintridge/ Pasadena/Arcadia/Monrovia/Duarte | 30 | 60 | 20 | 40 |
| MTA 188 | N. Fair Oaks/Colorado Blvd./Duarte Rd. | 45 | 60 | 20 | 40 |
| Foothill 184 | Duarte/Monrovia/Arcadia/Pasadena | 60 | 60 | 30 | 30 |
| Foothill 187 | Claremont/Montclair/Pasadena | 30 | 60 | 20 | 40 |
| Foothill 189 | Claremont/Montclair/Pasadena | 30 | 60 | 20 | 40 |
| Foothill 494 | Glendora/Monrovia/Los Angeles | 30 | 0 | 20 | 0 |
| Foothill 690 (Express) | Montclair–Express Service to Pasadena via I-210 Corridor | 30 | 0 | 10 | 20 |

Source: Parsons Brinckerhoff, 2003.

LACMTA Route 177 connects the Cities of Pasadena, Monrovia, and Duarte along the I-210 corridor. Operating during weekdays, this route serves primarily commuters. Departing from the City of Hope Medical Center in Duarte, Route 177 travels west on Royal Oaks Drive, then jumps up to Foothill Boulevard by way of Shamrock Avenue in Monrovia. Continuing west on Foothill Boulevard through Arcadia, Route 177 stops at the Sierra Madre Villa Station before continuing through Pasadena to the Allen Avenue Station. The route heads west on Maple Street (eastbound uses Corson Street) to Hill Avenue, where it drops south to Pasadena City College and the California Institute of Technology. At California Boulevard, the line heads west again, to loop around the Del Mar Station via Raymond Avenue, Colorado Boulevard, and Arroyo Parkway before beginning the eastbound leg of the route. Refer to **Figure 2-8** for a route map. **Table 2-3** shows that under the TSM Alternative, the headways would be increased from 30 minutes to 20 minutes in the peak hours, and from 60 minutes to 40 minutes in the off-peak hours.

LACMTA Route 188 serves the Cities of Pasadena, Arcadia, Monrovia, and Duarte, and portions of the unincorporated parts of Los Angeles County. It originates at Fair Oaks Avenue and Loma Alta, then travels south on Fair Oaks Avenue, east on Colorado Boulevard, north on Rosemead, east on Foothill Boulevard, south on Michillinda, south on Sunset, east on Huntington Drive, south on Baldwin, east on Duarte Road, and ends at the City of Hope Medical Center. Refer to **Figure 2-9** for a route map. The TSM Alternative would improve headways from 45 minutes to 20 minutes for this line during peak hours, and from 60 minutes to 40 minutes during off-peak hours.

Foothill Transit Route 184 serves the Cities of Arcadia, Monrovia, and Duarte, and connects several hospitals, civic centers, shopping areas, and recreational facilities. Traveling from Sierra Madre Villa Station, the route travels east along Foothill Boulevard, south along Rosemead (SR 19) to Huntington Drive, continuing east past Santa Anita Fashion Park, Santa Anita Racetrack, Methodist Hospital, and Arcadia Civic Center. The route travels north on Santa Anita Avenue, turns east on Colorado Boulevard, drops down Mayflower Avenue to Olive Avenue, and then loops north up Shamrock Avenue, east on Lemon Avenue, and south on Mountain Avenue in Monrovia. Once in Duarte, the route turns east on

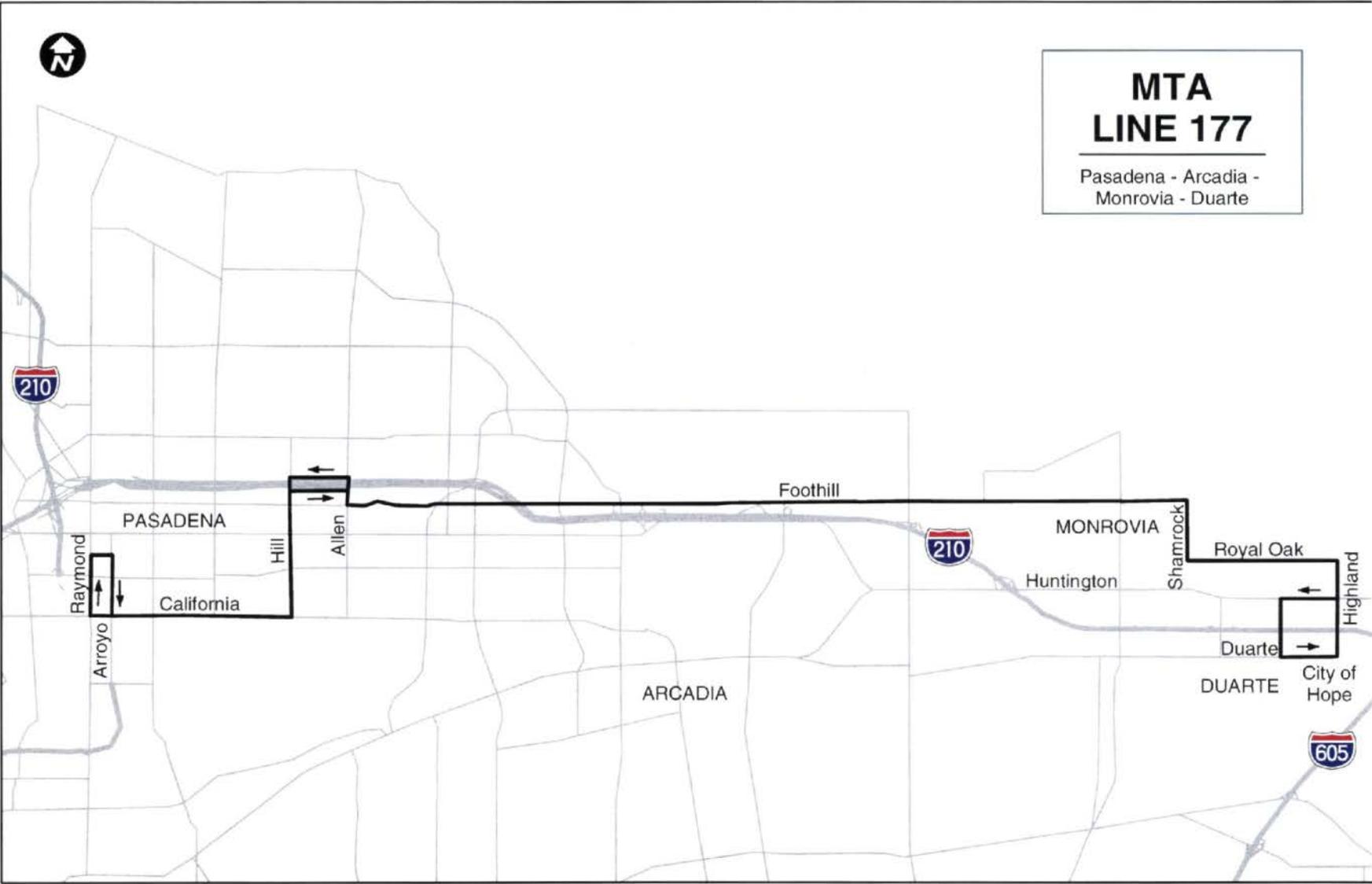


Figure 2-8: MTA Route 177 Map

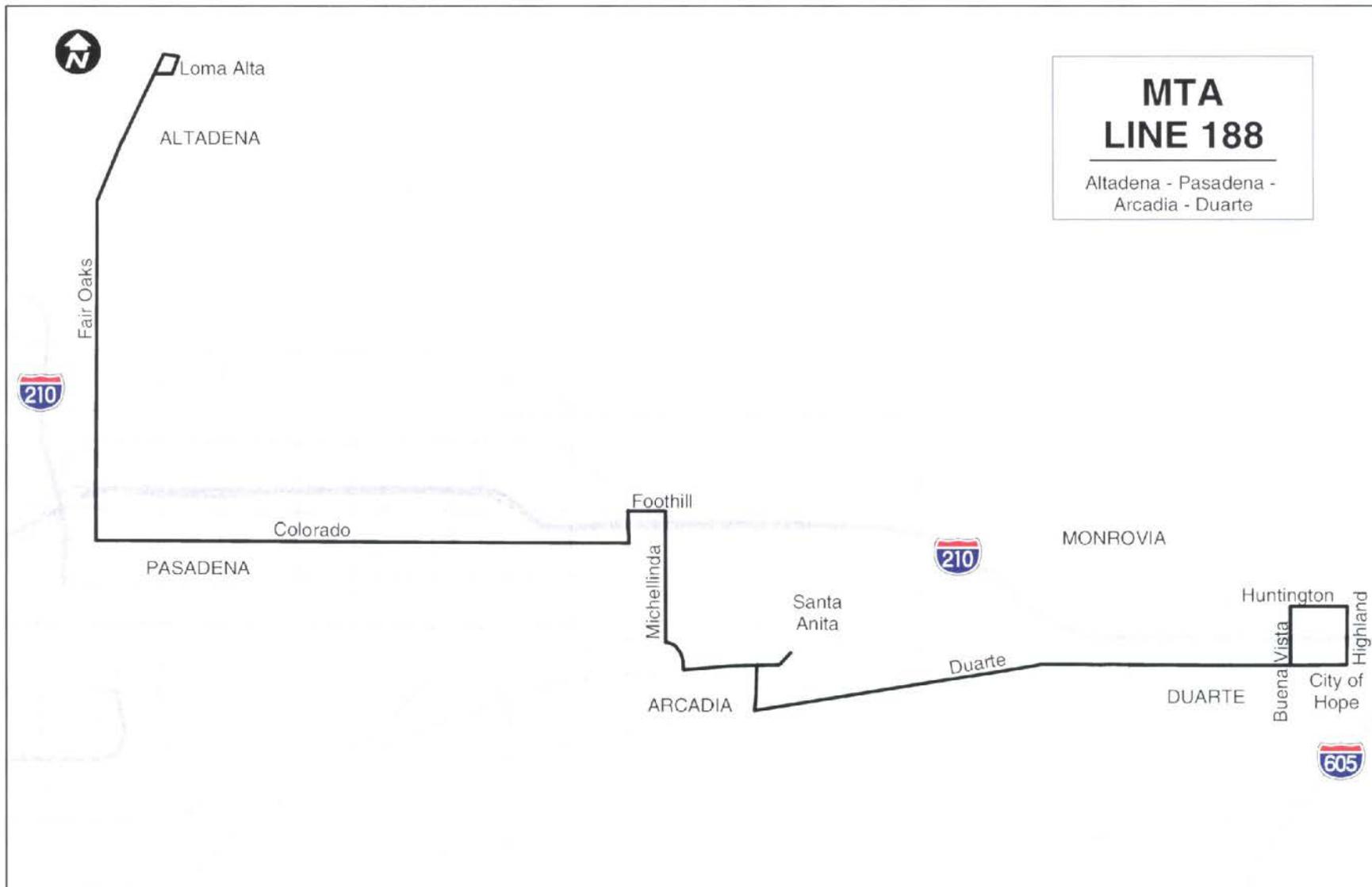


Figure 2-9: MTA Route 188 Map

Huntington Drive, past Santa Teresita Hospital, south on Buena Vista Street, east on Duarte Road past City of Hope Medical Center, north on Highland Avenue, and terminates at the intersection of Huntington Drive and Highland Avenue, near the Foothill Transit Store. Refer to **Figure 2-10** for a route map. **Table 2-3** shows that under the TSM Alternative, the headways would be increased from 60 minutes to 30 minutes during both peak and off-peak periods.

Foothill Transit Routes 187/189 travel throughout the San Gabriel Valley in an east-west direction from Pasadena through Arcadia, Monrovia, Glendora, San Dimas, and La Verne to Claremont. Departing from Raymond Avenue and Walnut Street in Pasadena, Routes 187/189 does a counter-clockwise loop west on Walnut Street, south on Fair Oaks Avenue, and then east on Colorado Boulevard, past Pasadena City College. At San Gabriel Boulevard, the route turns north to meet up with the Phase I terminus station at Sierra Madre Villa Avenue and Foothill Boulevard. It then travels south on Sierra Madre Villa Avenue, turning east on Colorado Boulevard through Arcadia. At Santa Anita Avenue, Colorado Boulevard merges into Huntington Drive, and the route continues through Duarte on Huntington Drive into Azusa, where it becomes Foothill Boulevard. At Citrus College, the route turns south on Citrus Avenue, then east again on Historic Route 66. At the intersection of Glendora Avenue and Historic Route 66, Route 187 continues east while Route 189 heads south on Glendora Avenue. Route 187 continues east on Historic Route 66 (which becomes Foothill Boulevard), turns south on Monte Vista Avenue in San Bernardino County, stops at the Montclair TransCenter, and terminates at the Claremont TransCenter by way of a loop on Arrow Highway and Indian Hill Boulevard. Route 189 travels south on Glendora Avenue, turns east on Gladstone Street, jogs down Lone Hill Avenue to continue east on Arrow Highway to Bonita Avenue, and then heads north on San Dimas Avenue. At Foothill Boulevard, Route 189 turns southeast until it meets up with Baseline Road. The route travels east on Baseline Road, then south on Indian Hill Boulevard to terminate at the Claremont TransCenter on First Street. Refer to **Figure 2-11** for a route map. **Table 2-3** shows that under the TSM Alternative, the headways would be increased from 30 minutes to 20 minutes in the peak hours, and from 60 minutes to 40 minutes in the off-peak hours.

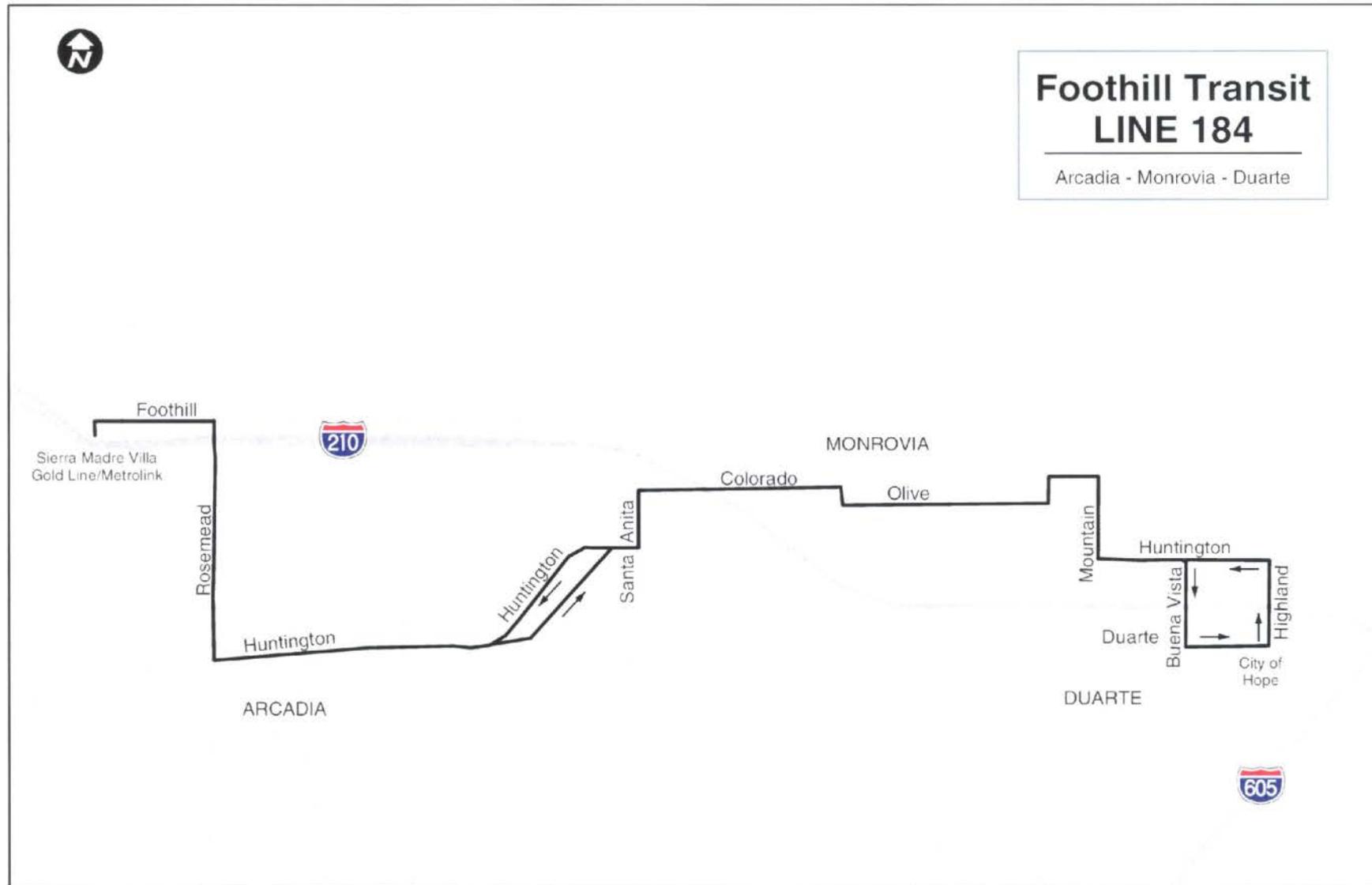


Figure 2-10: Foothill Transit Route 184 Map

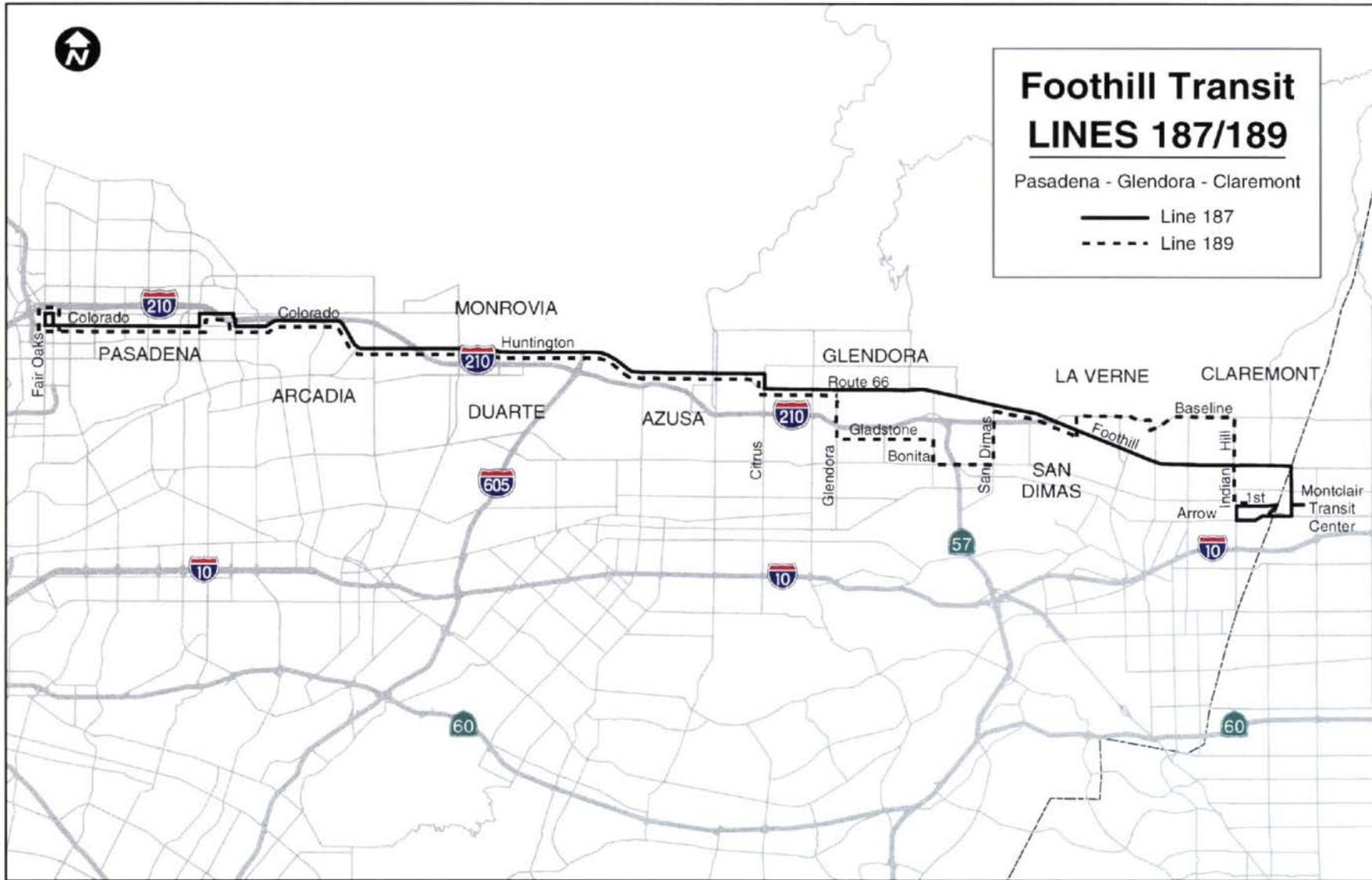


Figure 2-11: Foothill Transit Route 187/189 Map

Foothill Transit Route 494 is an express route that connects downtown San Dimas with downtown Los Angeles, roughly paralleling the Interstate 10 (I-10) corridor. Traveling westbound in the morning and eastbound in the evening, Route 494 serves commuters with limited stop service through San Dimas, Glendora, Azusa, Duarte, Monrovia, El Monte, and Los Angeles. Departing from the San Dimas Park-and-Ride, Route 494 travels south on San Dimas Avenue to Arrow Highway, where it turns west. The route heads north on Lone Hill Avenue through Glendora, and then west on Foothill Boulevard through Azusa. In Duarte, Foothill Boulevard becomes Huntington Drive, and the route continues on this into Monrovia. At Myrtle Avenue in Monrovia, the line turns east through El Monte to the El Monte Station, then travels west along the 10 Busway to Union Station. Once in the downtown Los Angeles area, the route travels southwest on Spring Street, northwest on 1st Street, southwest on Grand Avenue, northwest on Wilshire Boulevard and Ingraham Street, and terminates at the intersection of Union Avenue and Ingraham Street. In the evenings the line runs in the reverse direction. Refer to **Figure 2-12** for the route map. As shown in **Table 2-3**, this line operates only in the peak hours, and the headways are improved for this time from 30 minutes to 20 minutes in this alternative.

Foothill Transit Route 690 offers express service from Montclair to Pasadena, roughly paralleling the I-210 corridor. Traveling westbound in the mornings and eastbound in the evenings, Route 690 begins at the Montclair TransCenter, travels north on Monte Vista Avenue, west on Arrow Highway, and south into Claremont on Claremont Boulevard. Traveling west through the Claremont Colleges area on First Street, the route turns north on Indian Hill Boulevard up to Foothill Boulevard, where it turns west again. Route 690 runs west on Foothill Boulevard through the cities of Pomona and La Verne, where it meets up with I-210 and continues west. At San Dimas Avenue, the route exits the freeway and loops south on San Dimas Avenue, west on Allen Avenue (Auto Center Drive), north on Lone Hill Avenue, and then rejoins the freeway. Route 690 continues west on I-210 to meet the Grand Avenue Park-and-Ride in Azusa, and then travels west on Baseline Road to Azusa Avenue. At this point, it rejoins I-210 to reach Pasadena, where it heads south on Lake Avenue, west on Union Street, and north on Fair Oaks Avenue before rejoining I-210 and reversing the trip for the eastbound route. **Figure 2-13** illustrates the route. **Table 2-3** shows that under the TSM Alternative, headways would be increased from 30 minutes to 10 minutes during peak periods, and service would be extended to off-peak periods with 20-minute headways.

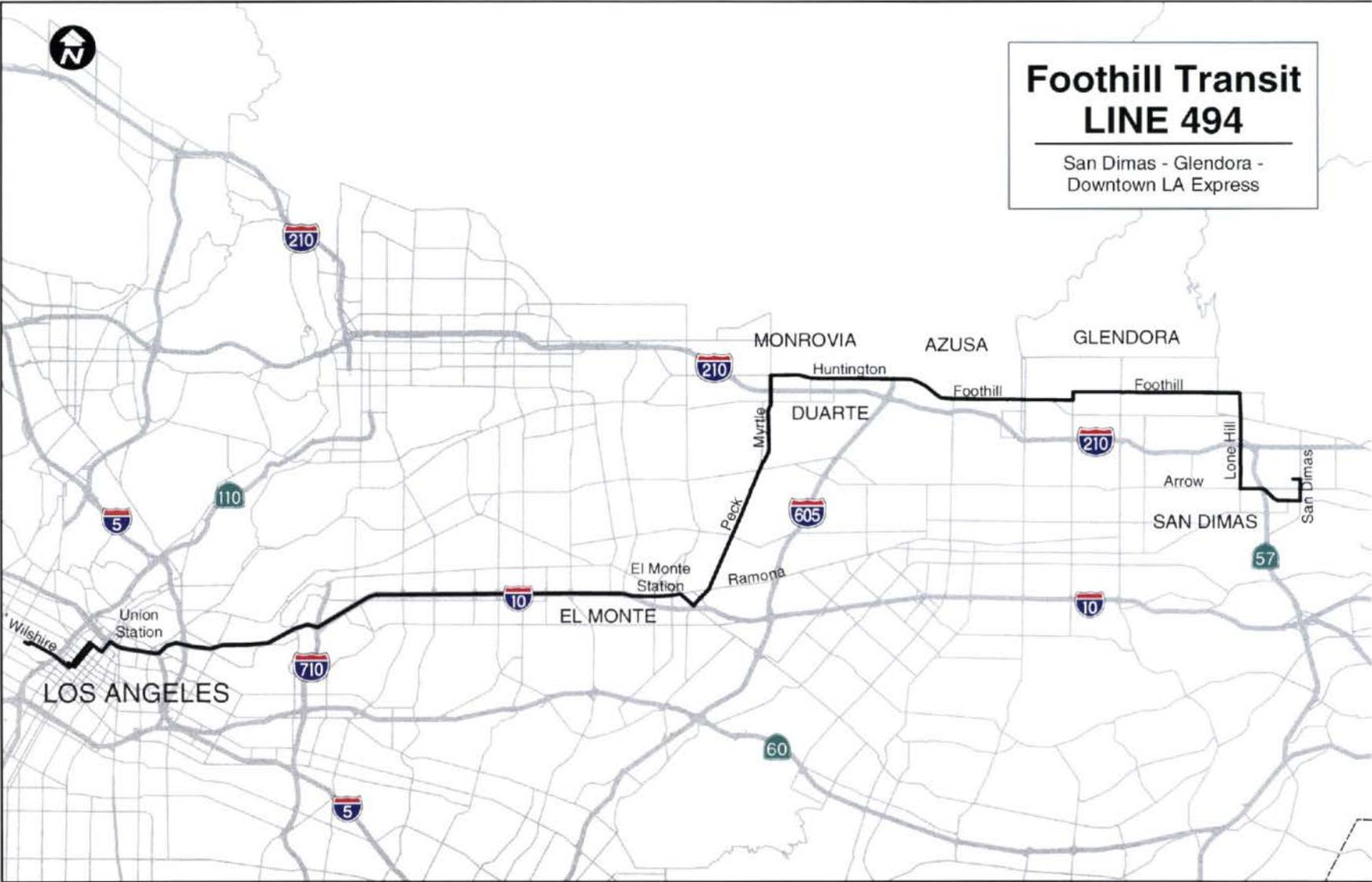


Figure 2-12: Foothill Transit Route 494 Map



Figure 2-13: Foothill Transit Route 690 Map

The TSM Alternative would provide a substantive increase in arterial bus and express bus service to the study area. To the areas east of Duarte, the peak period bus service would go from eight buses per hour in each direction to 14 buses per hour. The areas west of Duarte would have service increased from 11 buses per hour in each direction to 20 buses per hour. Refer to **Figures 2-14 through 2-18** for the routes improved in the TSM Alternative.

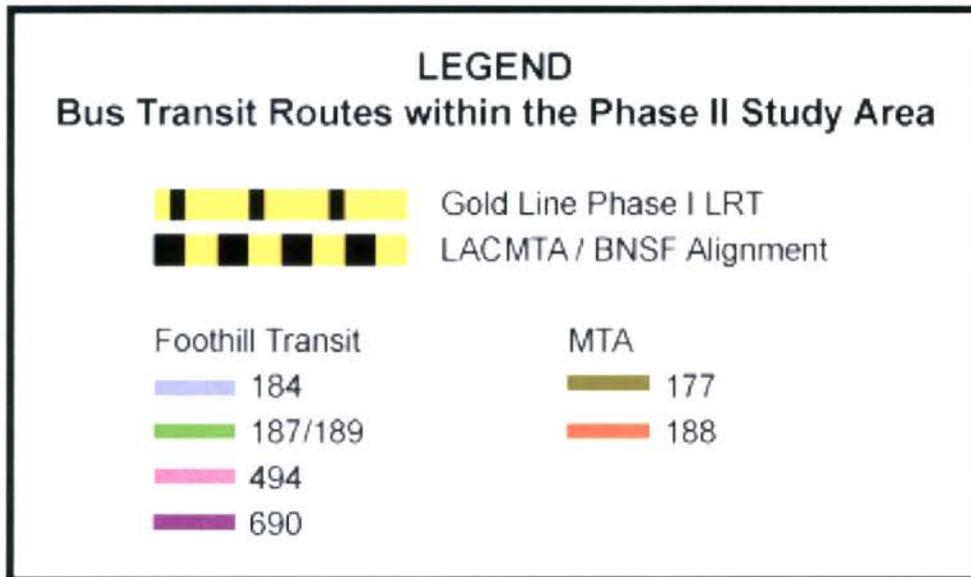


Figure 2-14: Legend for Figures 2-15 to 2-18



Figure 2-15: Transit Service, TSM Alternative, Map 1 of 4

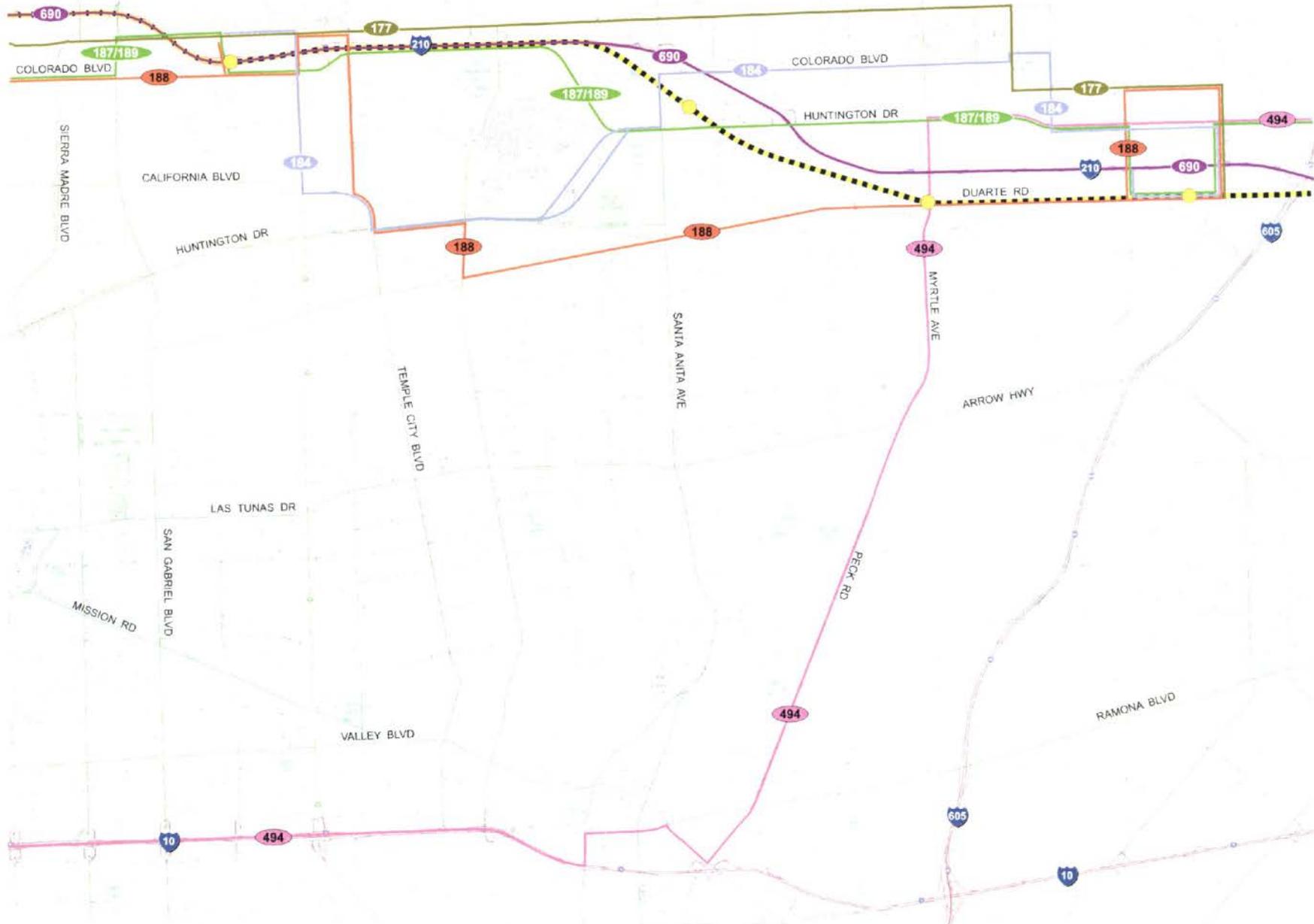


Figure 2-16: Transit Service, TSM Alternative, Map 2 of 4

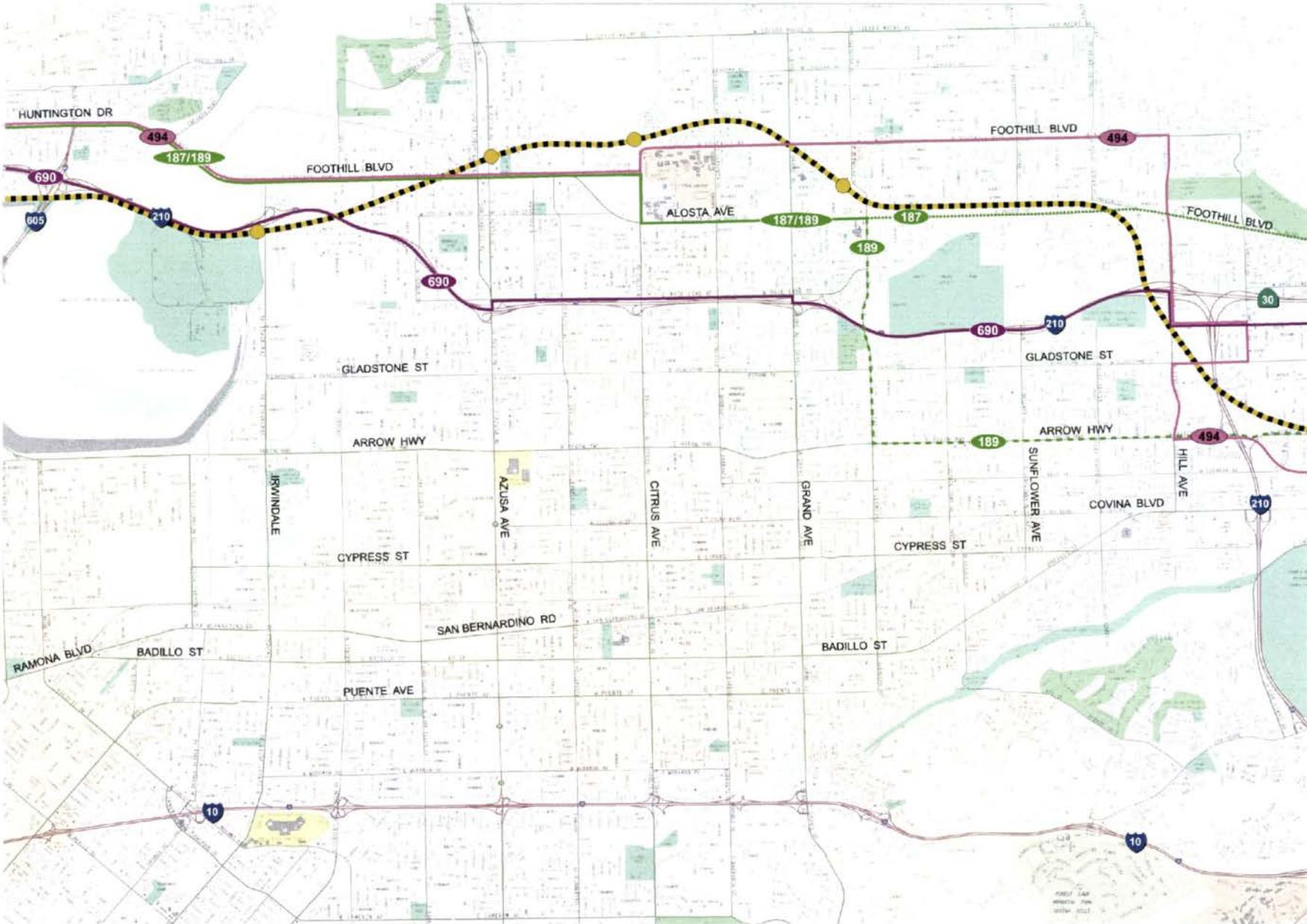


Figure 2-17: Transit Service, TSM Alternative, Map 3 of 4



Figure 2-18: Transit Service, TSM Alternative, Map 4 of 4

b. Highway/Roadway Improvements Under TSM Alternative

The highway/roadway improvements in the TSM Alternative would be the same as in the No Build Alternative. No additional highway improvements would be included in the TSM Alternative.

c. Other Committed Improvements

The other committed improvements in the TSM Alternative would be the same as in the No Build Alternative. No additional improvements would be included in the TSM Alternative.

2-2.2.2 Non-Transportation Projects in the TSM Alternative

Non-transportation projects in the TSM Alternative would be the same as in the No Build Alternative, including the proposed Monrovia Nursery development in Azusa/Glendora, and the Hutton Mixed-Use Development at the eastern end of the line in Upland.

2-2.3 Full Build Alternative

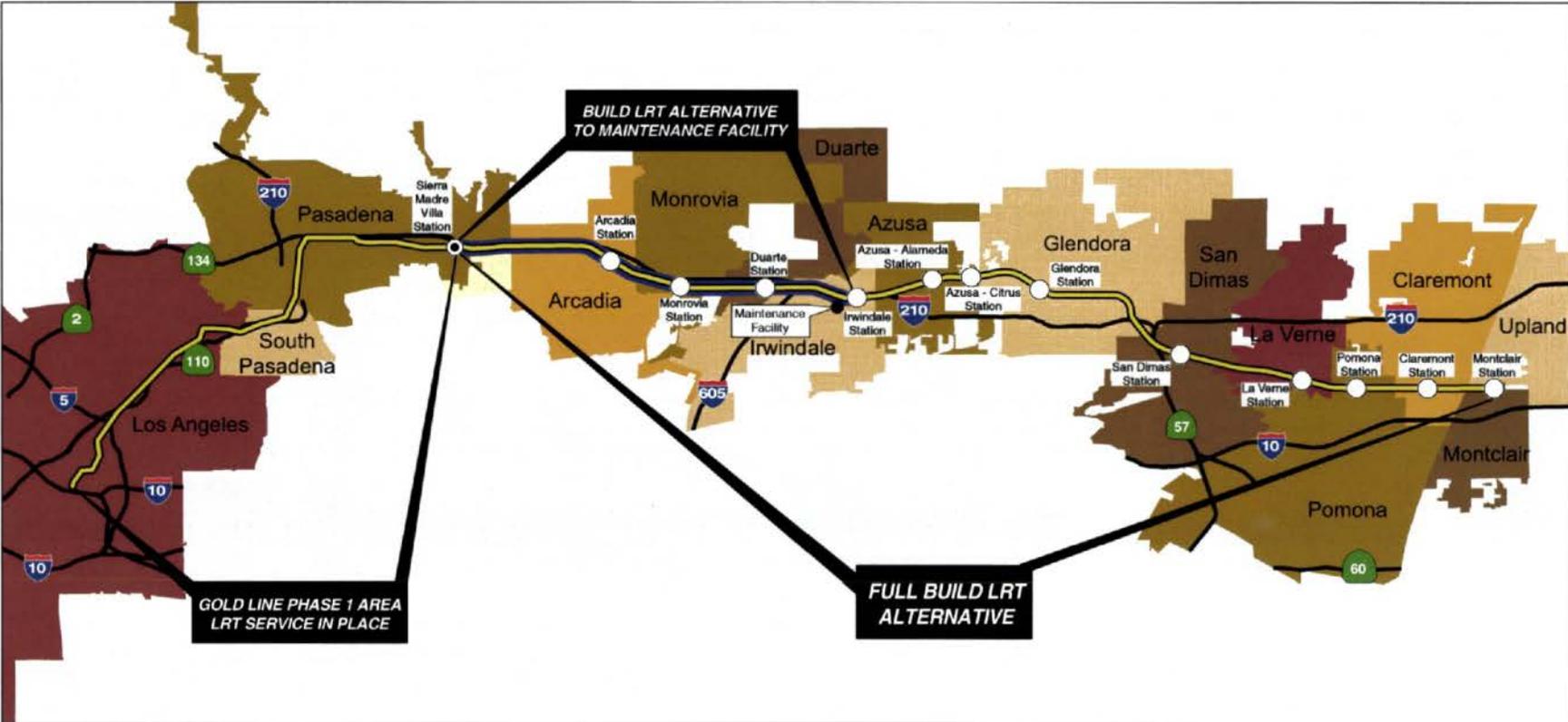
2-2.3.1 Physical components

A Full Build Alternative that encompasses Segments 1 and 2 of the proposed project would extend the current Gold Line system from Sierra Madre Villa Station to the Montclair TransCenter (approximately 24 miles). Segment 1 lies between the current Sierra Madre Villa Station and the proposed Maintenance and Operating Facility site in Irwindale. Segment 2 is between the proposed Maintenance and Operating Facility site and the existing Montclair TransCenter. **Figure 2-19** provides an overview of Segments 1 and 2, and the location of the proposed M&O facility site. Volume II of this EIR/EIS is the plan/profiles for the Full Build Alternative. That document includes plans, profiles, station layouts, and bridge analysis. The Full Build Alternative will use the same LRT technology and the same types of system components would be used as are in the existing Phase I segment from Los Angeles to Pasadena, and in the soon-to-be built Eastside Extension. The Eastside Extension will run from Union Station to Pomona Boulevard /Atlantic Boulevard Station in East Los Angeles.

The Full Build Alternative would include 12 new stations, subject to the approval of the individual cities, with at least one in or serving each of the cities along the corridor. Potential station locations, including some optional ones, have been defined in consultation with the corridor cities. Parking facilities would be provided at each new station. The Full Build Alternative consists of two LRT tracks extending from Sierra Madre Villa Station in Pasadena along the LACMTA/BNSF alignment through the San Gabriel Valley to the Montclair TransCenter. Several options are described in more detail throughout this section, including freight, station location, Metrorail, and alignment options. Freight options include Double or Triple Track; with freight operations on the third track in the Triple Track option. Refer to Section 3-12, Railroad Operations, for a discussion of freight operations. The station descriptions in the following section begin with the “base case” for the station location in each city. Following this description, any options for the station location and alignment in that city are outlined. A brief summary of the options is provided at the beginning of the station description section.

The location of the Maintenance and Operating Facility is proposed to be on now-vacant property west and south of the Miller Brewing facility and the proposed Irwindale Station. Approximately 21 traction power substations (TPSS) would be constructed along the route in order to provide electrical power to the

line. Where possible, TPSS sites would be located near a station. TPSS sites would be located within existing rail right-of-way or within properties to be acquired for stations or parking. Refer to **Figures 2-19 through 2-41** for the LRT alignment.



Sources: U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2004.

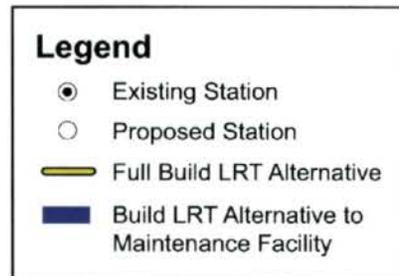
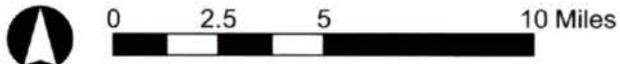
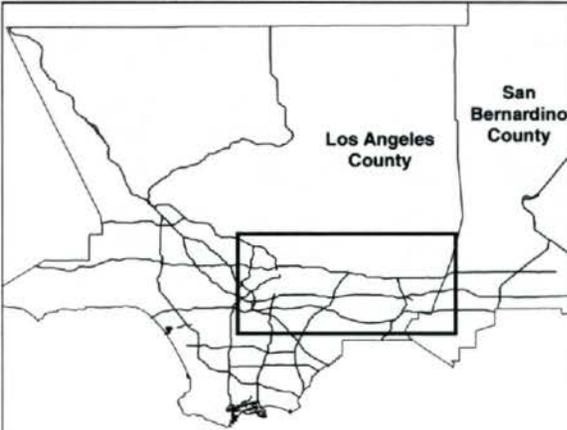


Figure 2-19: Gold Line Phase II Build Alternatives

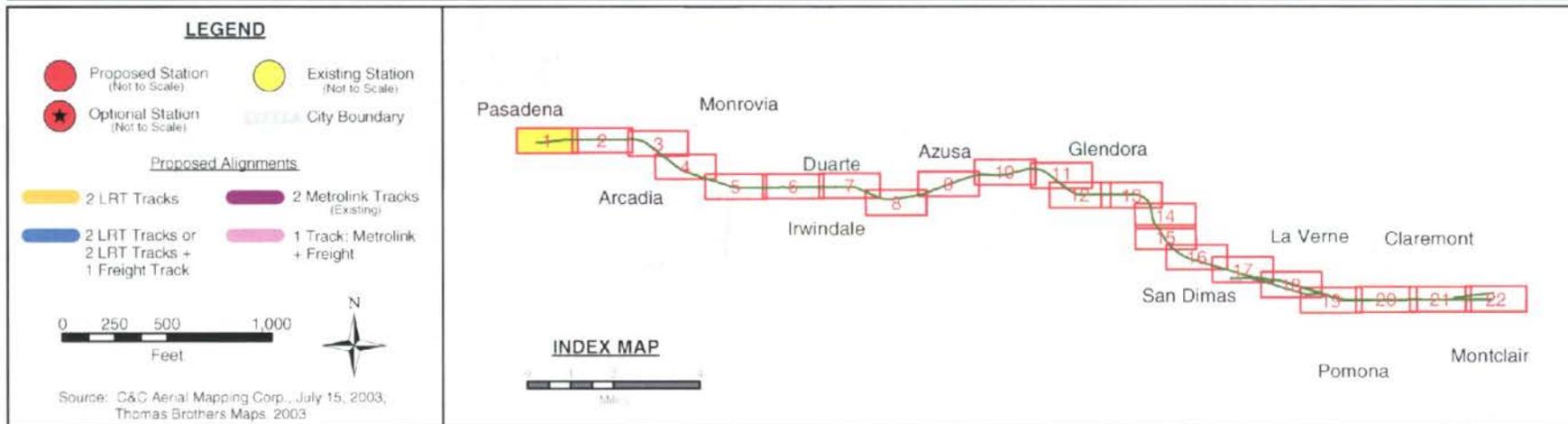
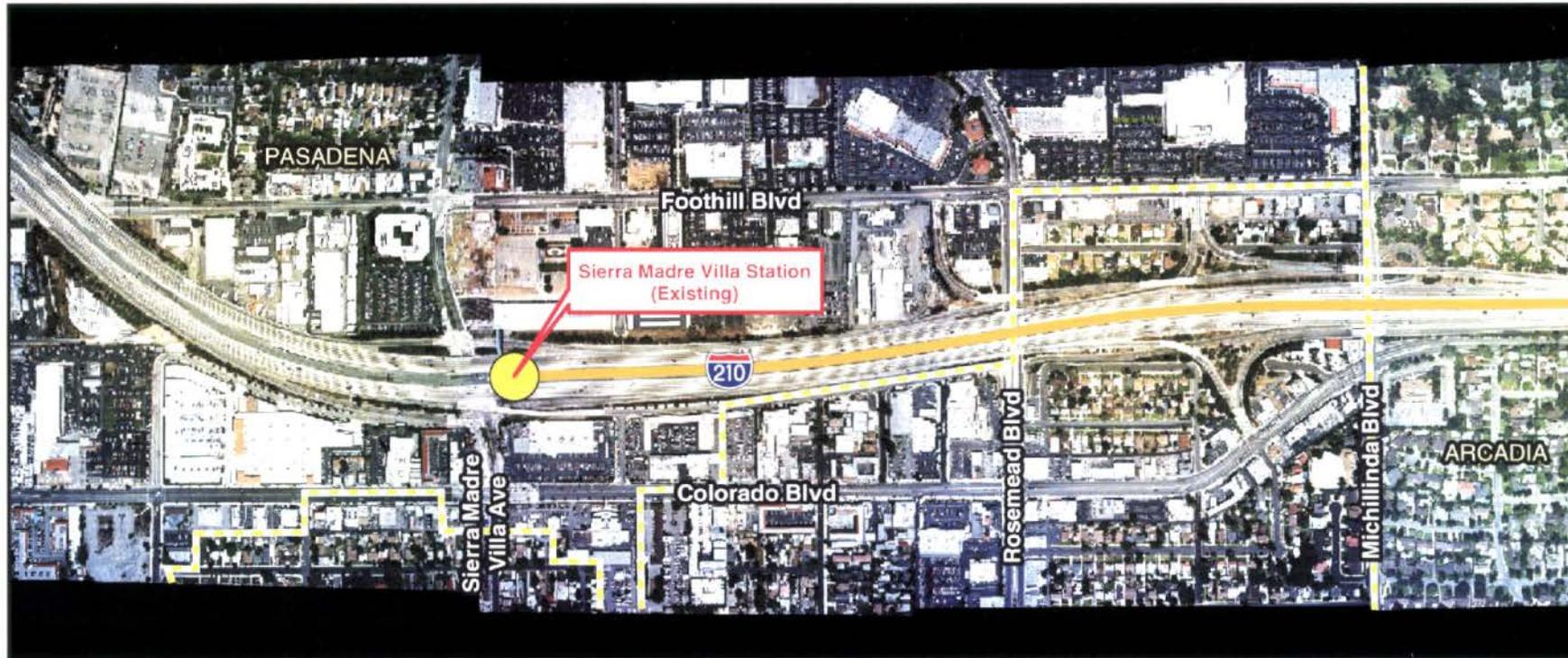


Figure 2-20: Full Build LRT Alternative (1 of 22)

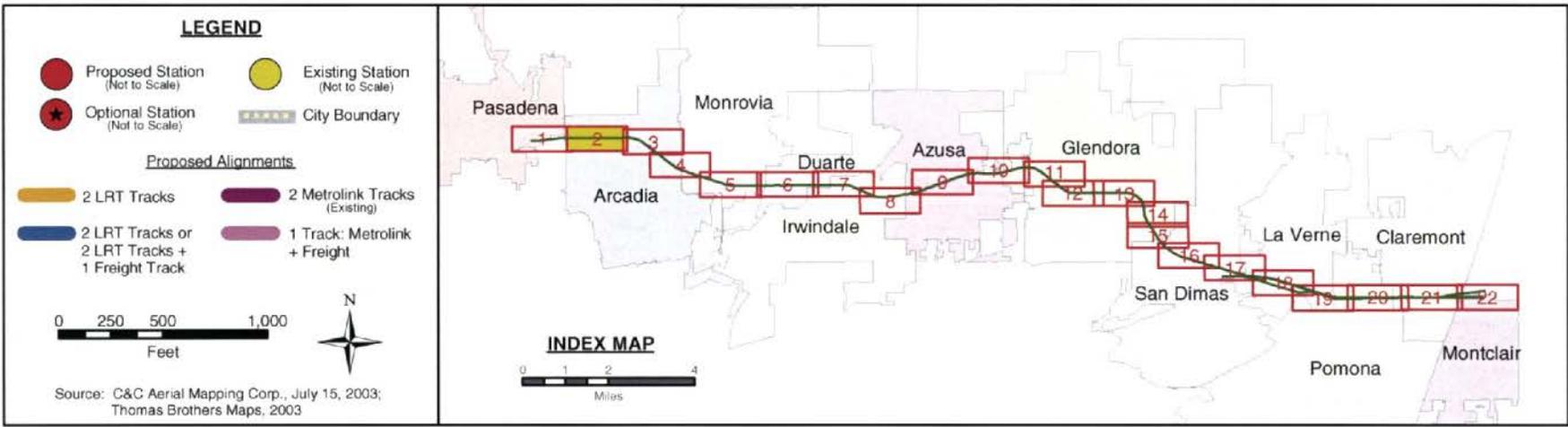


Figure 2-21: Full Build LRT Alternative (2 of 22)

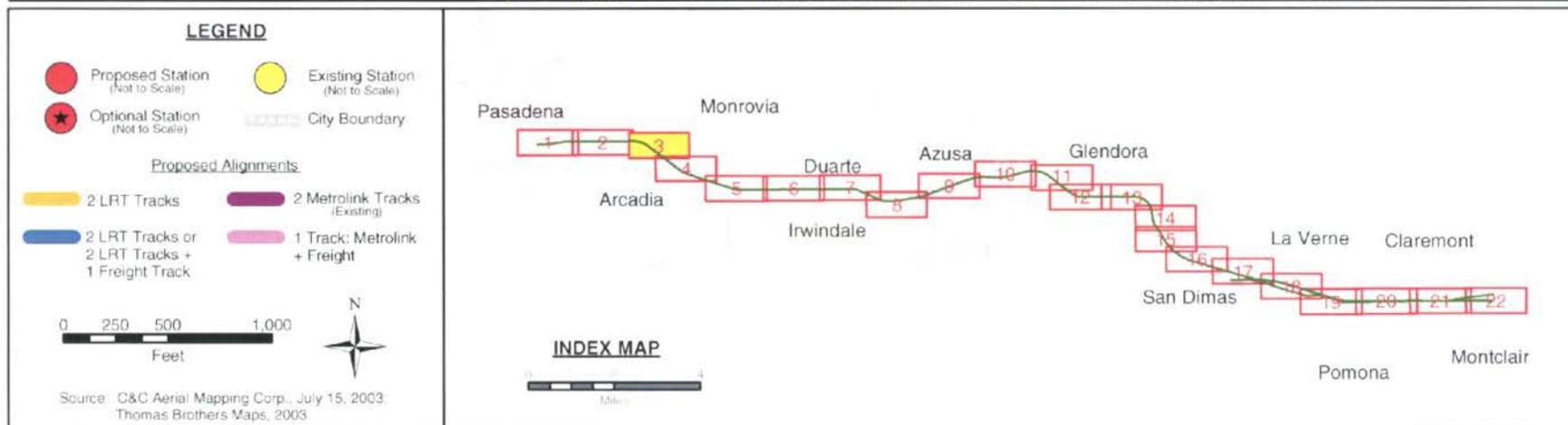


Figure 2-22: Full Build LRT Alternative (3 of 22)

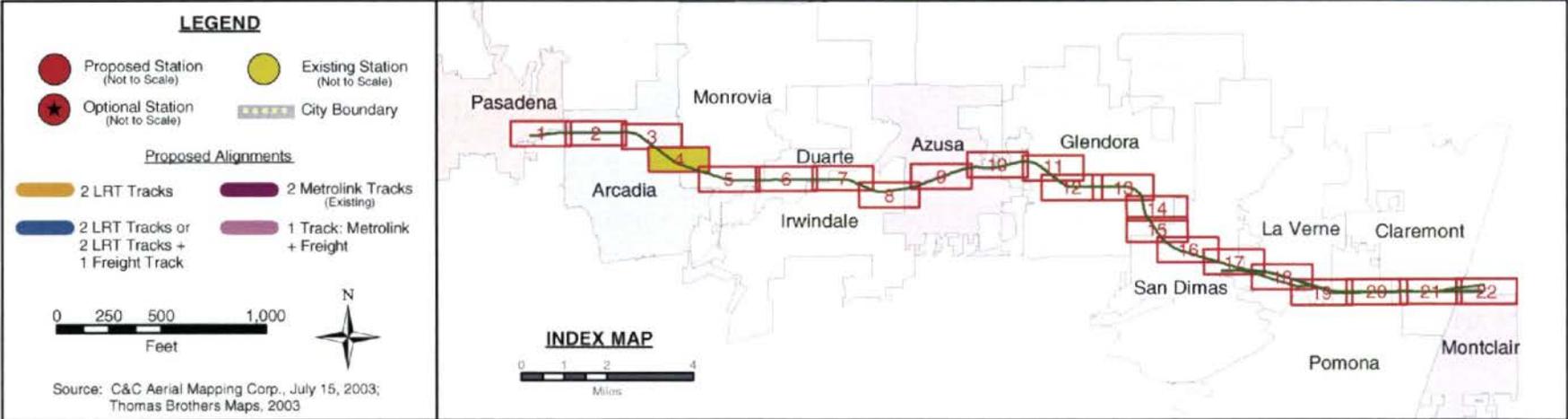


Figure 2-23: Full Build LRT Alternative (4 of 22)

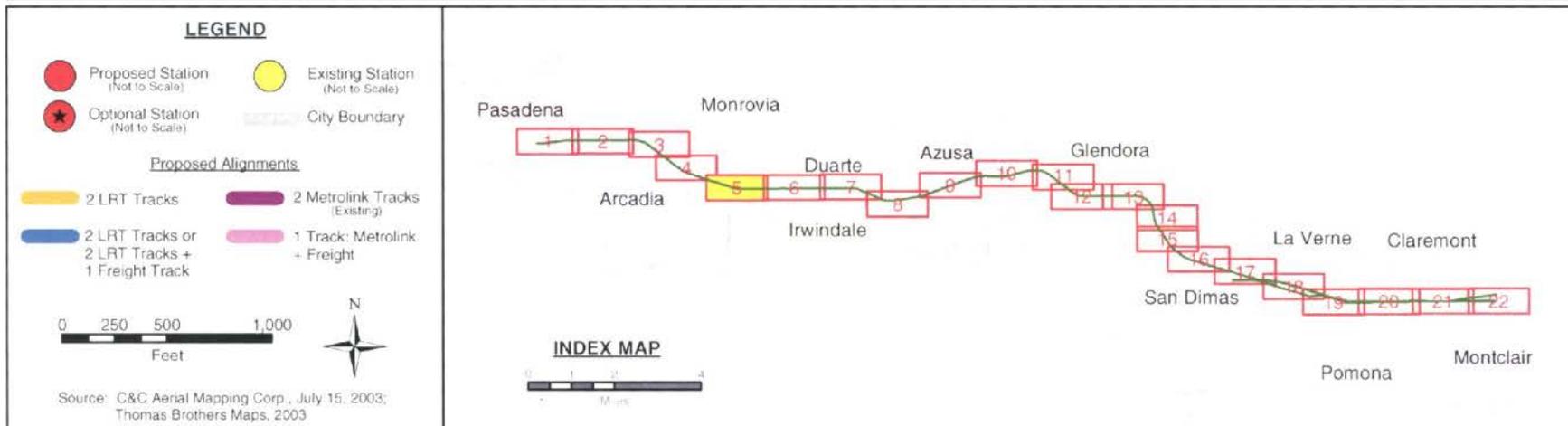
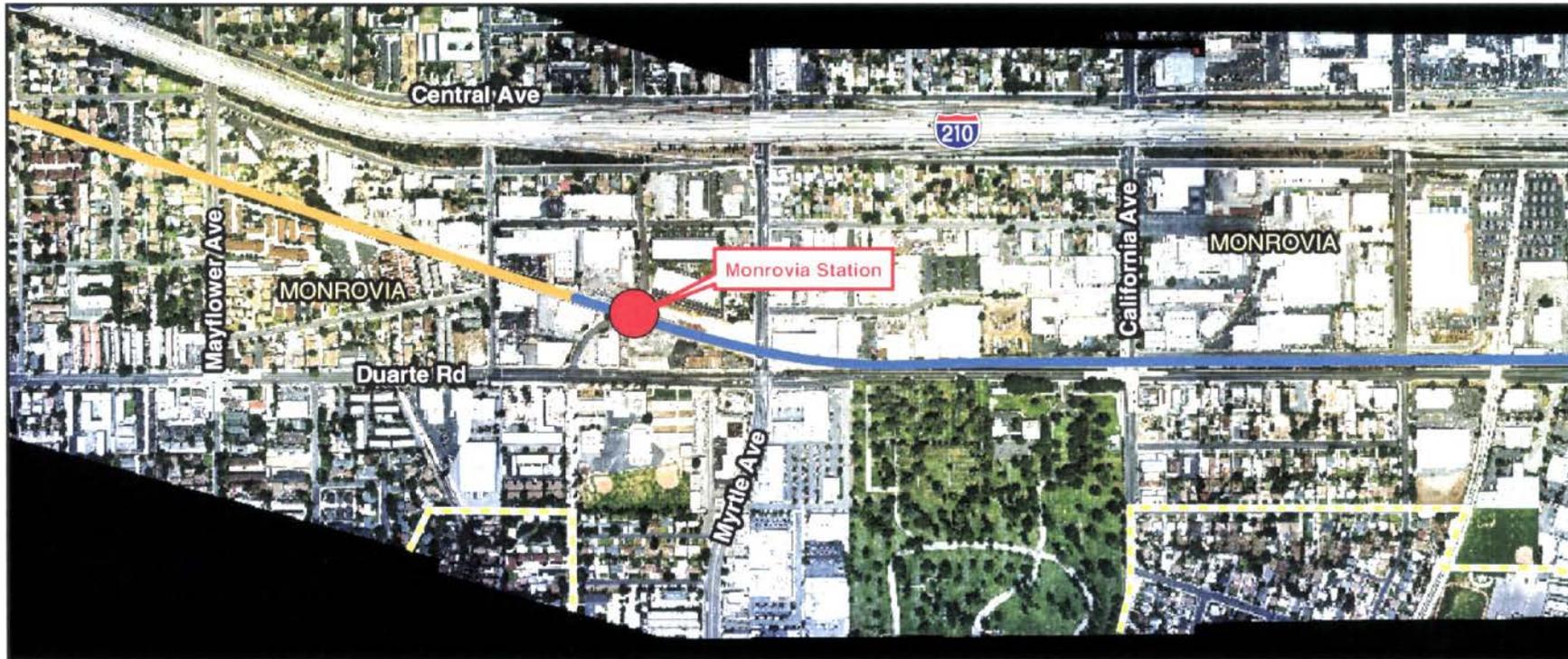


Figure 2-24: Full Build LRT Alternative (5 of 22)

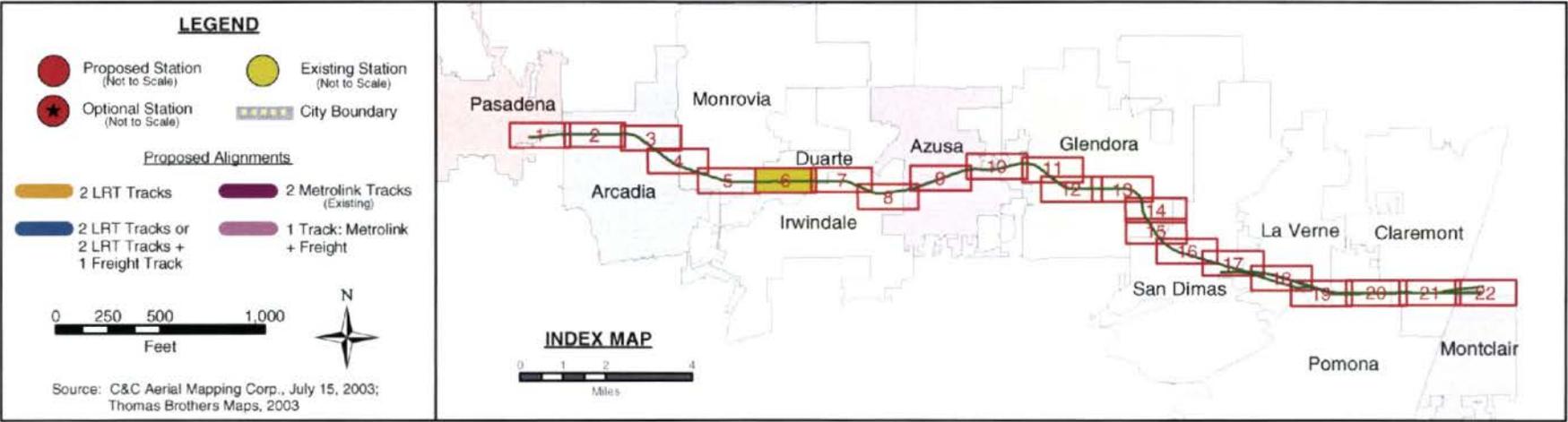
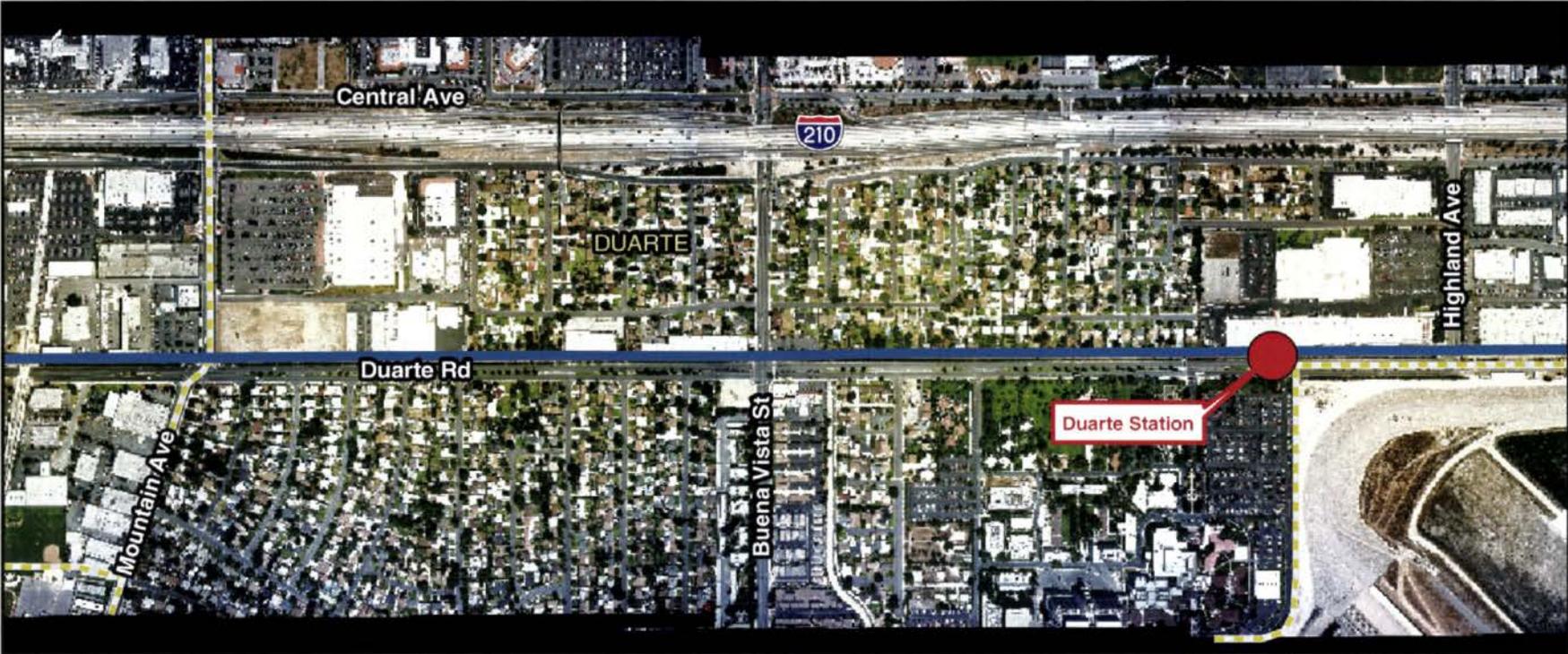


Figure 2-25: Full Build LRT Alternative (6 of 22)

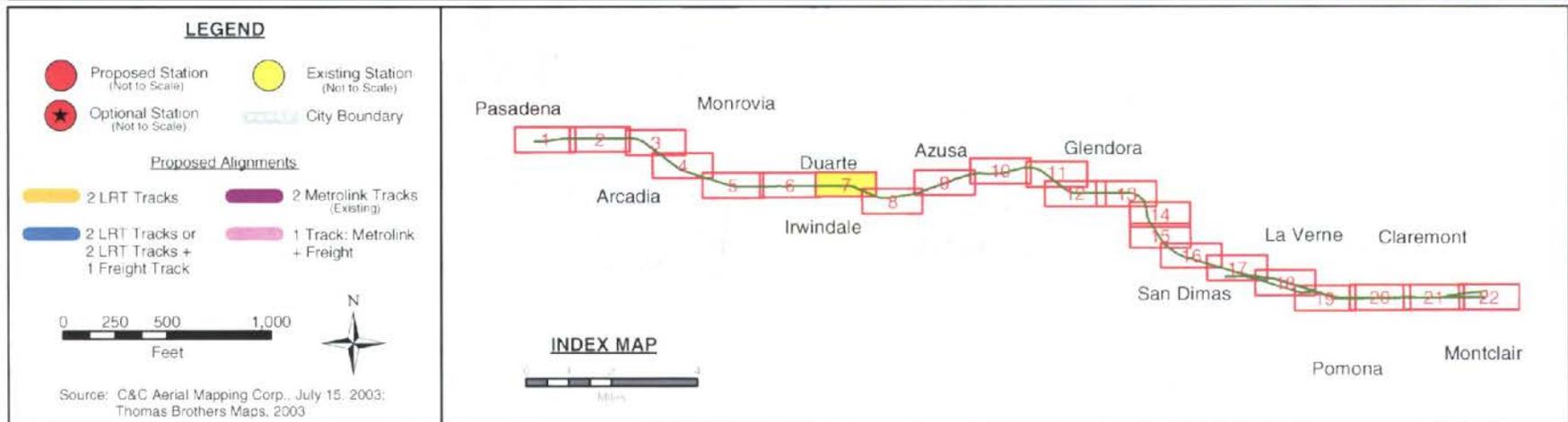


Figure 2-26: Full Build LRT Alternative (7 of 22)

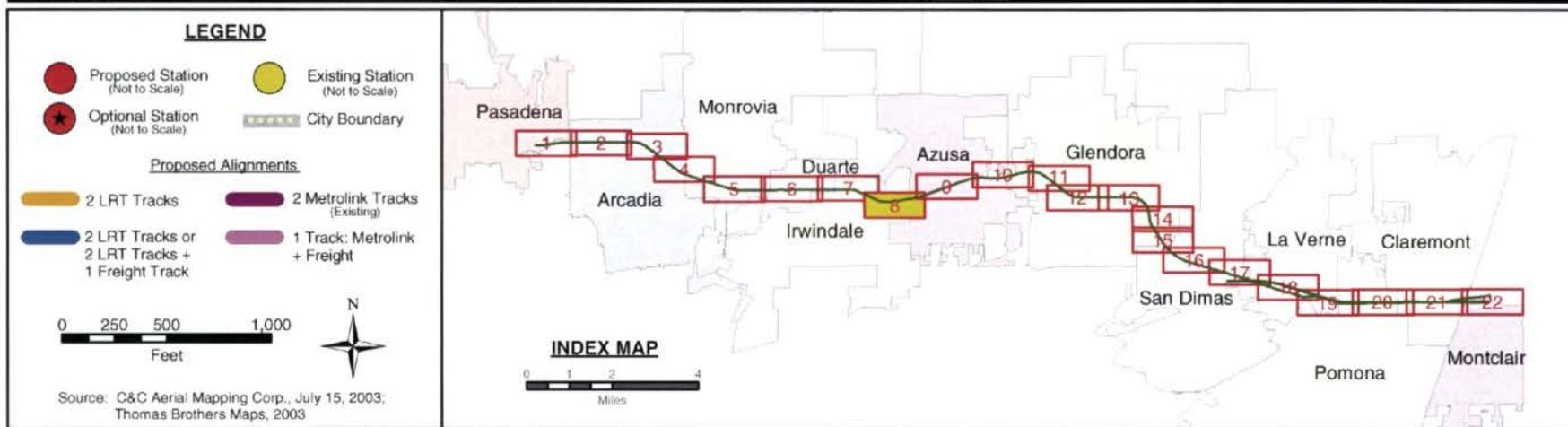


Figure 2-27: Full Build LRT Alternative (8 of 22)

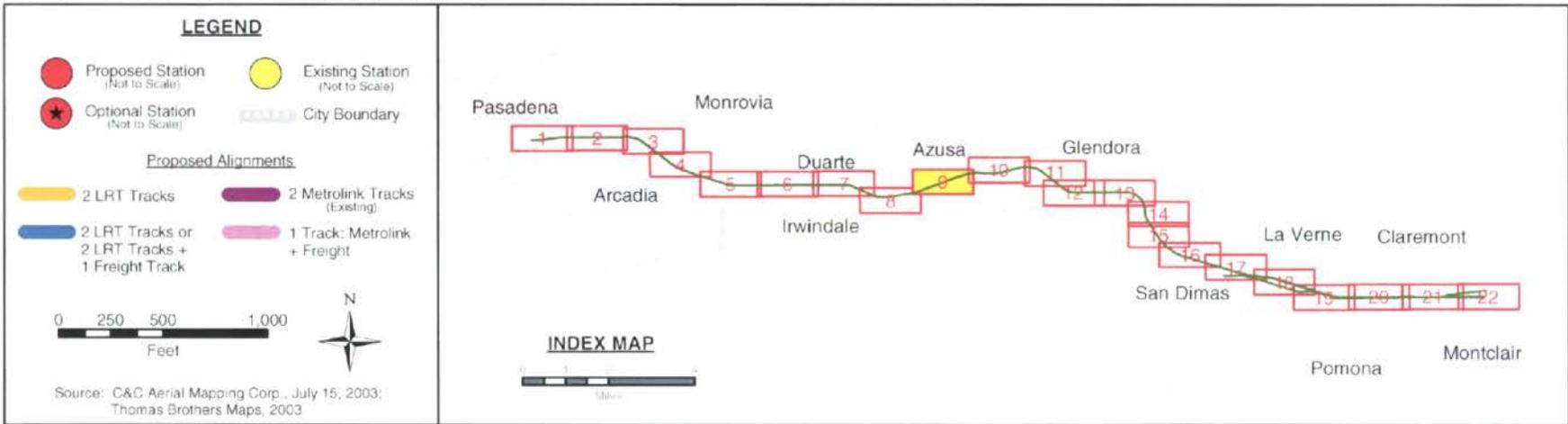


Figure 2-28: Full Build LRT Alternative (9 of 22)

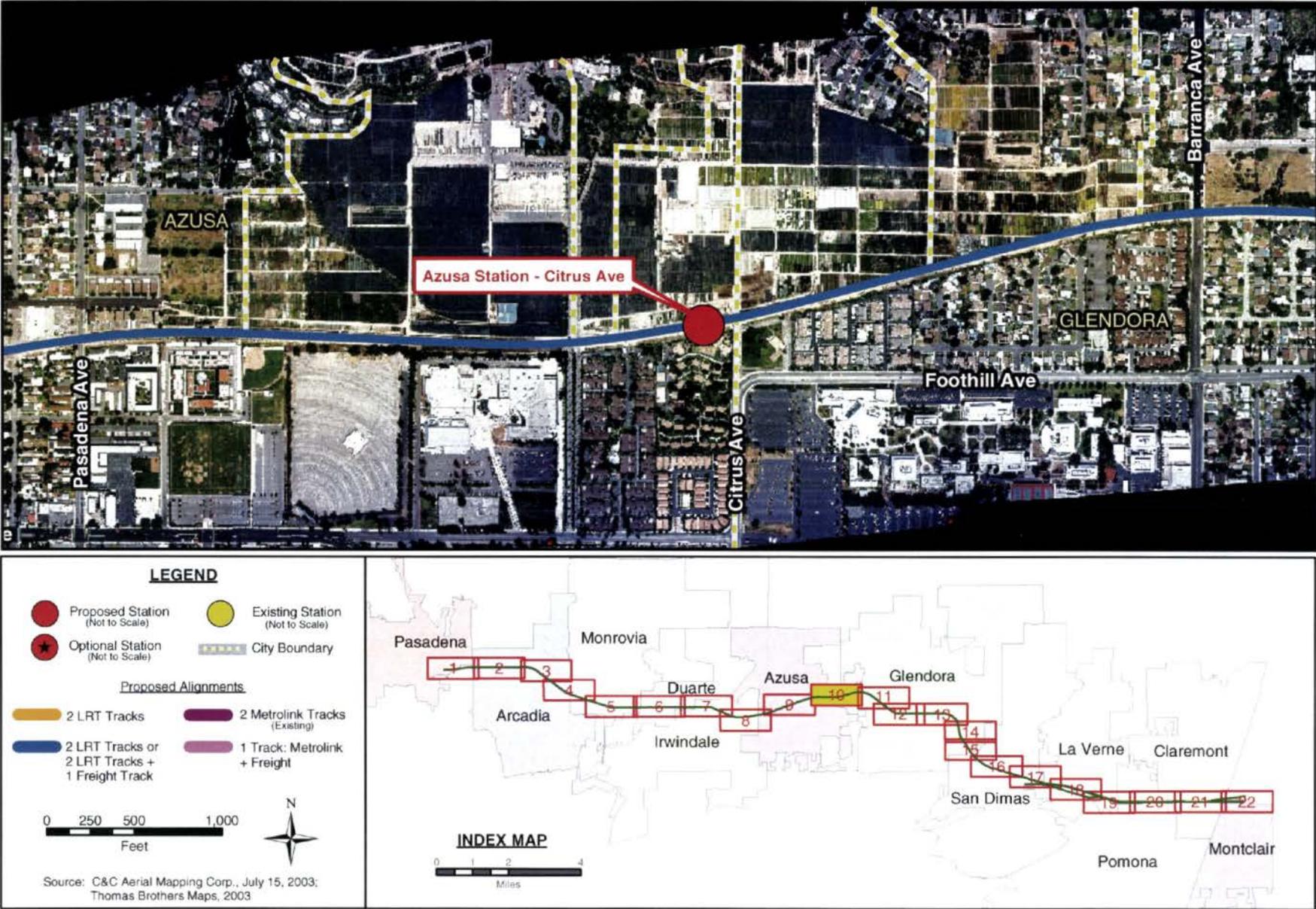


Figure 2-29: Full Build LRT Alternative (10 of 22)

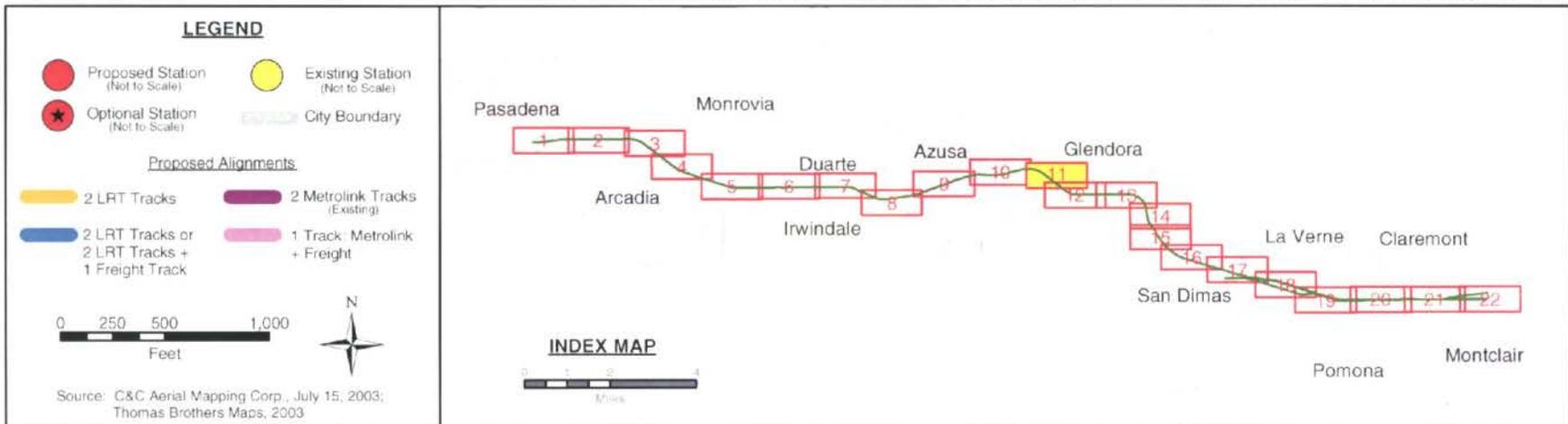
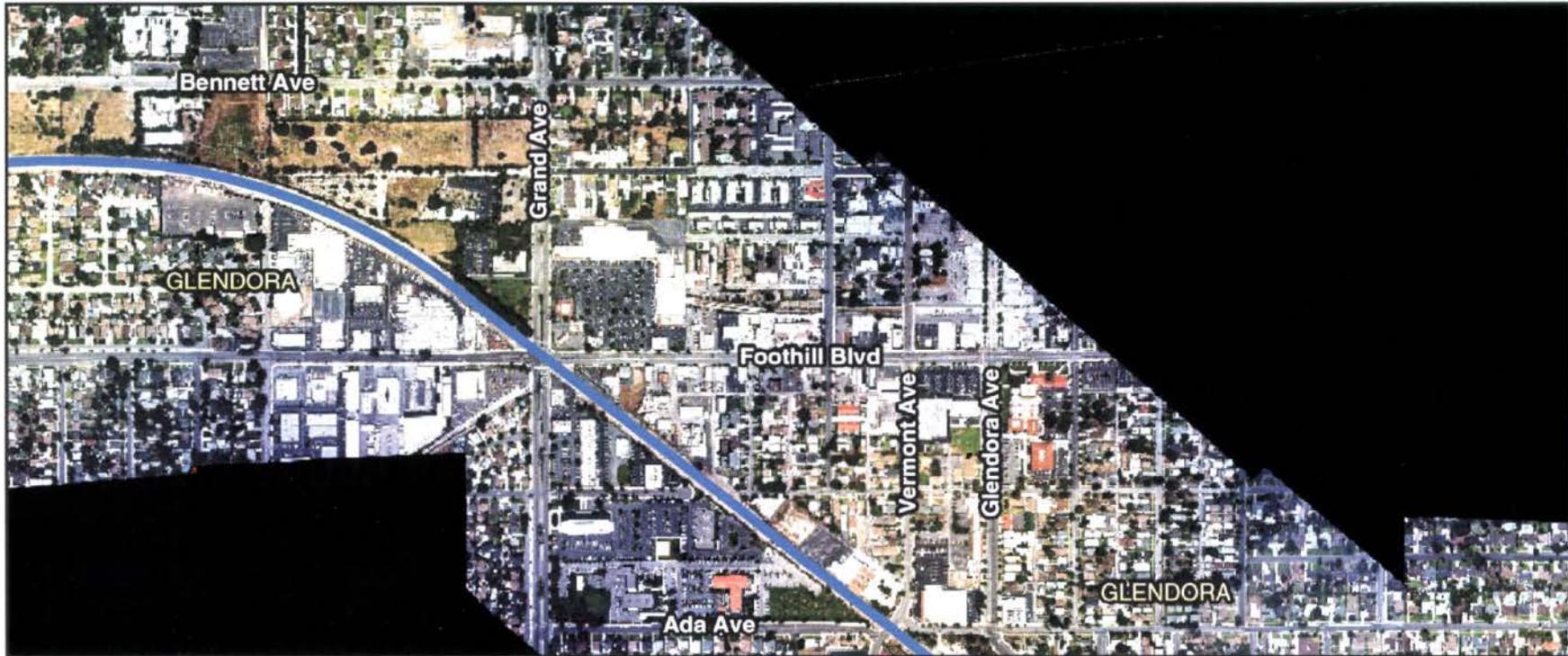


Figure 2-30: Full Build LRT Alternative (11 of 22)

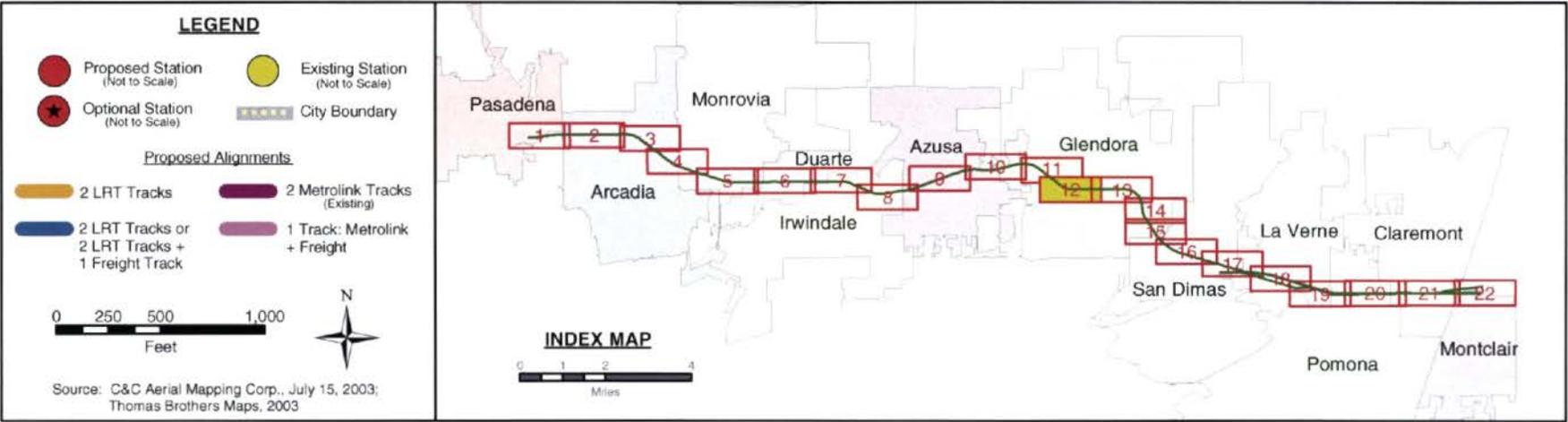
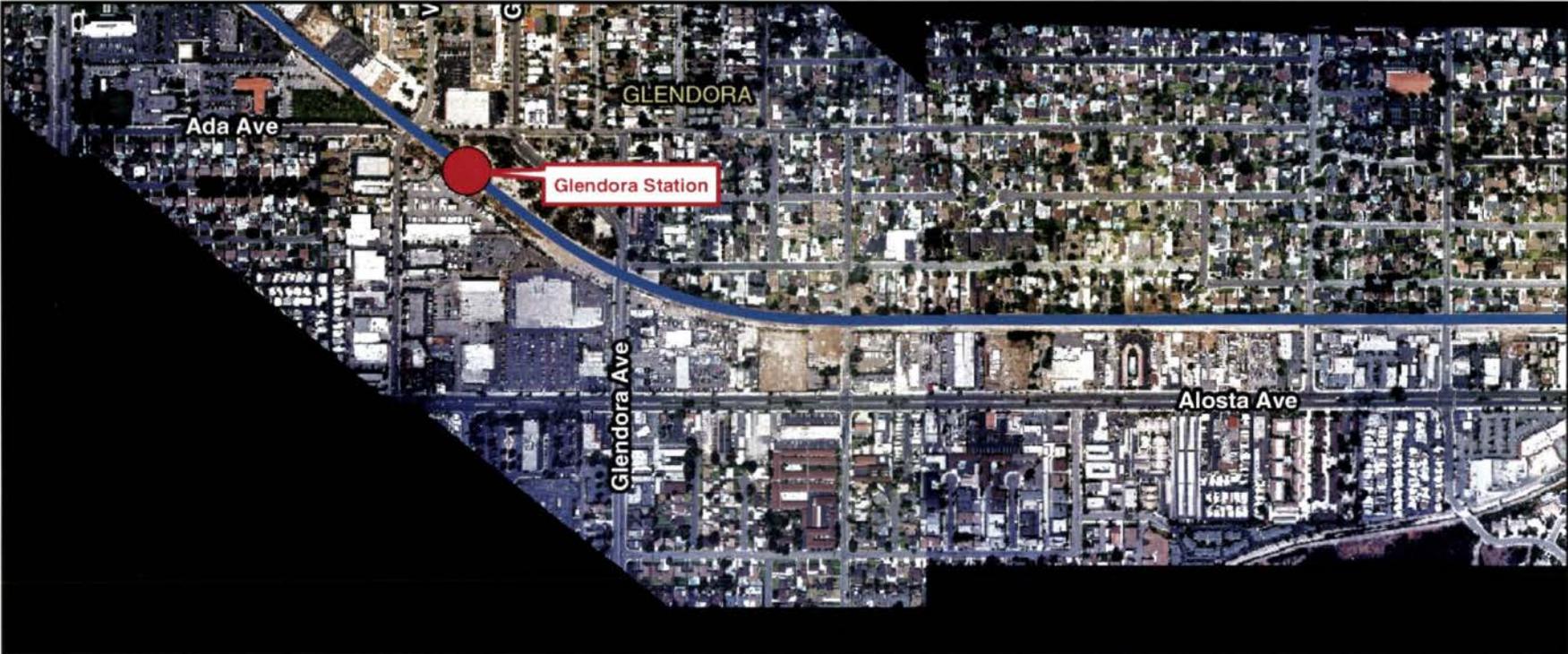


Figure 2-31: Full Build LRT Alternative (12 of 22)

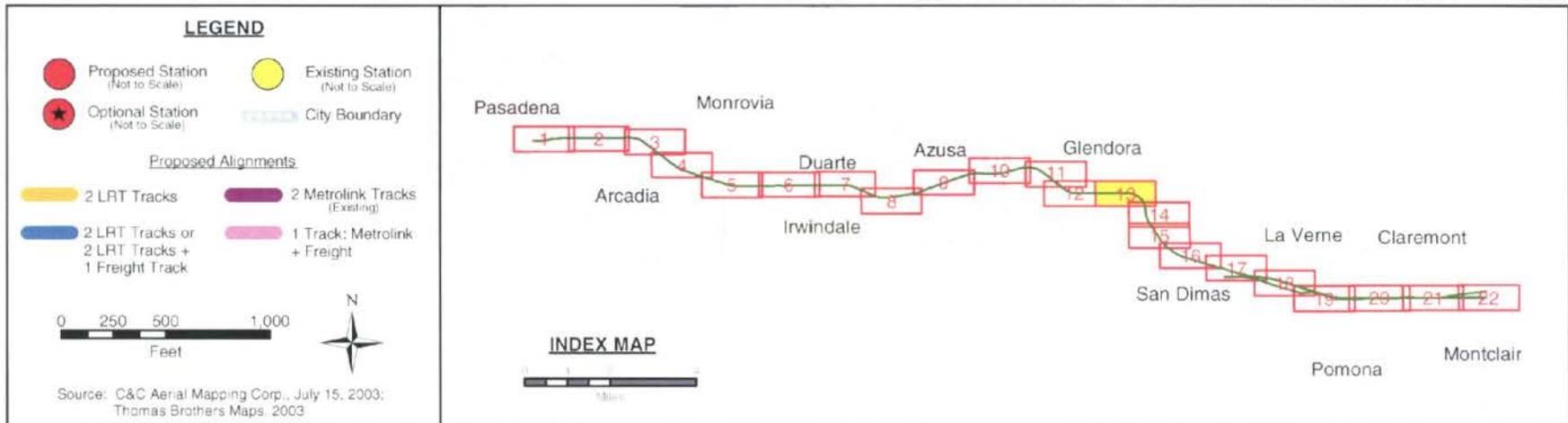


Figure 2-32: Full Build LRT Alternative (13 of 22)

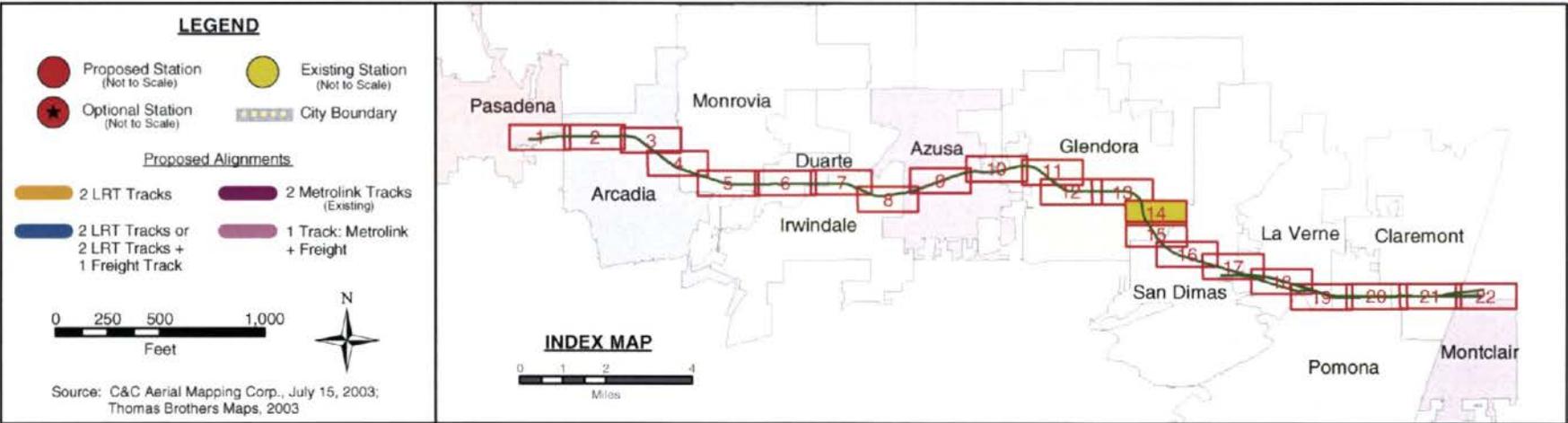
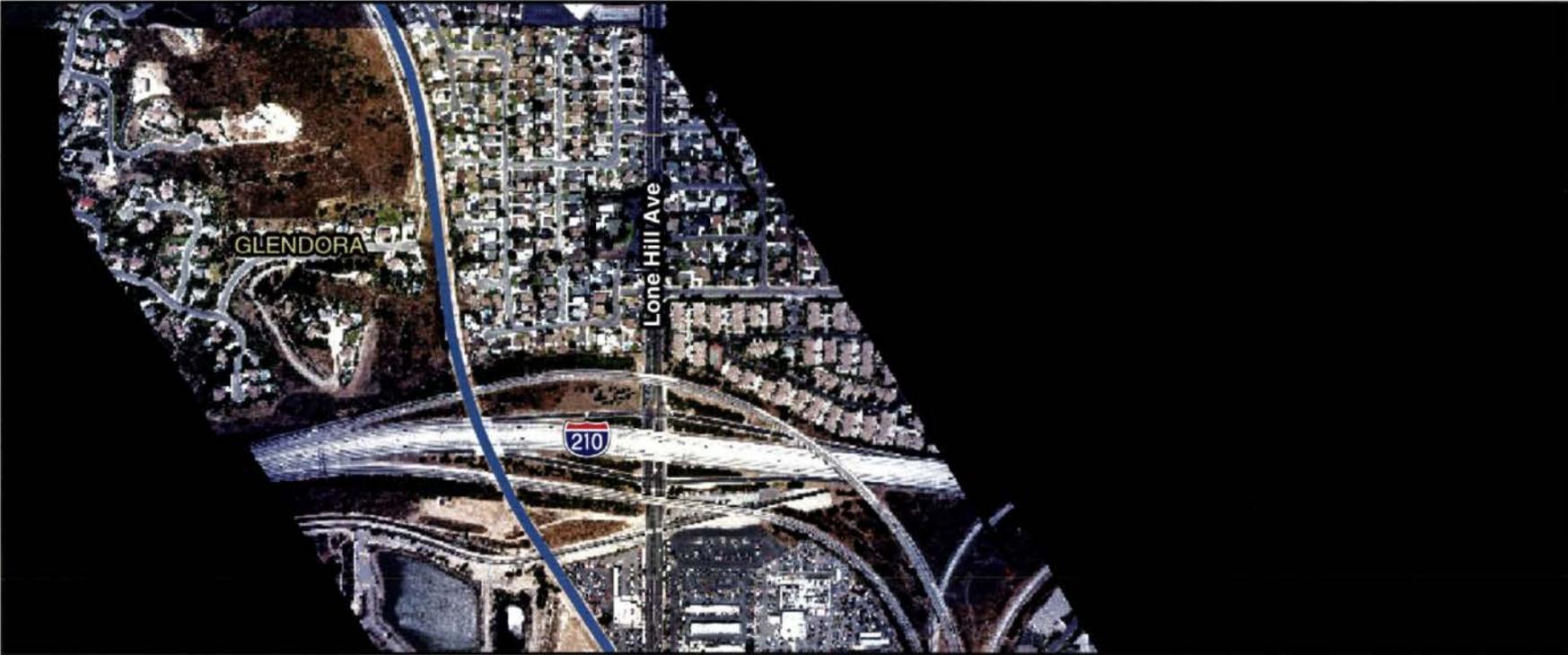


Figure 2-33: Full Build LRT Alternative (14 of 22)

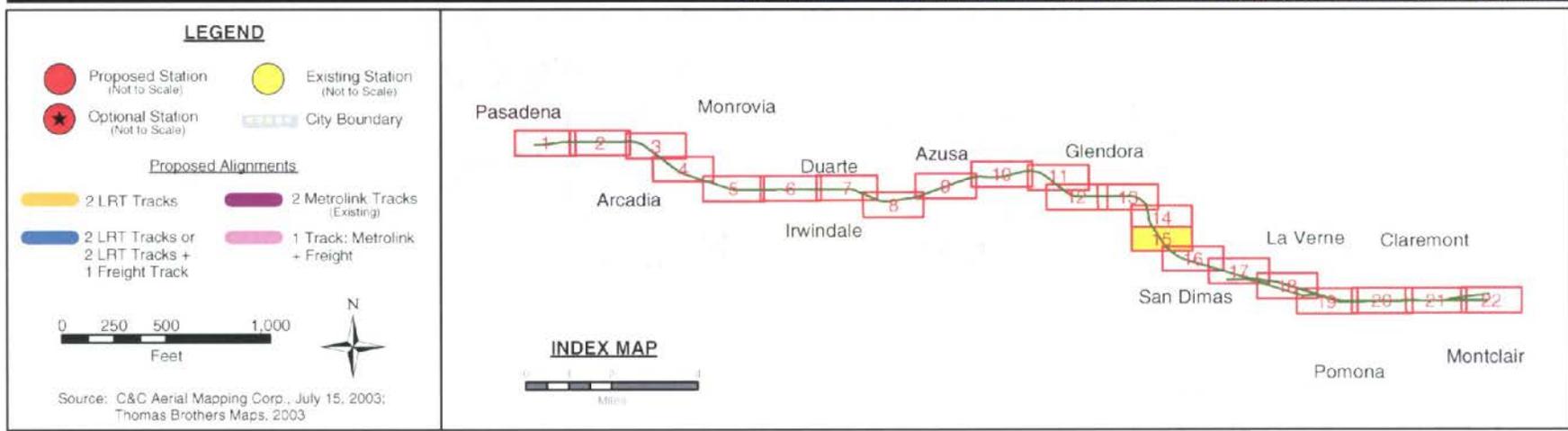
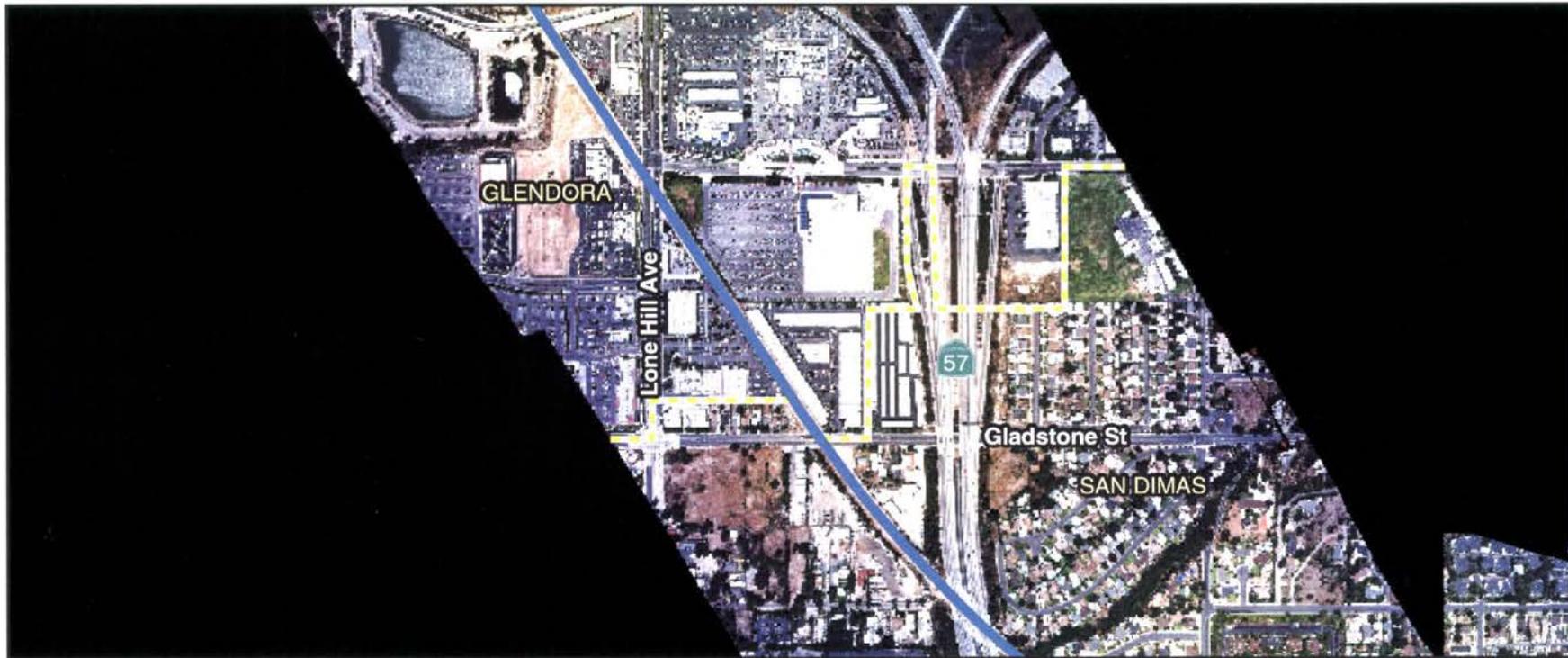


Figure 2-34: Full Build LRT Alternative (15 of 22)

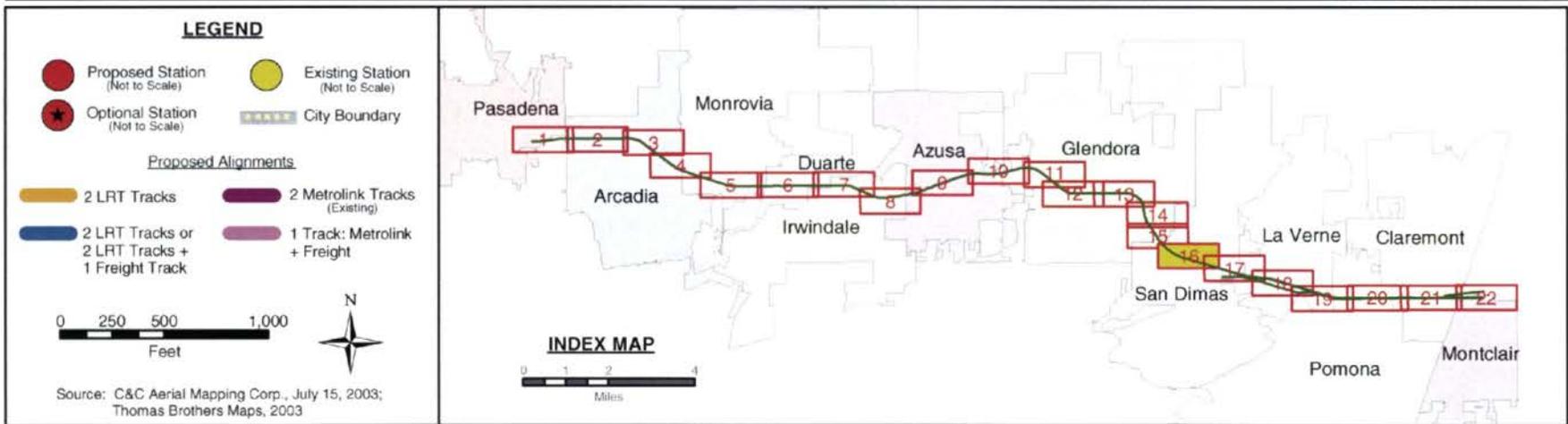


Figure 2-35: Full Build LRT Alternative (16 of 22)

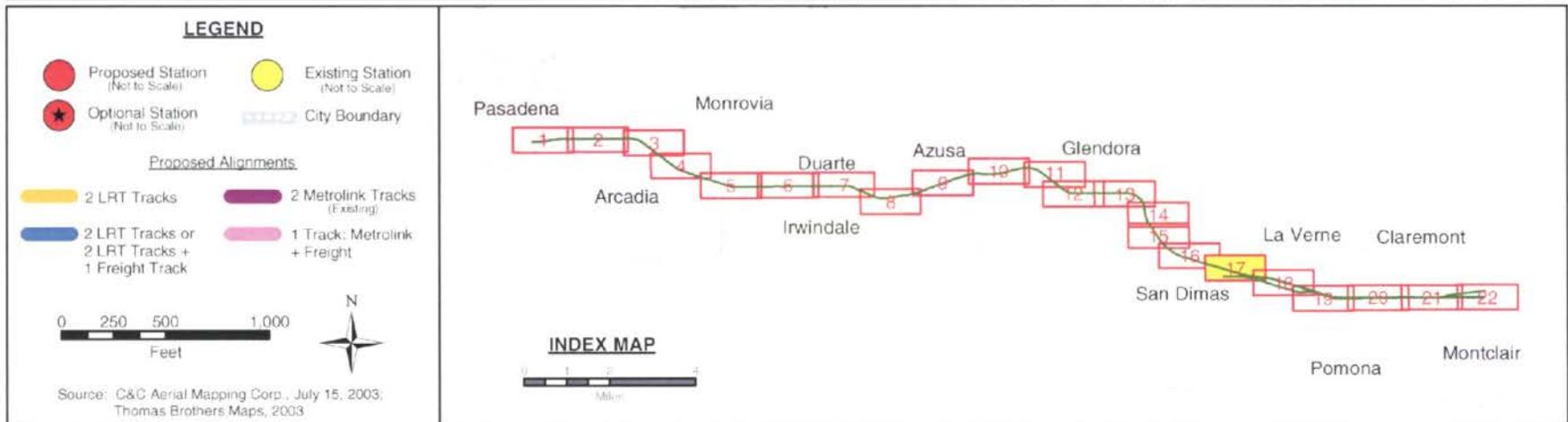


Figure 2-36: Full Build LRT Alternative (17 of 22)



LEGEND

- Proposed Station (Not to Scale)
- ★ Optional Station (Not to Scale)
- Existing Station (Not to Scale)
- City Boundary

Proposed Alignments

- 2 LRT Tracks
- 2 LRT Tracks or 2 LRT Tracks + 1 Freight Track
- 2 Metrolink Tracks (Existing)
- 1 Track: Metrolink + Freight

0 250 500 1,000 Feet

Source: C&C Aerial Mapping Corp., July 15, 2003; Thomas Brothers Maps, 2003

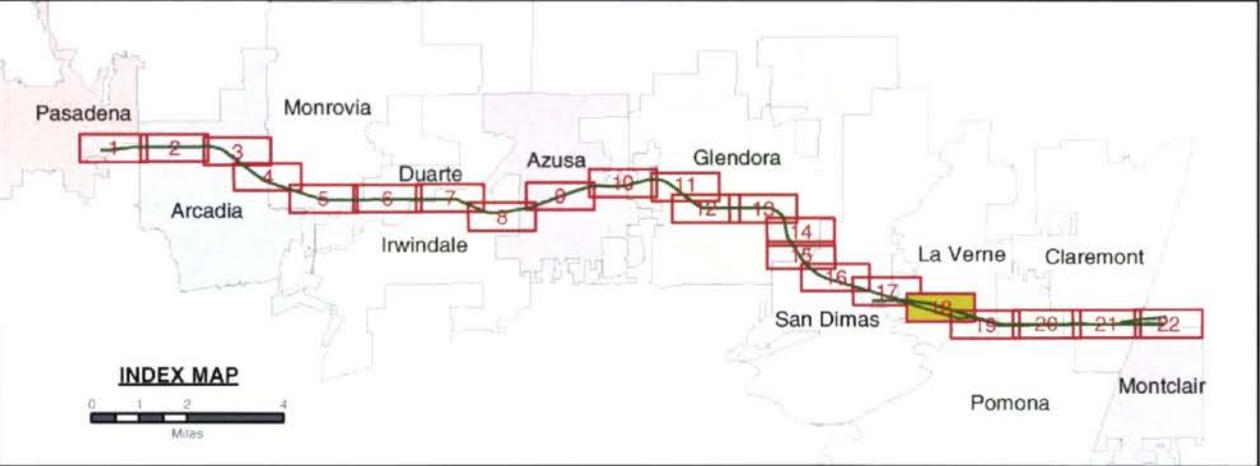


Figure 2-37: Full Build LRT Alternative (18 of 22)

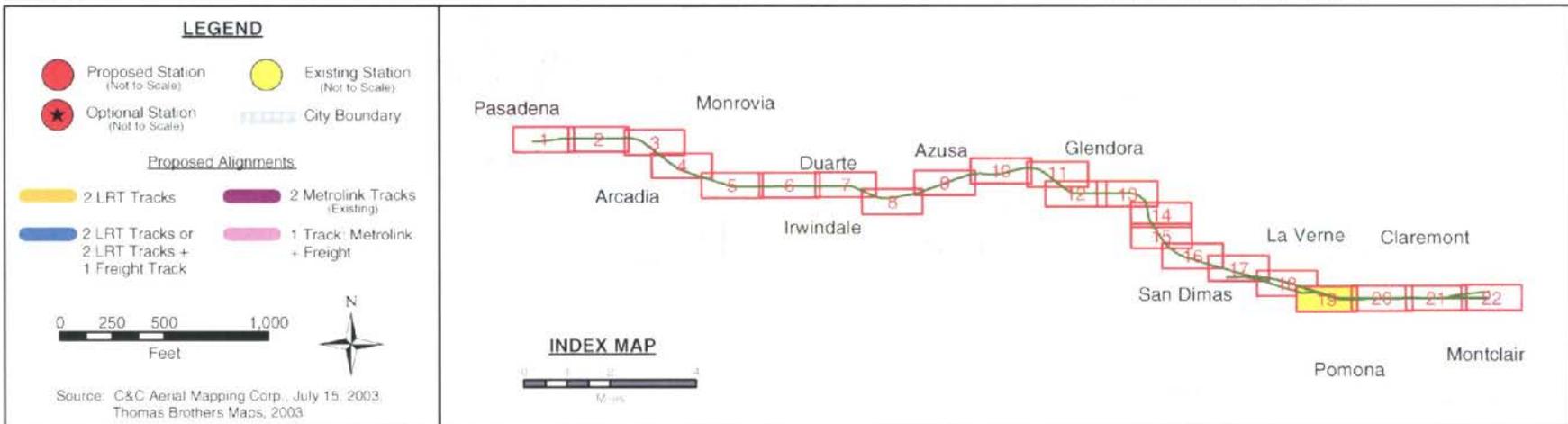


Figure 2-38: Full Build LRT Alternative (19 of 22)

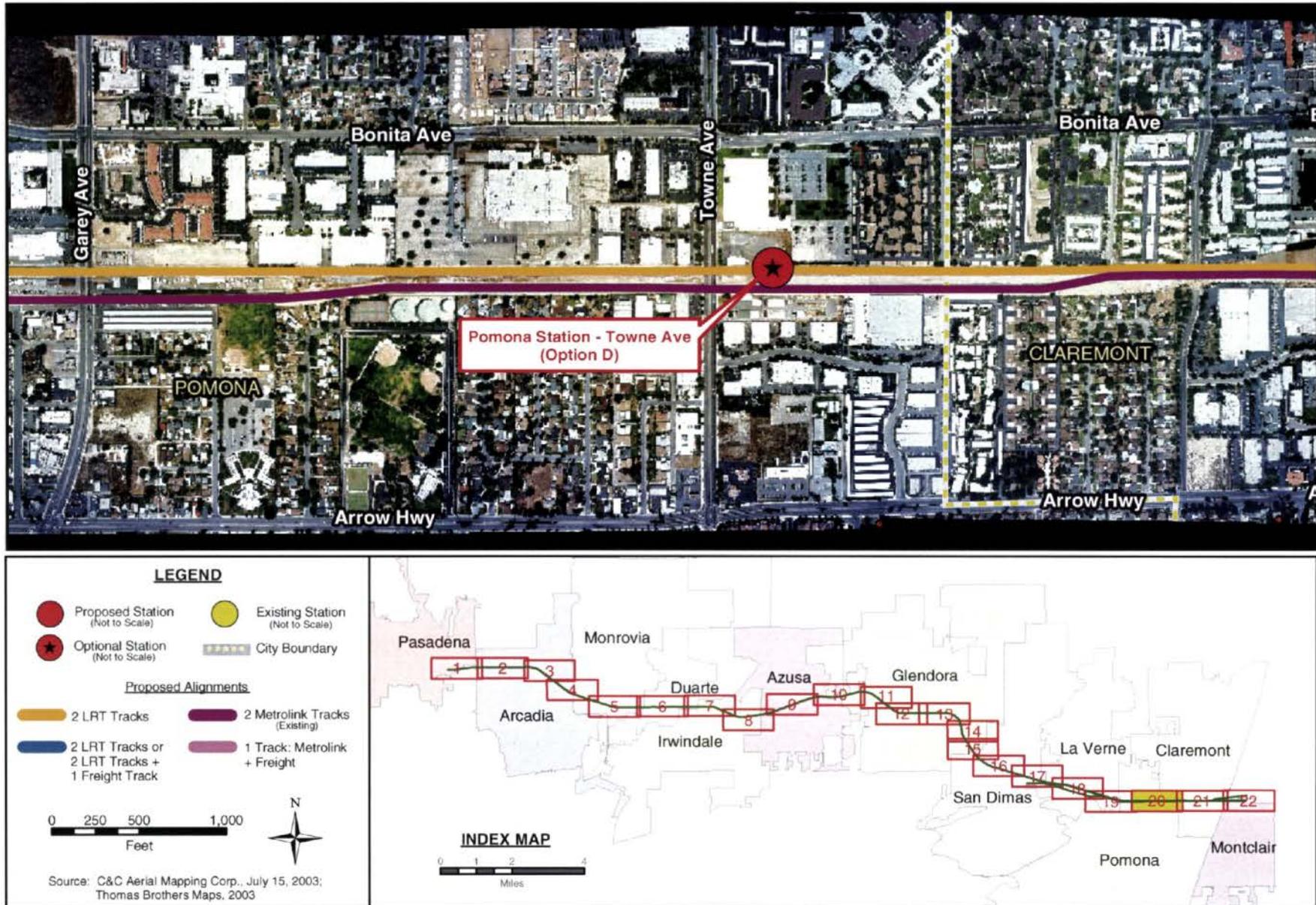


Figure 2-39: Full Build LRT Alternative (20 of 22)

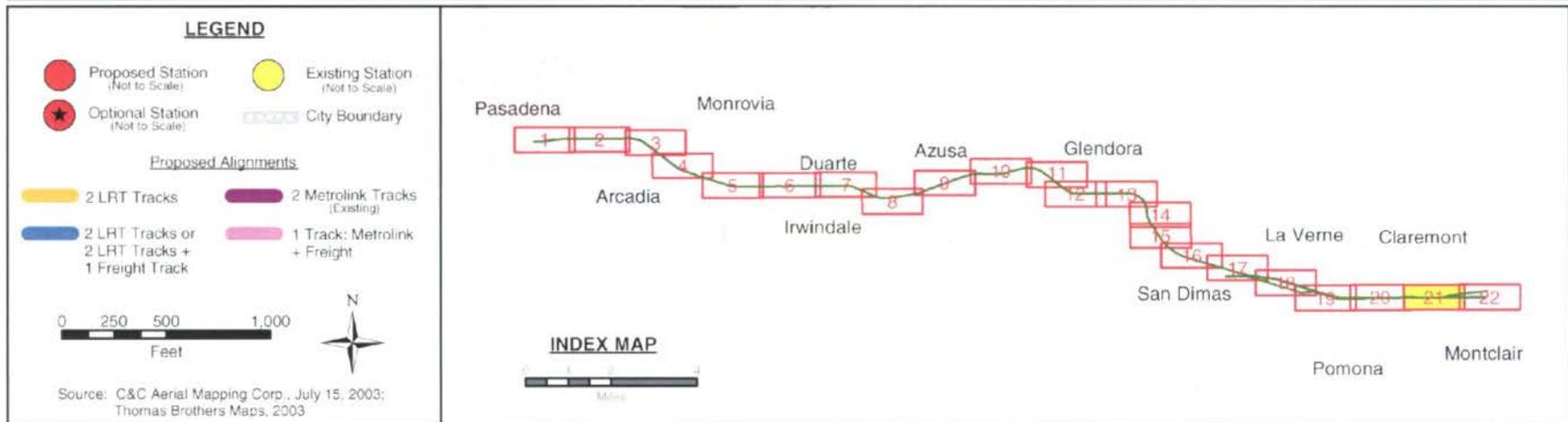
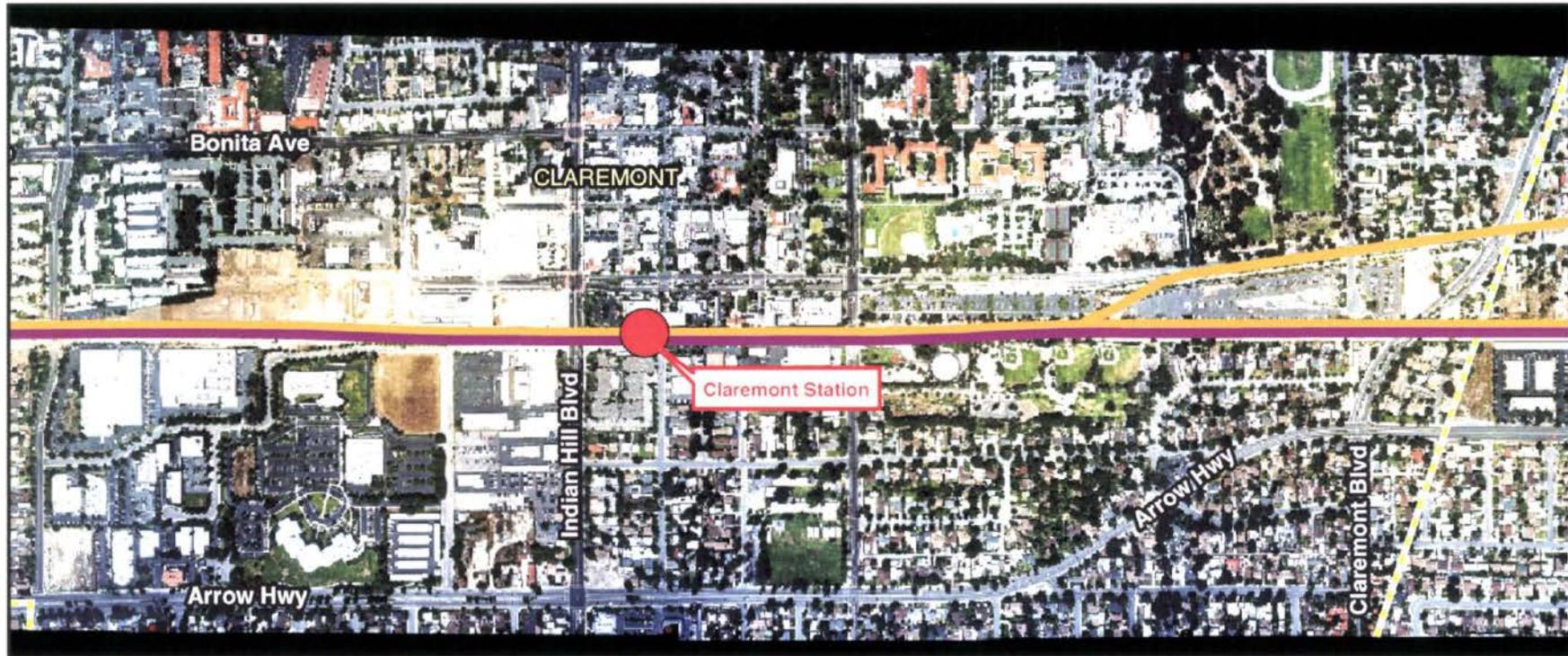


Figure 2-40: Full Build LRT Alternative (21 of 22)

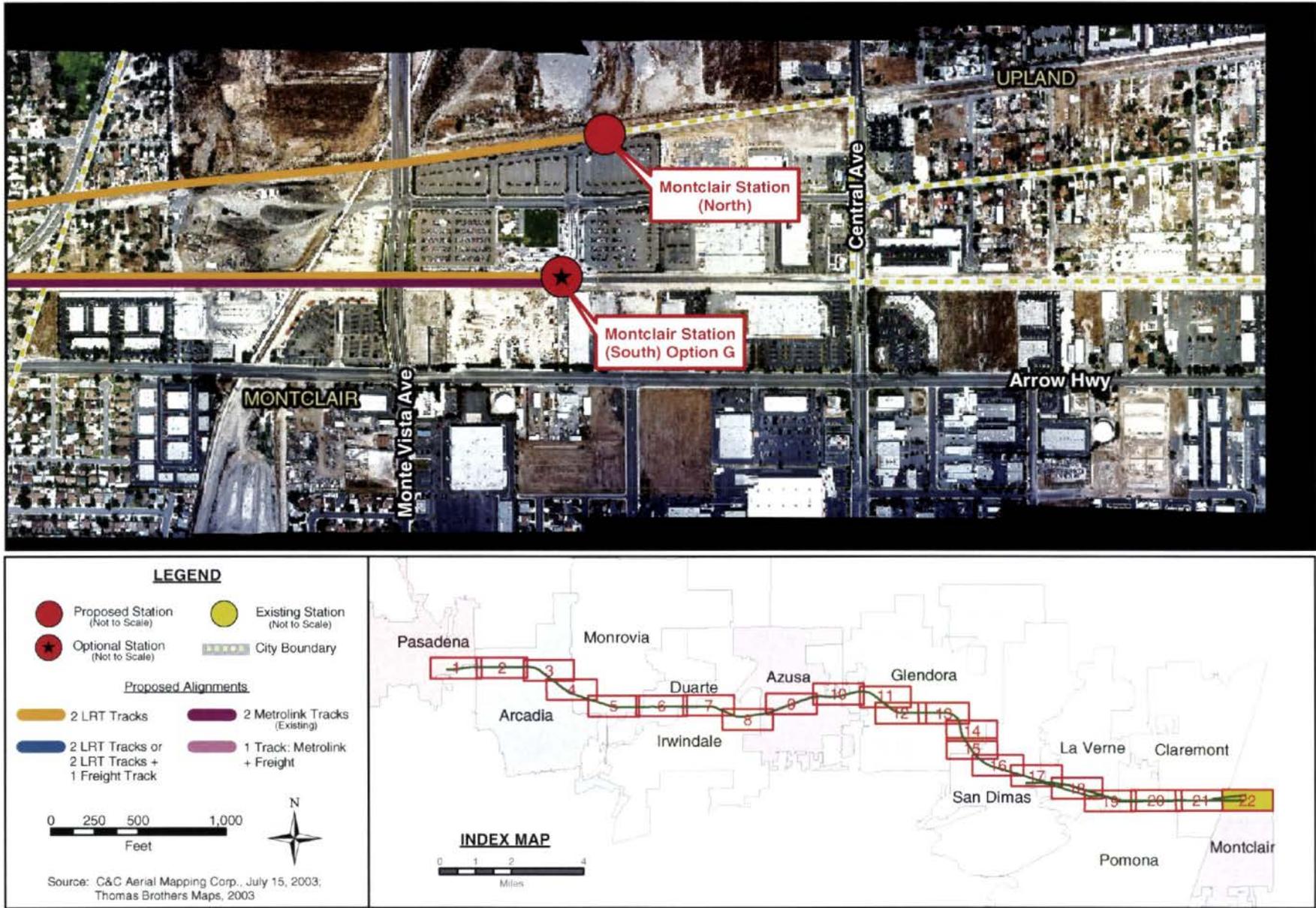


Figure 2-41: Full Build LRT Alternative (22 of 22)

a. Stations

The Full Build Alternative would include a total of 12 new stations, subject to the approval of the individual cities. All of these stations would contain one or two platforms, 270 feet long, to accommodate LRT trains with up to three cars. Platforms would be approximately 14 feet wide for side-platform stations and 18 feet wide for center-platform stations. The conceptual design of proposed stations in the proposed project is based on the LRT stations created for Phase I. See **Figures 2-42 through 2-45** for examples of typical station types that would be used for the Full Build Alternative.

Station platforms would be either at grade or elevated above grade. Platforms would be designed to accommodate high-floor LRT vehicles, with the platform level approximately 3 feet above the level of the tracks. Grade changes between the platform and the surrounding land would be addressed with ramps, sloped walks, and stairs that meet ADA requirements. Aerial stations would be located approximately 30 feet above grade, and would require elevators, escalators, and other access equipment to meet ADA requirements and MTA design criteria.

Stations would be configured with center platforms or side platforms. Center-platform stations have a single platform located between the tracks and would serve trains traveling in both directions. Passengers would access the stations by using a crosswalk and a sloping walkway between the LRT tracks for street-level stations, and stairs and elevators (and possibly escalators) at elevated stations. Side-platform stations have separate platforms for each track to serve trains traveling in opposite directions. For elevated stations, passengers traveling from one platform to the other would need to take the stairs or elevators (or escalators, if provided) to another level and then back to the platform level once they had crossed. For at-grade stations, passengers would need to go down the ramp from the platform to a designated crosswalk, cross the tracks, and then go back up the ramp or stairs to the other platform. Passenger access to the at-grade platforms would be at one or both ends, connected to existing or new sidewalks, or along the outside of the platform. During the conceptual design of the alignment, center-platform stations were looked at first. If the site characteristics (such as a narrow right-of-way entering or exiting the site) ruled out a center-platform, then a side-platform station was designed.

LACMTA design guidelines state that stations are to be at least 180 feet from the nearest street in order to allow for safe emergency stopping of LRT vehicles shy of the roadway. In some locations, waivers may need to be obtained for non-conforming station locations due to existing street configurations. To be granted a waiver, it would have to be demonstrated that safety would not be substantially compromised by allowing a station to be closer than 180 feet from the nearest street. These waivers, if granted, would not have any environmental impacts.

Consistent design and equipment layout would be used throughout the system, as initiated in the Phase I construction, for the convenience of transit passengers and to control capital, operations, and maintenance costs. Signage, maps, fixtures, furnishings, lighting, and communication equipment would have consistent design throughout the system. However, opportunities would be provided during later stages of project development for stations to have individual and community identities created by design of other station components, such as roof canopies, guardrails, floor finishes, station furniture, plaza and entrance areas, artwork, vertical finishes, and related items. The final design of stations would result from a combination of LACMTA-standard system components and design enhancements provided by individual cities.

An area for fare collection and transit information posting would be provided on the platforms, similar to the existing LRT systems in Los Angeles County. Parking at each station would be necessary to accommodate patrons using the LRT service. Parking facilities would be provided at each station based

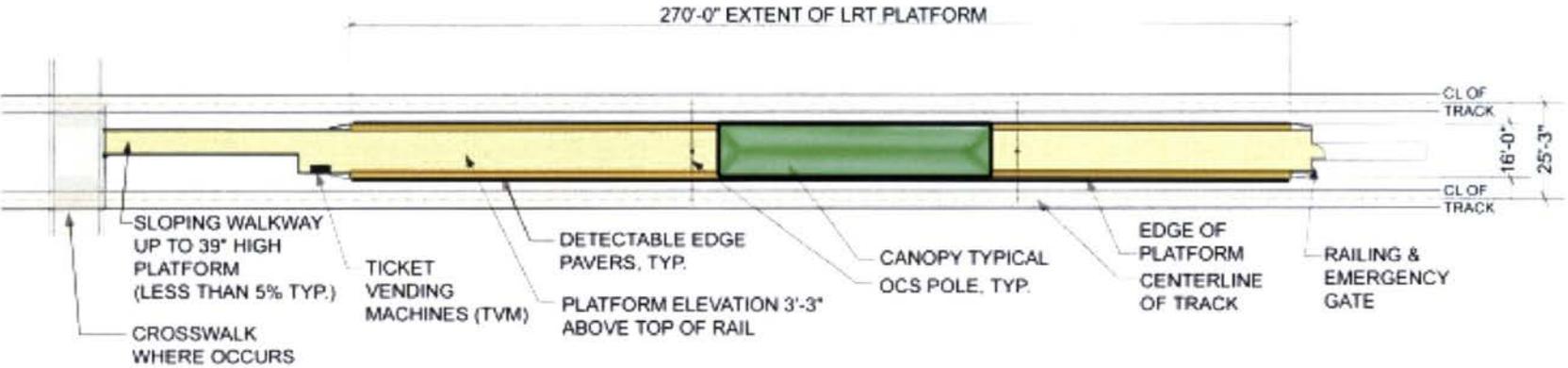
on the results of travel demand modeling. It is currently estimated that more than 7,000 parking spaces would be required at the 12 stations along the alignment. It should be noted that the demand for parking has been established from the transportation modeling process for 2010 and for 2025. Although proposed locations for parking have developed based on the 2025 demand forecast, it is assumed that staged implementation of parking is likely to occur. Staged implementation would enable existing or new surface lots to serve initial ridership, with parking structures being created over time as ridership increases. For the purpose of environmental analysis, the impacts of 2025 parking demand (i.e., the likely worst-case scenario) have been assessed. It is also assumed that parking at any of the stations might be provided as part of transit-oriented development that may be implemented by the individual cities.

Table 2-4 lists the options for station locations and alignment. These are described further in the specific station descriptions.

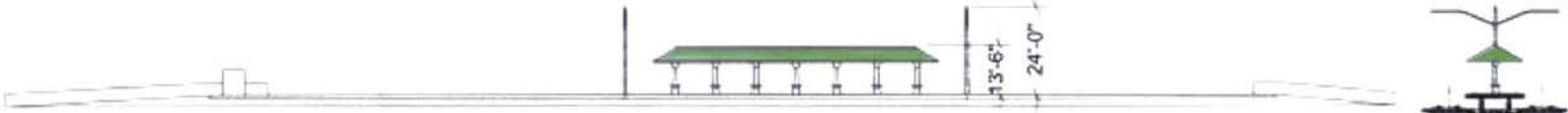
| TABLE 2-4 SUMMARY OF STATION AND ALIGNMENT OPTIONS TO THE BASE ALIGNMENT | | |
|--|---------------|--|
| <i>Base Case</i> | <i>Option</i> | <i>Option Description</i> |
| <ul style="list-style-type: none"> Arcadia Station: located northwest of the North First Avenue/East Santa Clara Avenue intersection. Center Platform. At-grade. Double Track. | A | <ul style="list-style-type: none"> Arcadia Station: located southeast of the intersection of North First Avenue and East Santa Clara Street. Side Platforms. At-Grade Station. Grade Separation of Santa Anita Avenue. Double Track. |
| <ul style="list-style-type: none"> | B | <ul style="list-style-type: none"> Arcadia Station: located northwest of the North First Avenue/East Santa Clara Avenue intersection. Aerial Station. Center Platform. Grade Separation of Santa Anita Avenue, and intersection of First Avenue and Santa Clara Avenue. Double Track. |
| <ul style="list-style-type: none"> La Verne Station: located east of E Street, just north of Arrow Highway. Center Platform. At-grade. Double or Triple Track. | C | <ul style="list-style-type: none"> La Verne Station located west of D Street adjacent to ULV campus, north of Arrow Highway. Center Platform. At-grade. Double Track only. |
| <ul style="list-style-type: none"> La Verne Station: located east of E Street, just north of Arrow Highway. Center Platform. At-grade. Double or Triple Track. Pomona Station: located adjacent to existing Metrolink facility located west of Garey Avenue and accessible via West Santa Fe Street. Center Platform. At-grade. Running with Metrolink at this point (3-tracks: 2 LRT, 1 Metrolink/freight). | D | <ul style="list-style-type: none"> Multimodal Transfer Facility: La Verne Station located south of the rail right-of-way between E and White Streets, and bordered on the southwest by Arrow Highway and on the southeast by the Metrolink right-of-way. Center Platform. At-grade. Triple Track (2 LRT, 1 Metrolink). Pomona Station: located east of Towne Avenue. Center Platform. At-Grade. Quad Track (2 LRT, 2 Metrolink). |
| <ul style="list-style-type: none"> La Verne Station: located east of E Street, just north of Arrow Highway. Center Platform. At-Grade. Double or Triple Track. | E | <ul style="list-style-type: none"> La Verne Station: located west of D Street adjacent to ULV campus, north of Arrow Highway. Center Platform. At-Grade. Triple Track. |

TABLE 2-4 *continued*
SUMMARY OF STATION AND ALIGNMENT OPTIONS TO THE BASE ALIGNMENT

| | | |
|--|----------|--|
| <ul style="list-style-type: none"> • La Verne Station: located east of E Street, just north of Arrow Highway. Center Platform. At-Grade. Double or Triple Track. • Pomona Station: located adjacent to existing Metrolink facility located west of Garey Avenue and accessible via West Santa Fe Street. Center Platform. At-Grade. Running with Metrolink at this point (3-tracks: 2 LRT, 1 Metrolink/freight). | <p>F</p> | <ul style="list-style-type: none"> • Multimodal Transfer Facility: La Verne Station located south of the rail right-of-way between E and White Streets, and bordered on the southwest by Arrow Highway and on the southeast by the Metrolink right-of-way. Center Platform. At-Grade. Triple Track (2 LRT, 1 Metrolink / freight). • Pomona Station: located east of Towne Avenue. Center Platform. At-Grade. Quad Track (2 LRT, 2 Metrolink / freight). |
| <ul style="list-style-type: none"> • Montclair Station located on north side of TransCenter. Center Platform. At-Grade. Double Track (Metrolink / freight tracks stay on southern alignment). | <p>G</p> | <ul style="list-style-type: none"> • Montclair Station located on south side of TransCenter, west of existing Metrolink station. Side Platforms. At-grade. Quad Track (2 LRT tracks, 2 Metrolink / freight). |



Prototypical Center Platform Concept



Prototypical Station Elevation and Cross Section

Figure 2-42: Typical Station Layout: Center Platform

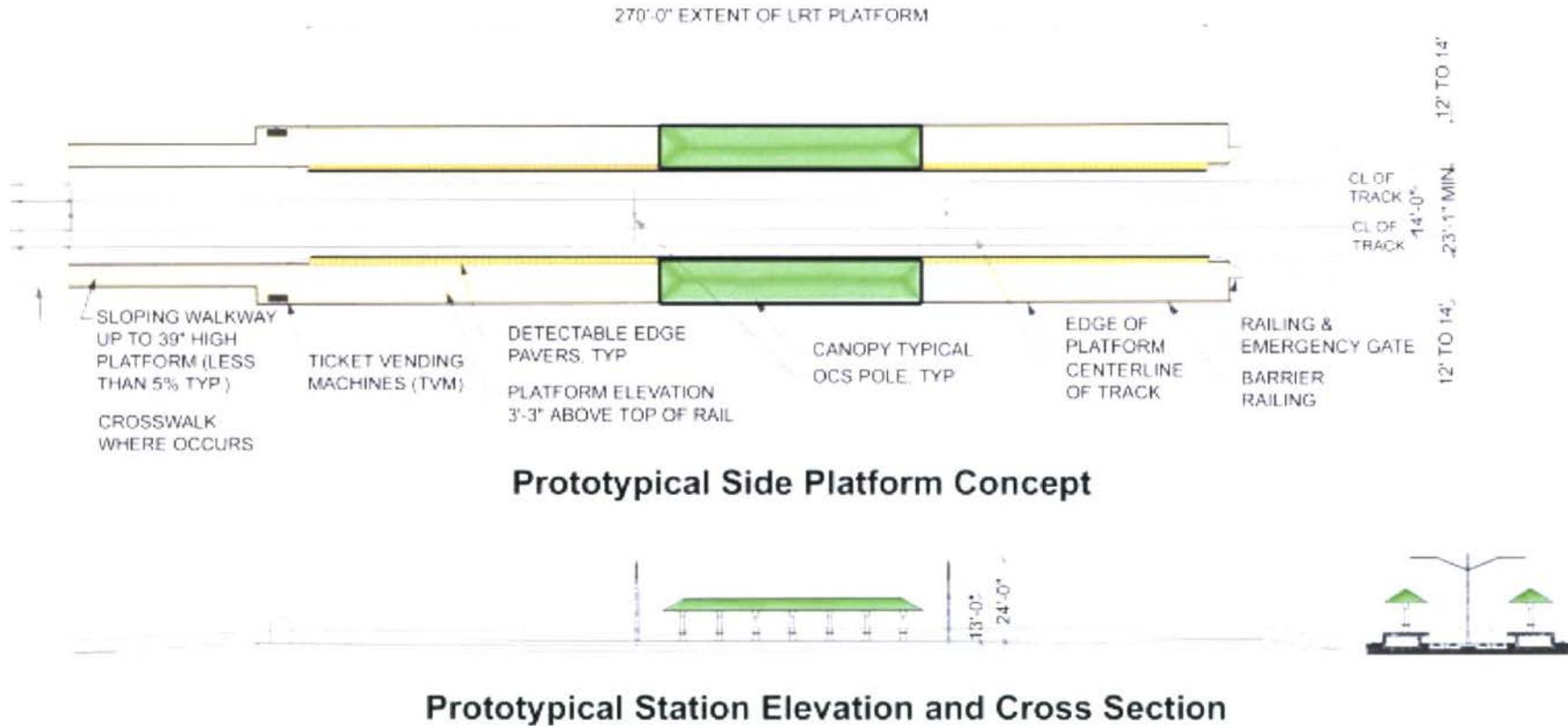
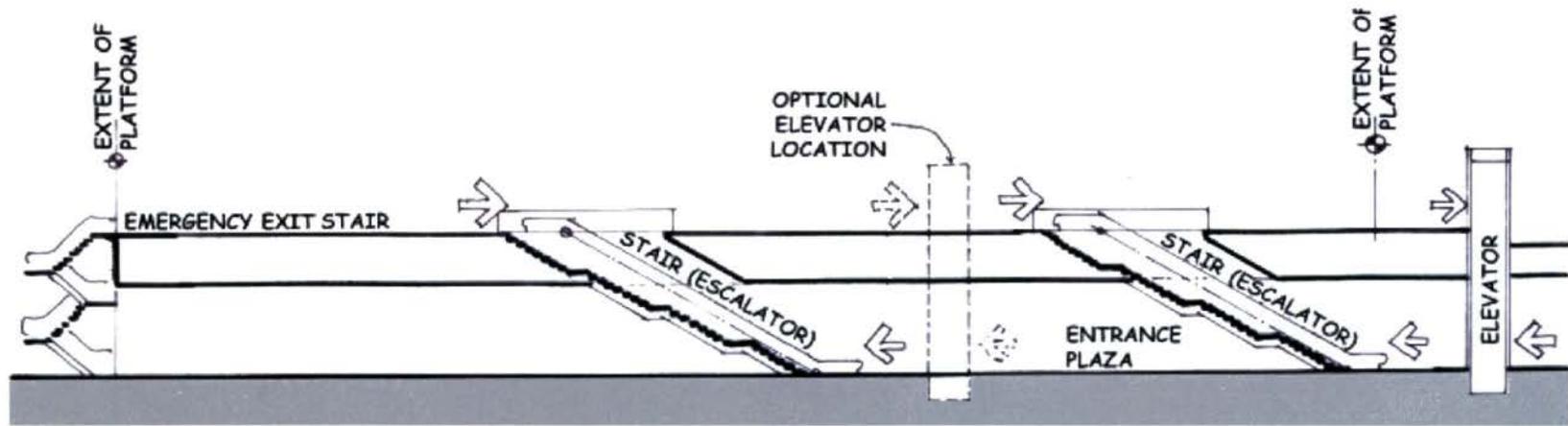
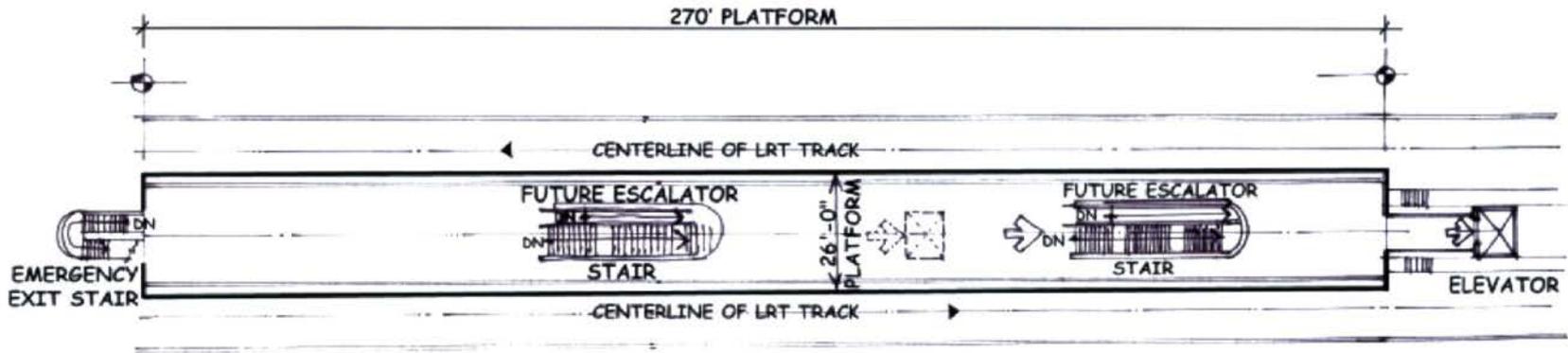


Figure 2-43: Typical Station Layout: Side Platform



TYPICAL AERIAL PLATFORM LONGITUDINAL SECTION



TYPICAL AERIAL PLATFORM PLAN



Figure 2-44: Typical Station Layout: Aerial Station

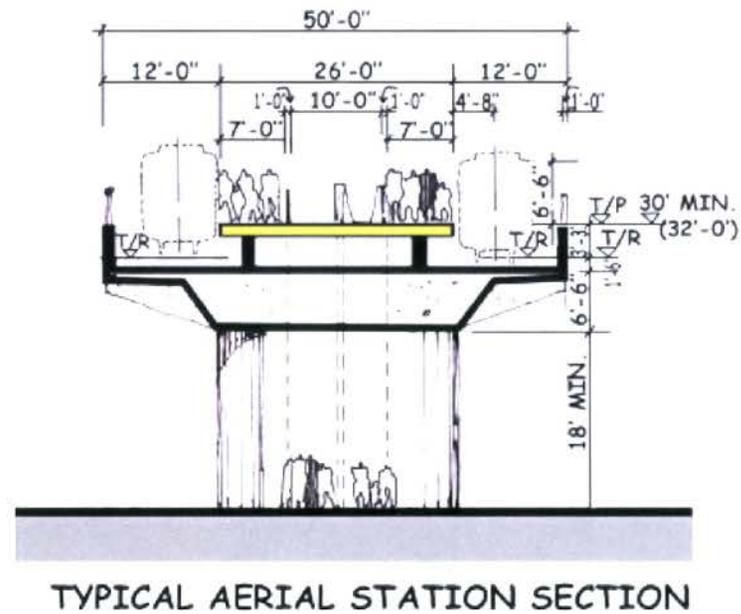


Figure 2-45: Typical Station Section: Aerial Station

Based on meetings with each city, preliminary station layouts and parking locations have been identified and analyzed. The proposed station and parking sites in each city are described below. Figures are provided for station layouts by city.

Arcadia

The City of Arcadia has two potential station sites, both located near the diagonal crossing of the intersection of North First Avenue and East Santa Clara Avenue. Parking for both options would take advantage of the city-owned parking lot located south of Wheeler Avenue between North Santa Anita Avenue and North First Avenue, and the land in the vicinity of the rail right-of-way and Front Street northwest of the intersection of North First Avenue and East Santa Clara Avenue. The City owned lot is currently utilized by customers of local shops and as parking for employees. This lot could be used with the construction of a parking structure in the future as transit ridership develops. The land in the vicinity of the rail right-of-way and Front Street would be available for parking and/or transit/passenger drop-off. In 2025, 800 parking spaces are forecasted as necessary for the Arcadia station. Refer to **Figures 2-46 through 2-48** for the proposed Arcadia station layouts.

Under base conditions, the LRT station would be located northwest of the North First Avenue/East Santa Clara Avenue intersection, within the rail right-of-way next to Front Street, as shown in **Figure 2-46**. This location would utilize a center platform with entry from the southern end at the intersection of North First Avenue/East Santa Clara Avenue. The platform begins 180 feet from the street curb to comply with California Public Utilities Commission regulations. Potential parking or passenger drop off would be located adjacent to the station at Front Street.

Option A would be located southeast of the intersection of North First Avenue and East Santa Clara Street. Due to the narrowing of the railroad right-of-way, this option would have side platforms, and access would be provided from the north at the aforementioned intersection. Option A could be implemented for either at-grade operation of the LRT line across Santa Anita Avenue, or for a grade separation of the LRT line above Santa Anita Avenue, which is at the request of the City of Arcadia. Refer to **Figure 2-47**.

The City of Arcadia has also expressed interest in having grade separations at Santa Anita Avenue and at the intersection of First Avenue and Santa Clara Avenue. This would require an aerial station in this area, which is Option B. The station in Option B would be located in the same location as the initial station, but would be elevated approximately 30 feet above grade. Refer to Figures 2-44 and 2-45 for typical aerial station layouts. **Figure 2-48** shows the Arcadia aerial station layout.

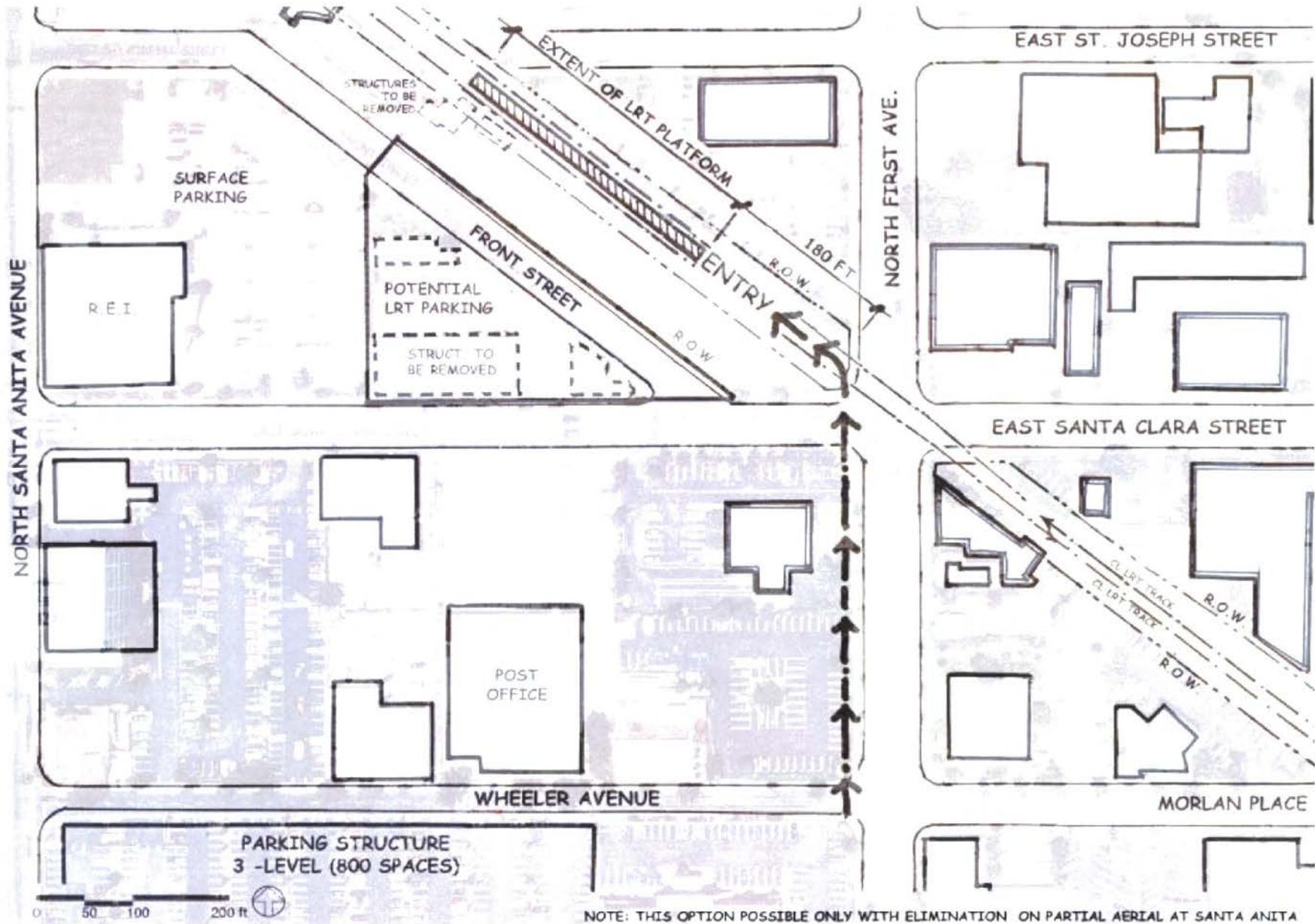


Figure 2-46: Site Plan: City of Arcadia Station

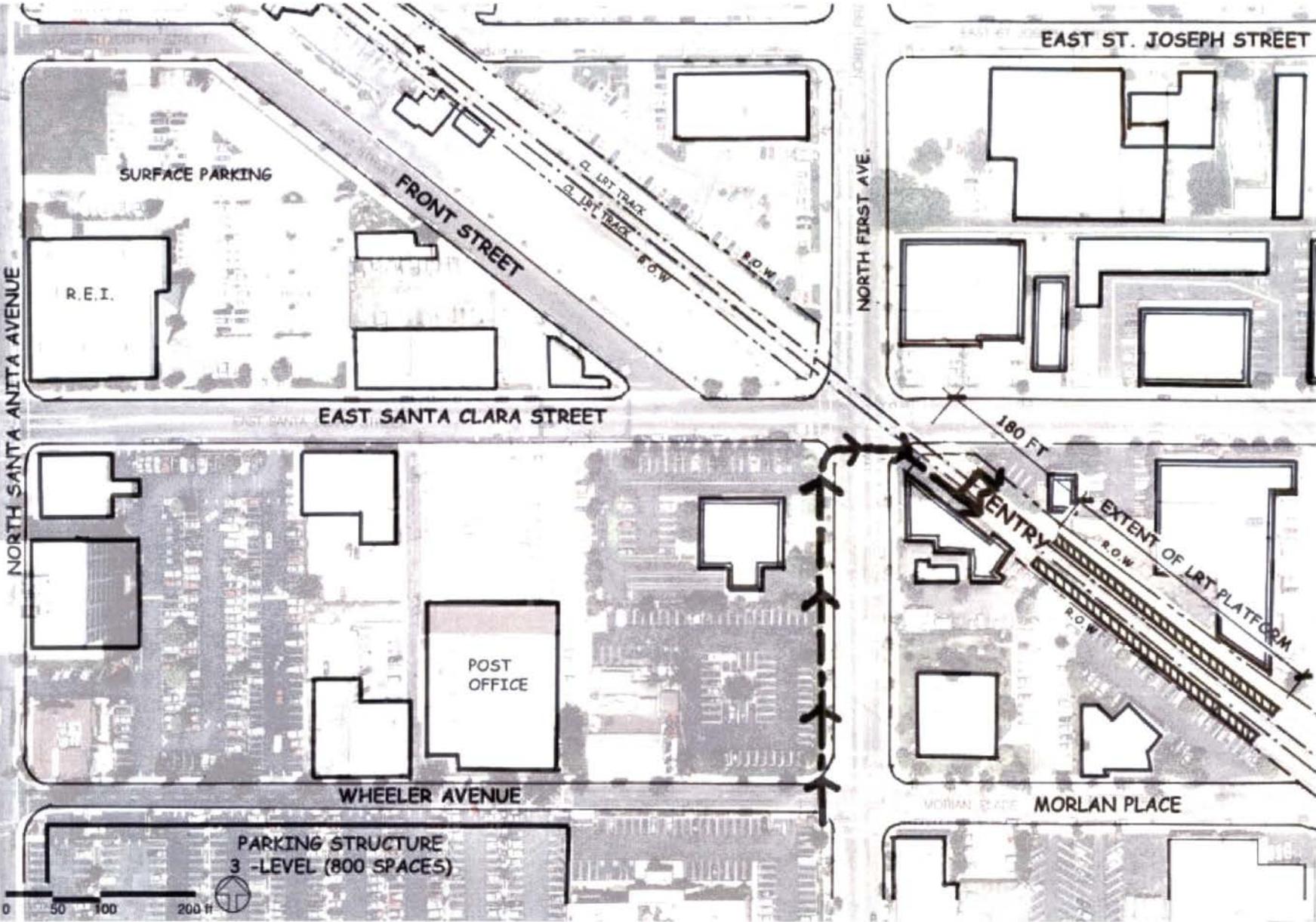


Figure 2-47: Site Plan: City of Arcadia Station, Option A

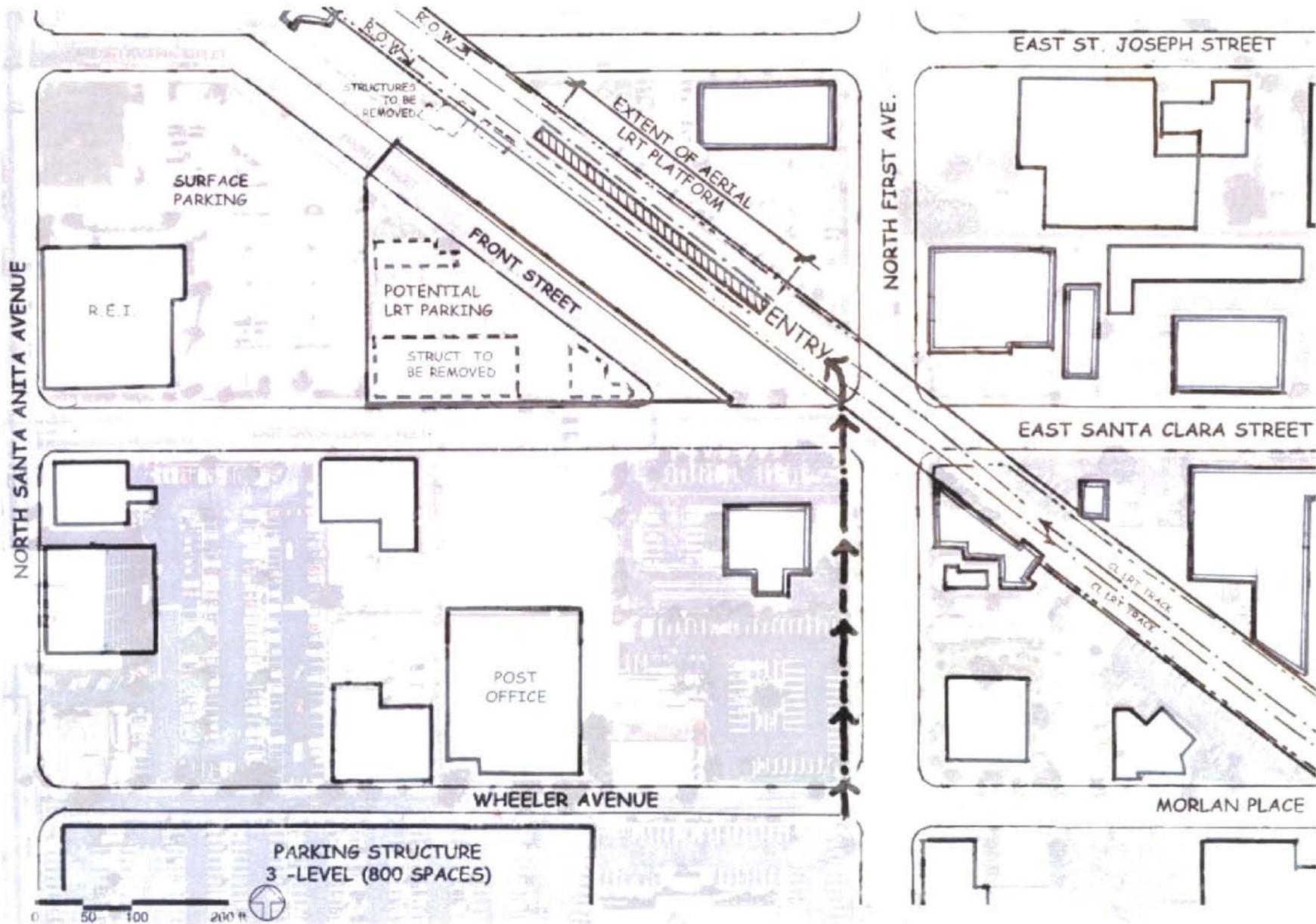


Figure 2-48: Site Plan: City of Arcadia Station, Option B

Monrovia

The City of Monrovia has a historic Santa Fe depot located on Myrtle Avenue just south of West Pomona Avenue. The City is in the process of restoring the depot and creating a new transit center, including a surface parking lot of 205 spaces. Foothill Transit will provide bus service to the transit center in addition to the proposed Gold Line LRT station. The station would be located just west of the historic depot, adjacent to and connected to the new transit center. For the Double Track Configurations, the station would be a side-platform station (as shown in Figure 2-43). For the Triple Track Configuration, the station is a center-platform station (as shown in Figure 2-42) closer to the existing Santa Fe Depot. Refer to **Figures 2-49 and 2-50** for illustrations of the alternate station layouts. Approximately 600 parking spaces would be required at the Monrovia station in 2025. Parking demand associated with LRT service would be accommodated by the new transit center lot and a proposed parking structure on the south side of the alignment. Creation of the parking structure would require the acquisition and demolition of commercial structures to the southwest of the station.

Duarte

The City of Duarte station would be sited near the City of Hope Medical Center. The City of Hope is an internationally recognized hospital and is a major destination in Duarte. The rail right-of-way is at its narrowest at this point, and, thus, the station site would require expansion into the parking lane of Duarte Road if the Triple Track Configuration were implemented. For the Double Track Configurations, expansion in the parking lane would not be necessary. Parking is currently not allowed along this stretch of Duarte Road, as per the City of Duarte. A center platform (as shown in Figure 2-42) is proposed for this location due to the narrow right-of-way. The estimated 250 parking spaces that are forecasted to be required by 2025 are proposed to be accommodated in a parking structure located on City of Hope property. The proposed structure would be located on a current surface parking area, and would be jointly utilized by transit patrons and City of Hope visitors and staff. Refer to **Figure 2-51**.

Irwindale

The station location for the City of Irwindale would be located adjacent to the Miller Brewing facility, west of Irwindale Boulevard. Vehicular access for the station would be provided via Irwindale Boulevard and a frontage road called Montoya Road. Approximately 700 parking spaces would be required by 2025. These parking spaces would be provided in a parking structure, to be located on a vacant site south of the station. Refer to **Figure 2-52**.

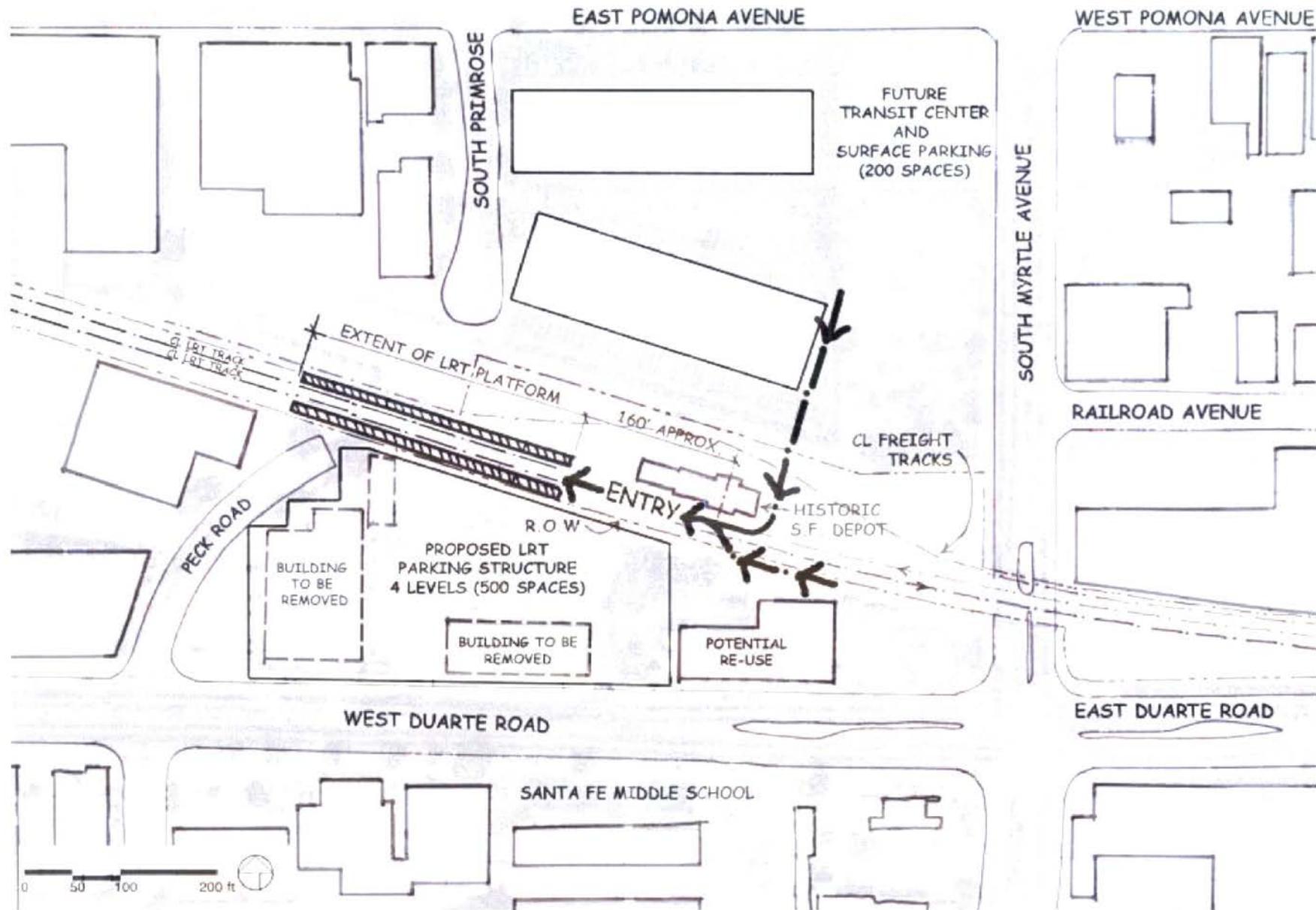


Figure 2-49: Site Plan: City of Monrovia Station, 2-Track Alternative

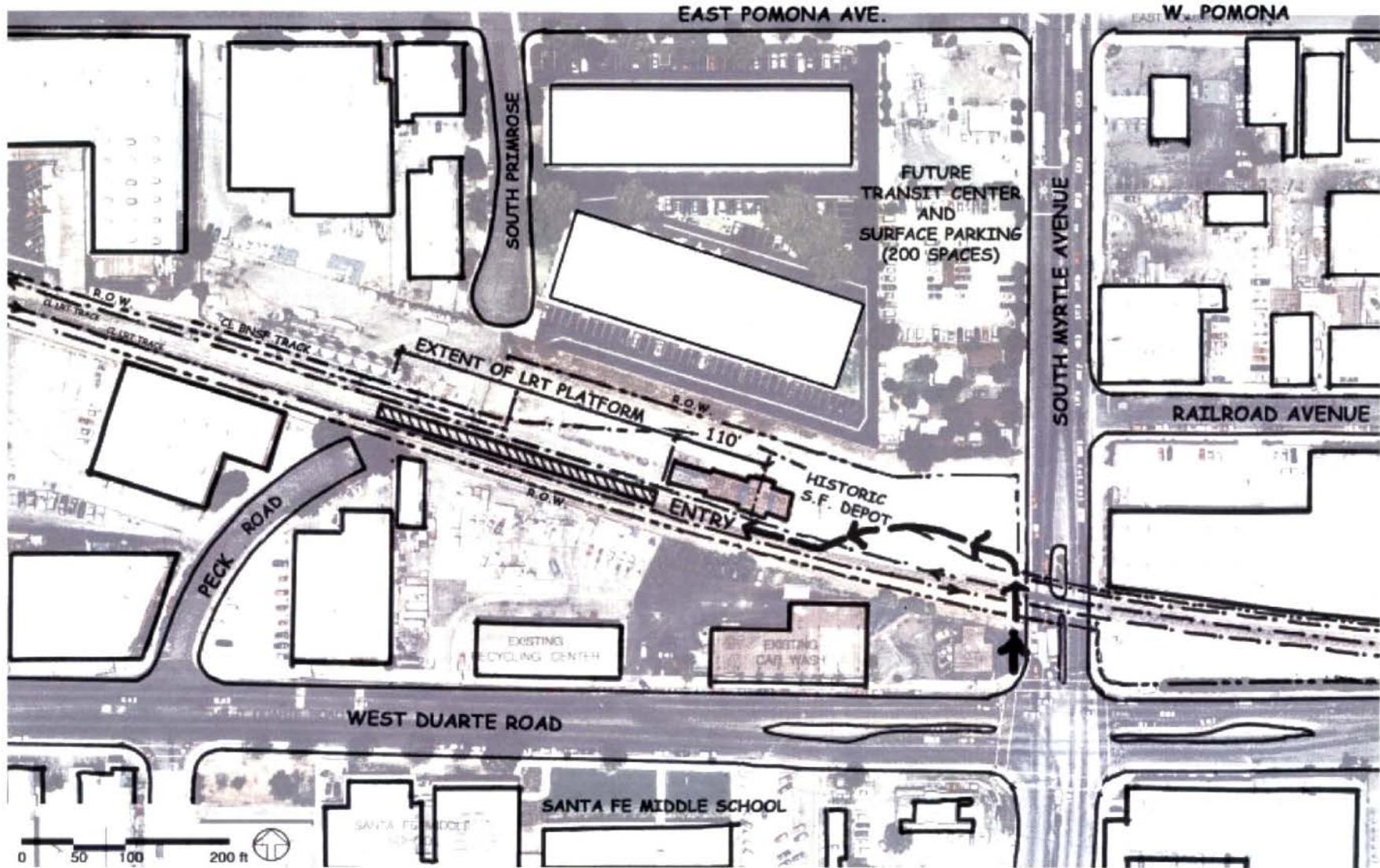


Figure 2-50: Site Plan: City of Monrovia Station, 3-Track Alternative

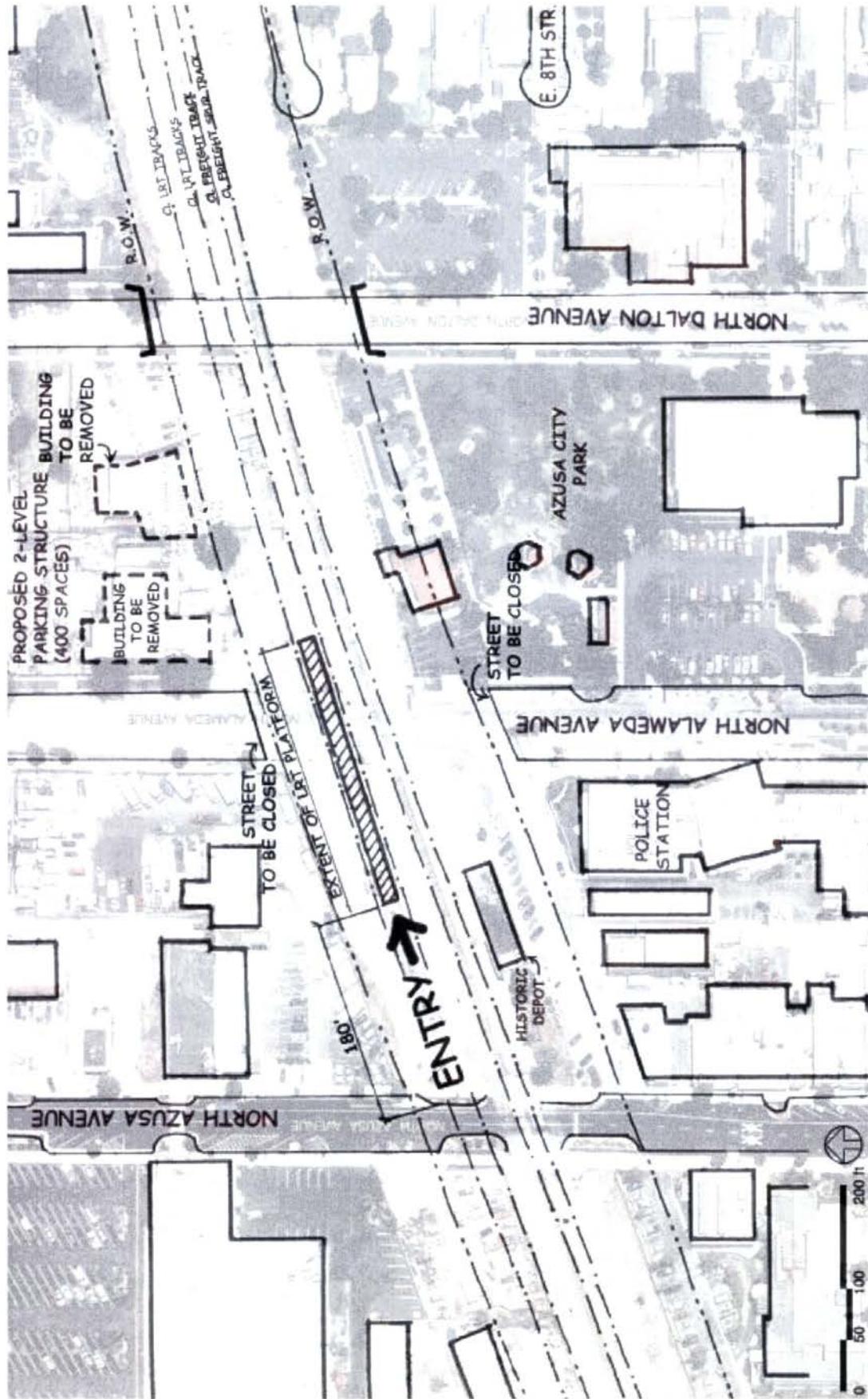


Figure 2-53: Site Plan: City of Azusa, Alameda Avenue Station

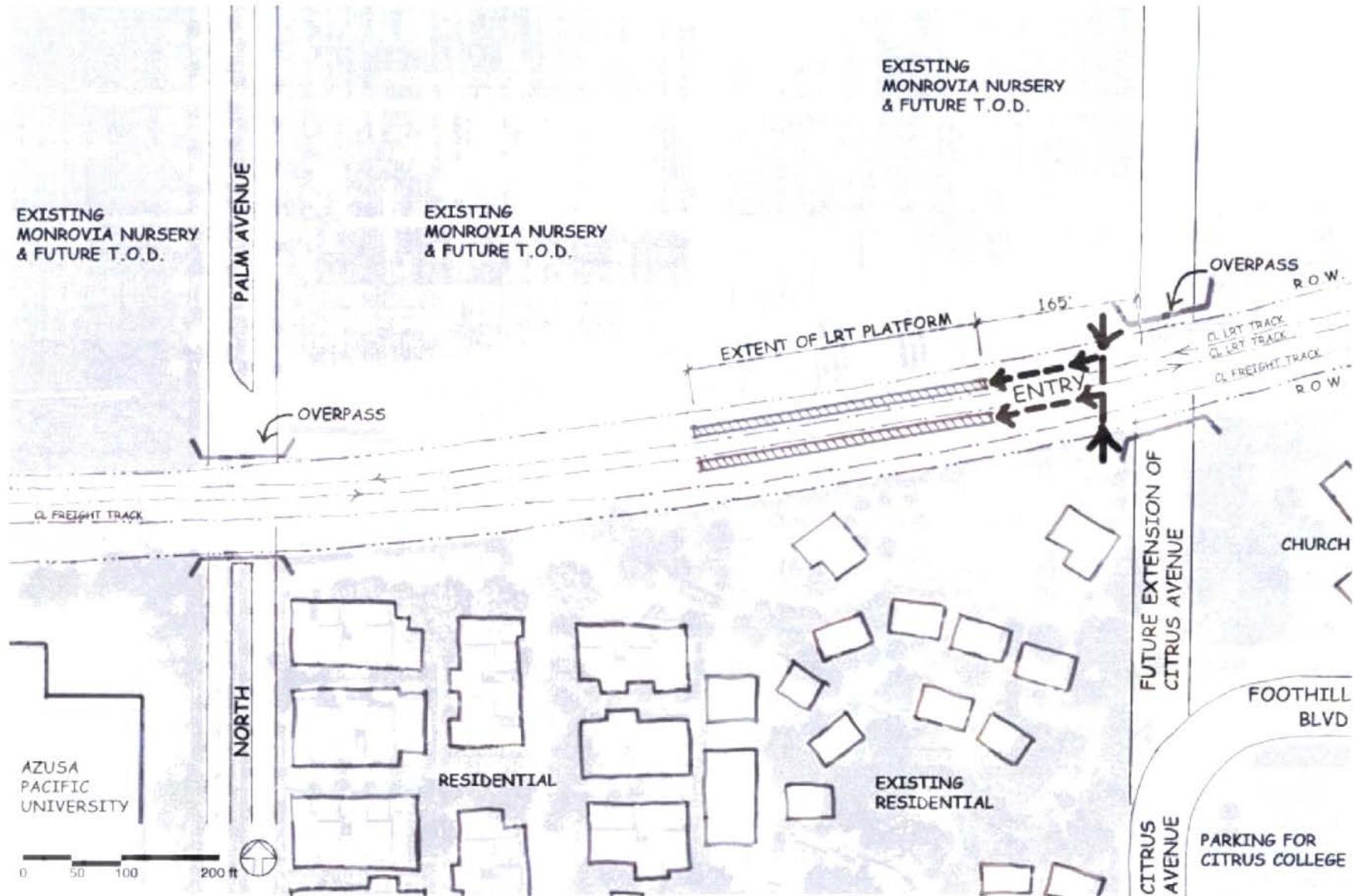


Figure 2-54: Site Plan: City of Azusa, Citrus Avenue Station

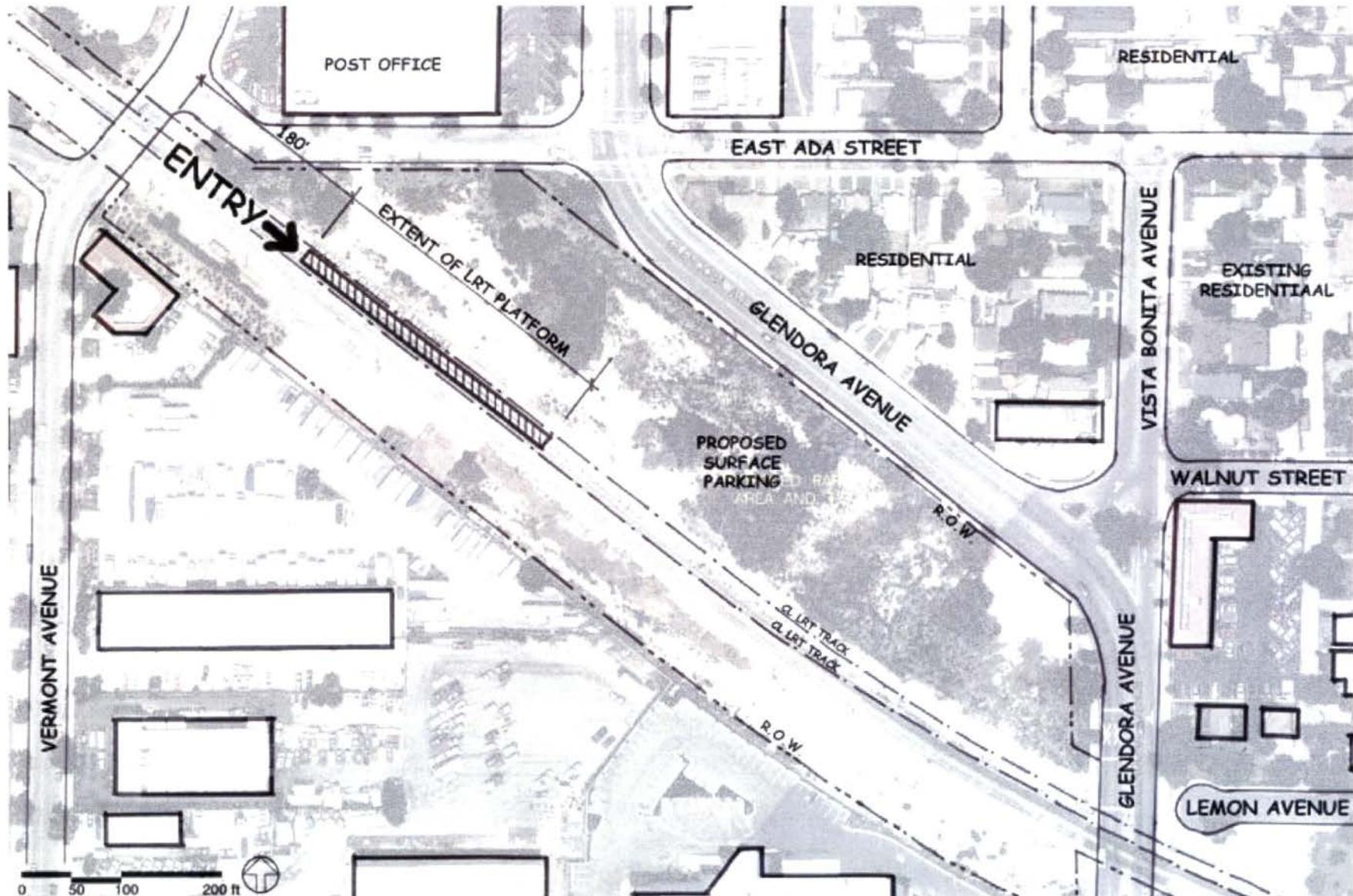


Figure 2-55: Site Plan: City of Glendora Station, 2-Track Alternative

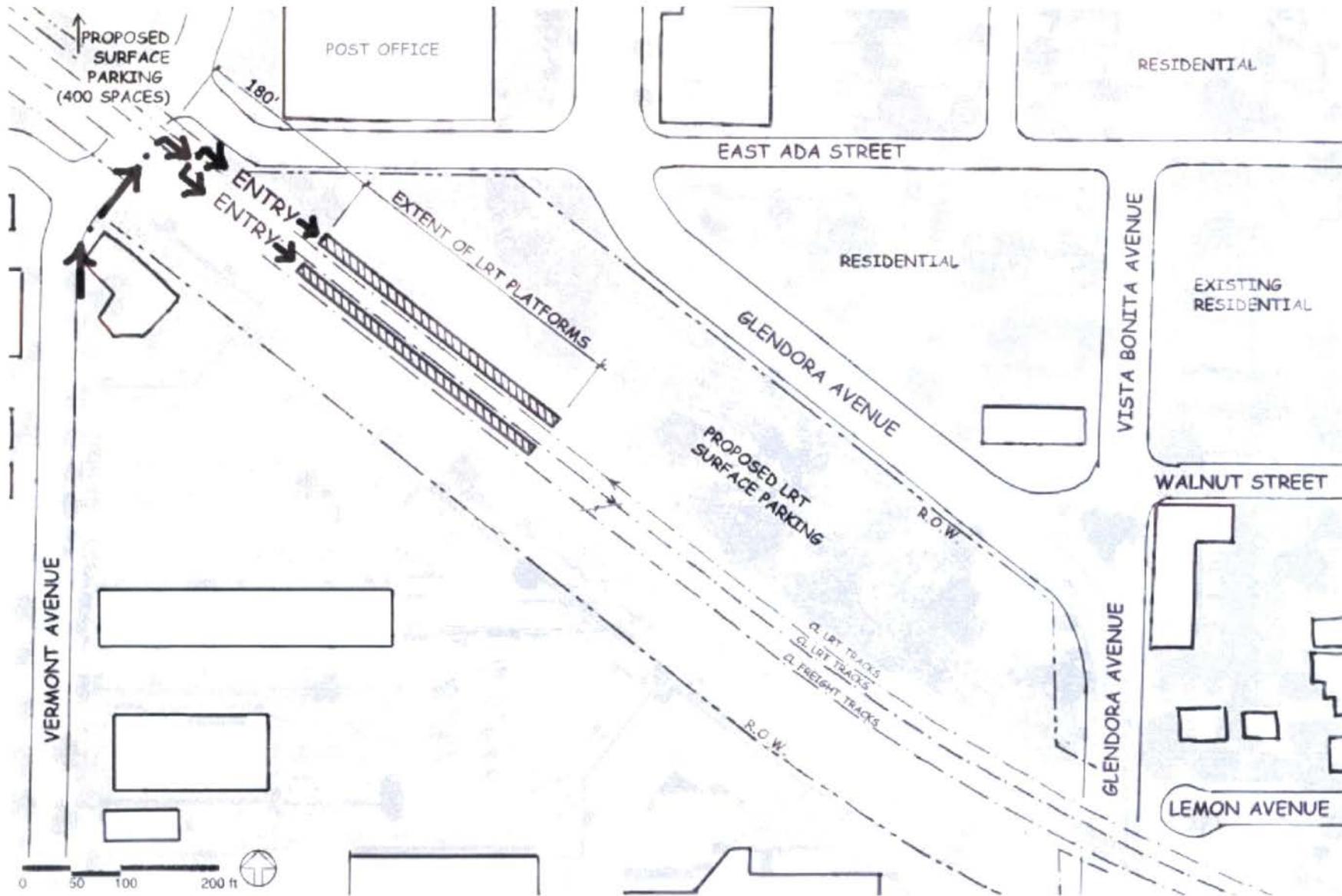


Figure 2-56: Site Plan: City of Glendora Station, 3-Track Alternative

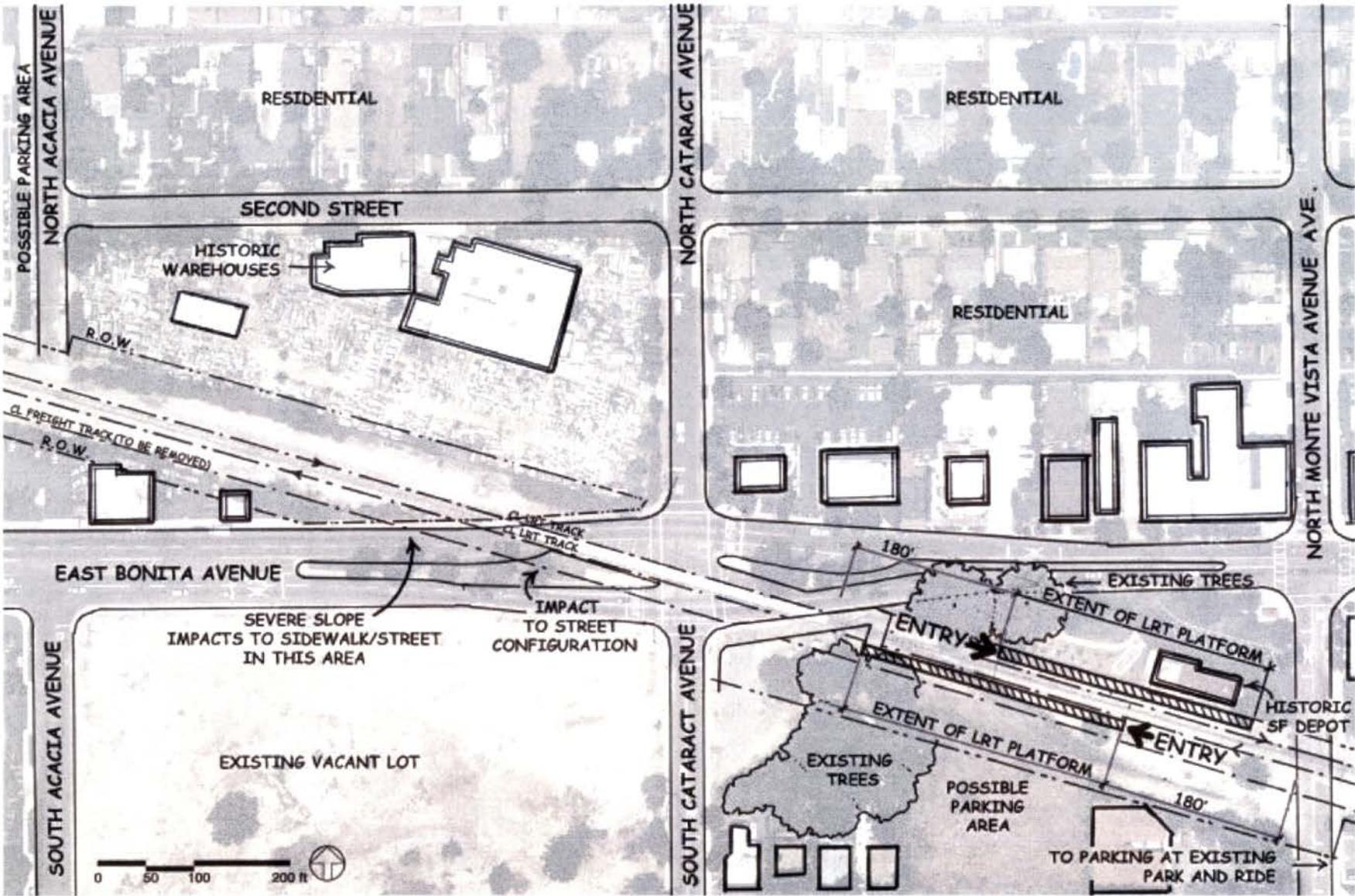


Figure 2-57: Site Plan: City of San Dimas Station, 2-Track Alternative

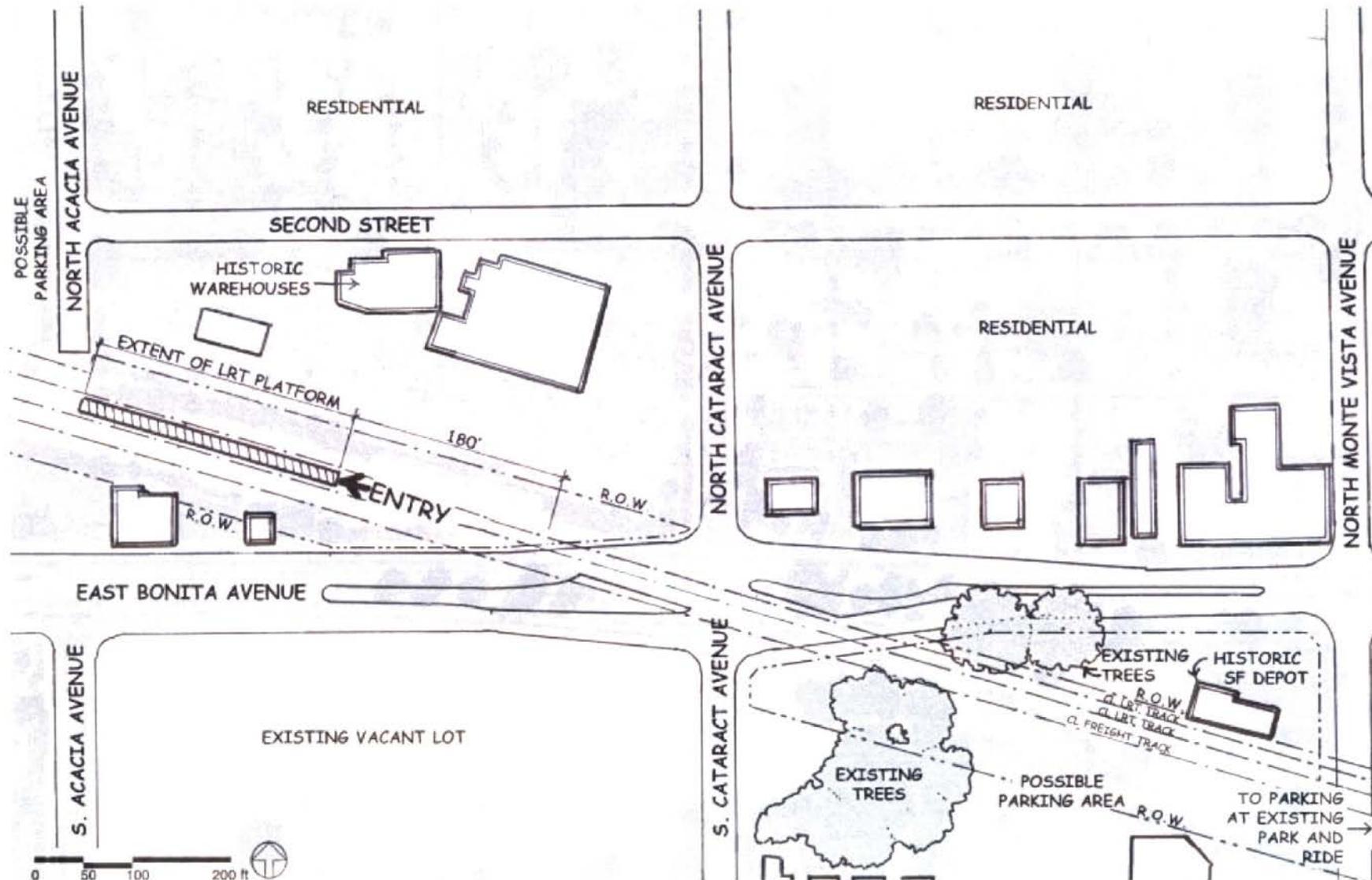


Figure 2-58: Site Plan: City of San Dimas Station, 3-Track Alternative

Approximately 750 parking spaces would be needed at the San Dimas station in 2025. For the LRT station at the historic depot, some parking demand could be met at the existing park-and-ride lot that is located nearby, east of Monte Vista Avenue. Three other locations were identified by the city as possible locations for parking. Surface parking could be provided at one of these sites, which is located west of Cataract Avenue and north of Bonita Avenue. This site includes the historic La Verne Orange Association building, which would remain on the site. Two locations for parking structures were identified. The first of these is located west of Acacia Avenue, at its intersection with First Street. The second is located west of Eucla Avenue, at its intersection with Second Street. Either of the parking structure locations would require the acquisition and demolition of commercial buildings.

La Verne

The station for the City of La Verne would be located east of E Street, just north of Arrow Highway. This location would have a center platform (as shown in Figure 2-42), and is illustrated in **Figure 2-59**. In addition, there are several options for the station site.

Option C, for the Double Track Configurations, and Option E, for the Triple Track Configuration, would be located west of D Street, adjacent to the University of La Verne campus and just north of Arrow Highway. This location would have a center platform (as shown in Figure 2-42), and is illustrated in **Figure 2-60**. This figure illustrates Option C, Double Track, and gives a good view of Option E, Triple Track. Option E is identical except for an additional through-track to the south of the LRT tracks.

Option D, for the no-freight configuration, and Option F, for the freight on Metrolink configuration, would be located adjacent to a potential multimodal transfer facility that would be built on the triangle of land south of the rail right-of-way between E and White Streets, and bordered on the southwest by Arrow Highway and on the southeast by the Metrolink right-of-way. This location would have a center platform (as shown in Figure 2-42) for LRT operations. Refer to **Figure 2-61**. This figure illustrates Option D and gives a good view of Option F. Option F is identical in that freight will share the Metrolink track on the south. This facility is tentatively planned to contain a light rail station, a Metrolink station, a bus transfer facility, patron parking, and kiss-and-ride access. The City of La Verne, the City of Pomona, the Fairplex, Foothill Transit, Metrolink, and the Construction Authority are in discussions regarding the potential for such a regional transportation facility.

If the multimodal facility were built (Options D and F), instead of following the current Metrolink right-of-way and turning southwest at White Street, the Metrolink tracks would continue west along a shared Gold Line alignment parallel to and north of Arrow Highway until approximately San Dimas Canyon Road. At this point, Metrolink tracks would cross over Arrow Highway and reunite with the Metrolink right-of-way on the south side of Arrow Highway. Additional parking, beyond that identified for LRT stations, may be required by Metrolink and Foothill Transit, according to their planning requirements. Those needs are not known at this time and would be developed in response to service demands. Funding issues and partnering agreements would be worked out separately between the various groups involved.

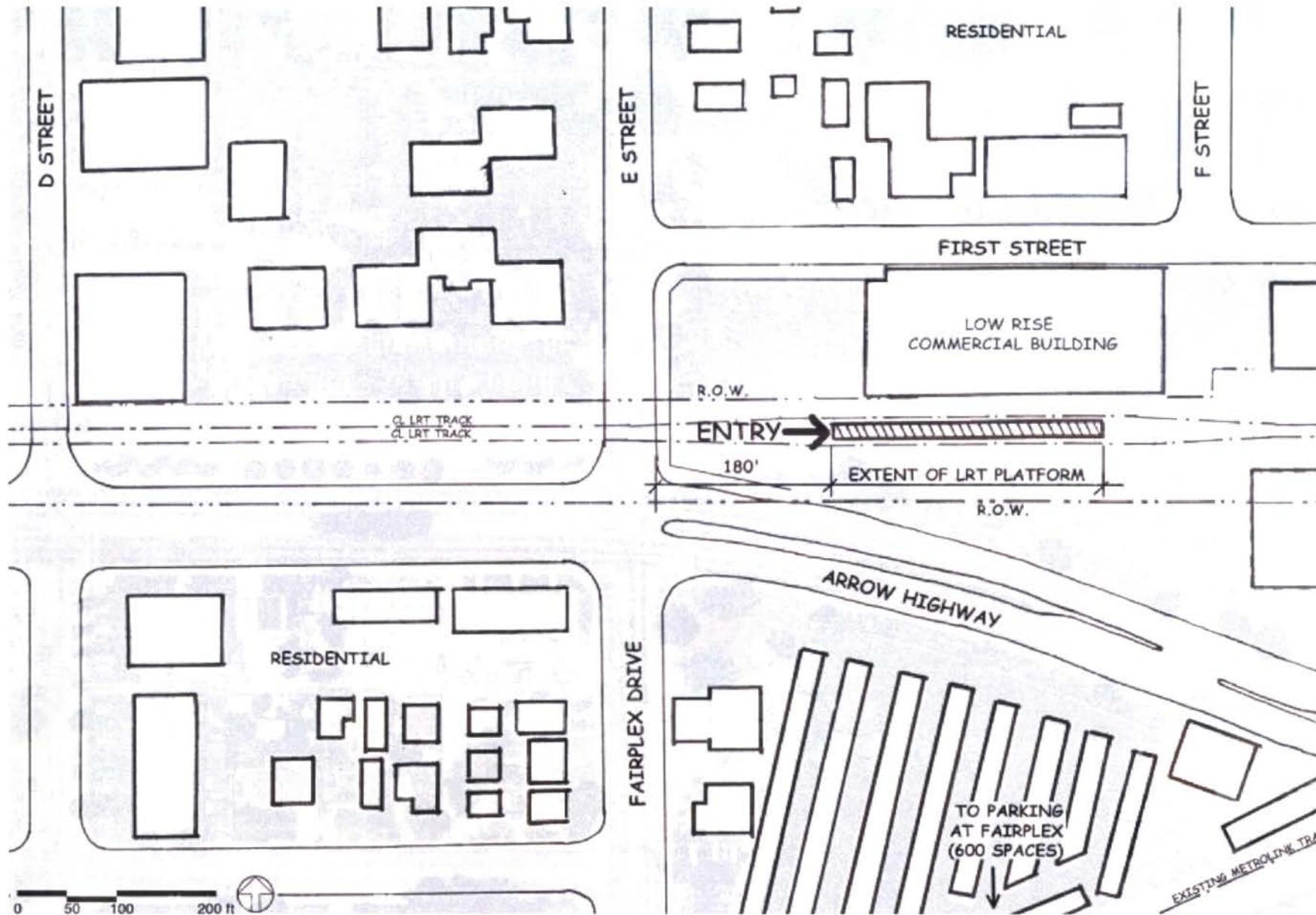


Figure 2-59: Site Plan: City of La Verne E Street Station

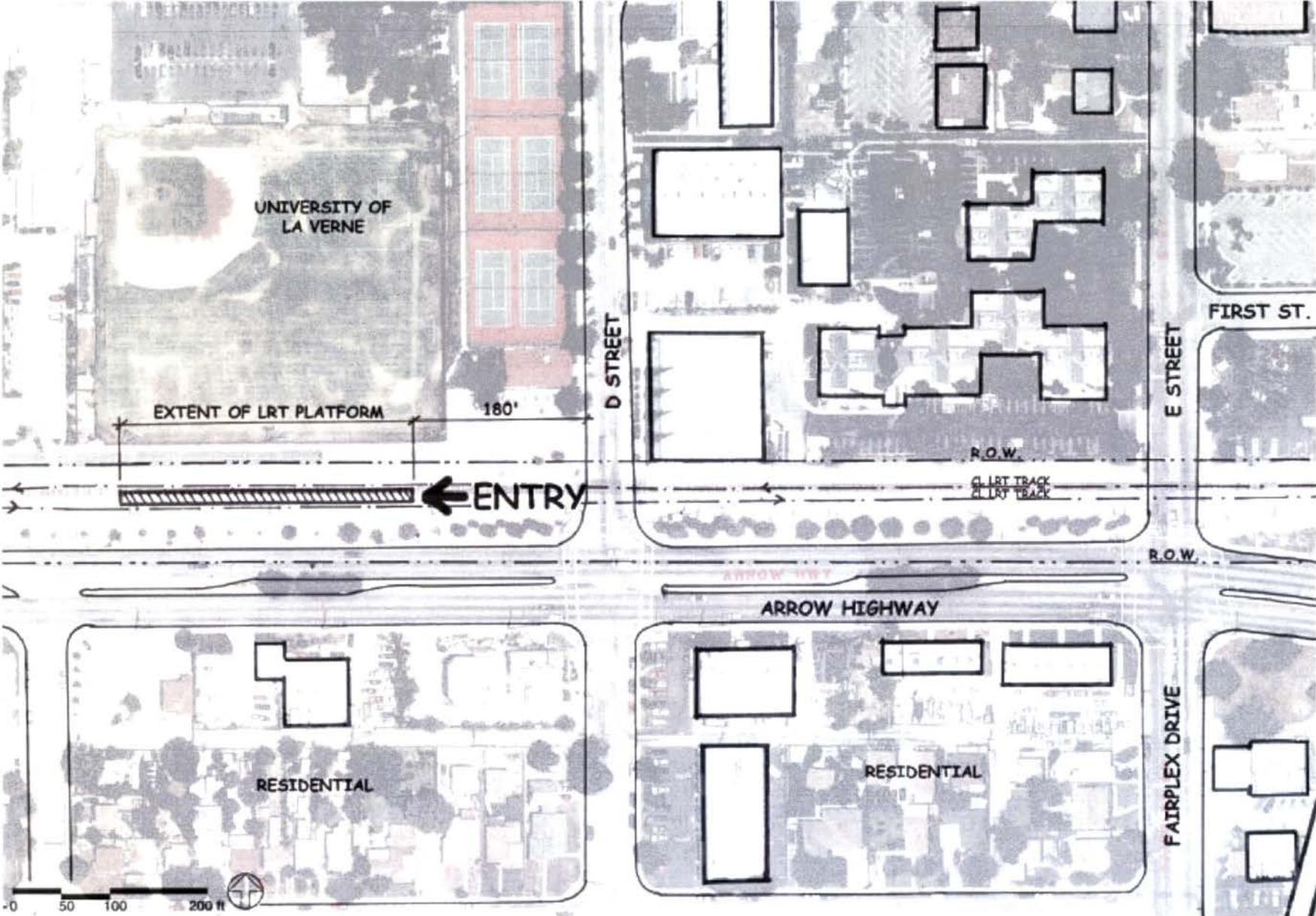


Figure 2-60: Site Plan: City of La Verne D Street Station, Option C

Option G would locate the LRT station on the south side of the TransCenter, just west of the existing Metrolink station. This location would have side platforms and have access from the eastern end of the LRT platforms. The existing Metrolink station would need to be relocated to the south side of the rail right-of-way in order for the LRT tracks to be placed on the north side of the right-of-way. The southern LRT platform would be located immediately next to a relocated Metrolink side platform. Refer to **Figure 2-66**.

The City of Upland, located directly to the north of the TransCenter, has a number of housing and commercial developments in the planning stages for the land adjacent to the north side of the TransCenter.

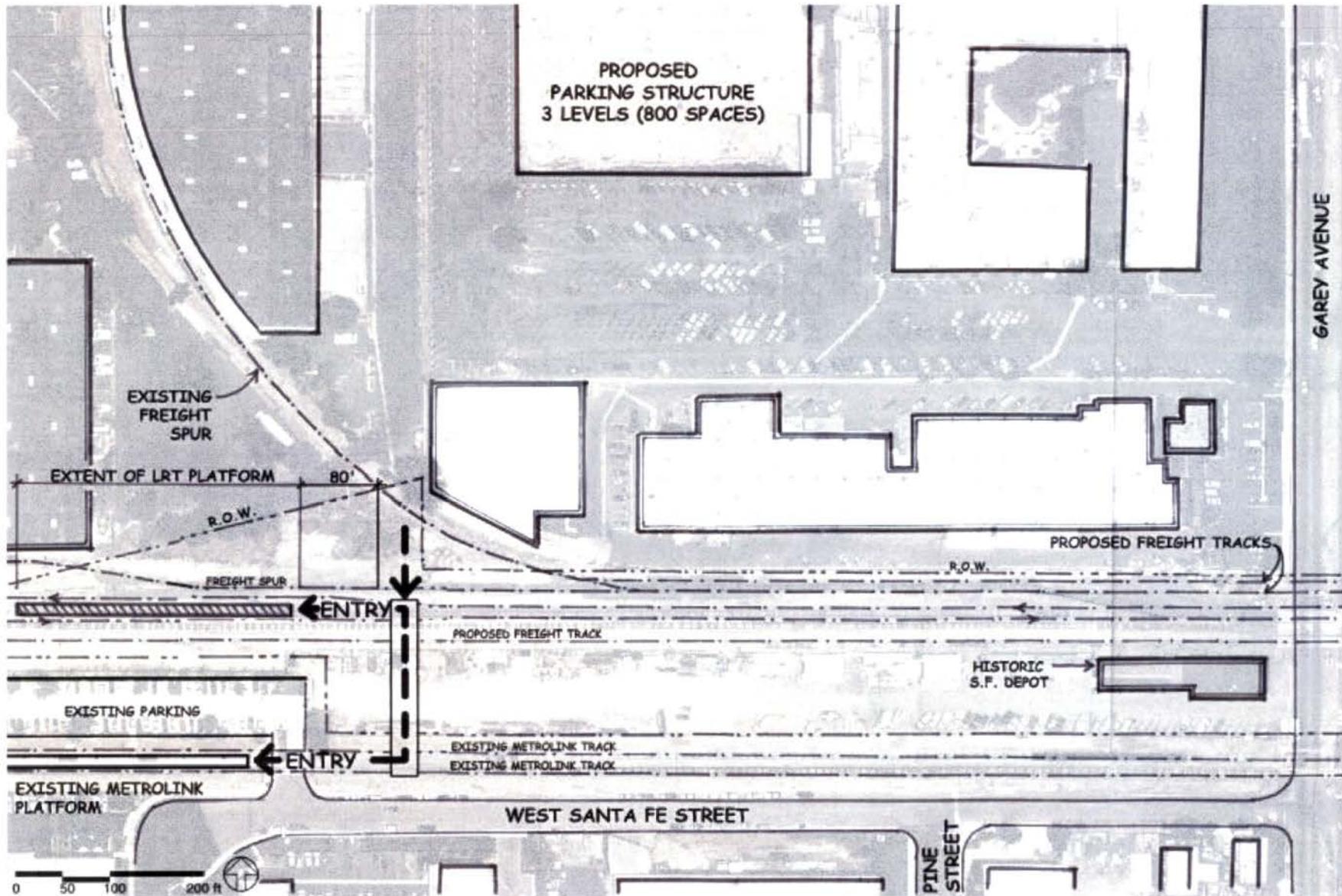


Figure 2-62: Site Plan: City of Pomona Garey/Metrolink Station

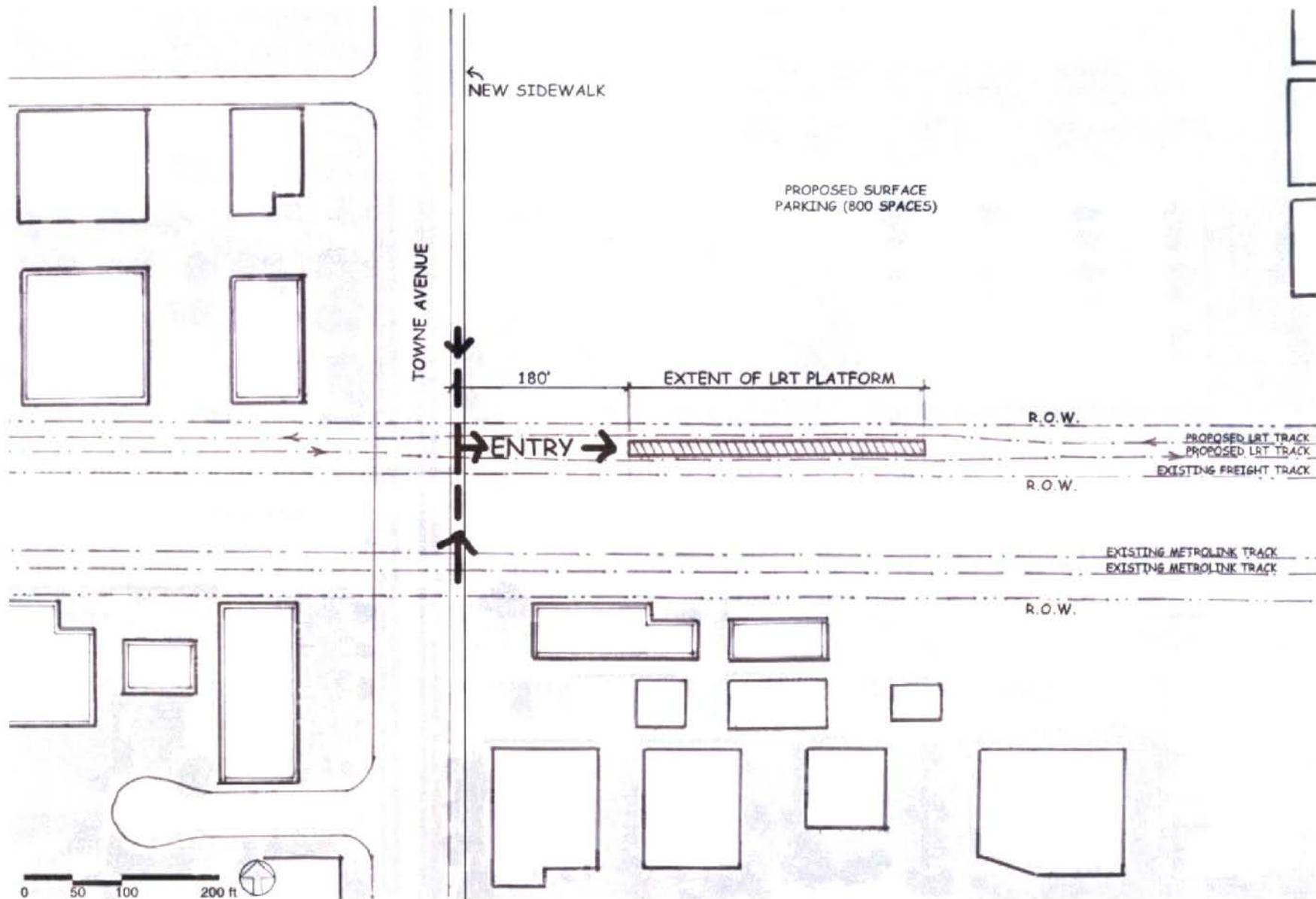


Figure 2-63: Site Plan: City of Pomona Towne Avenue Station, Option D

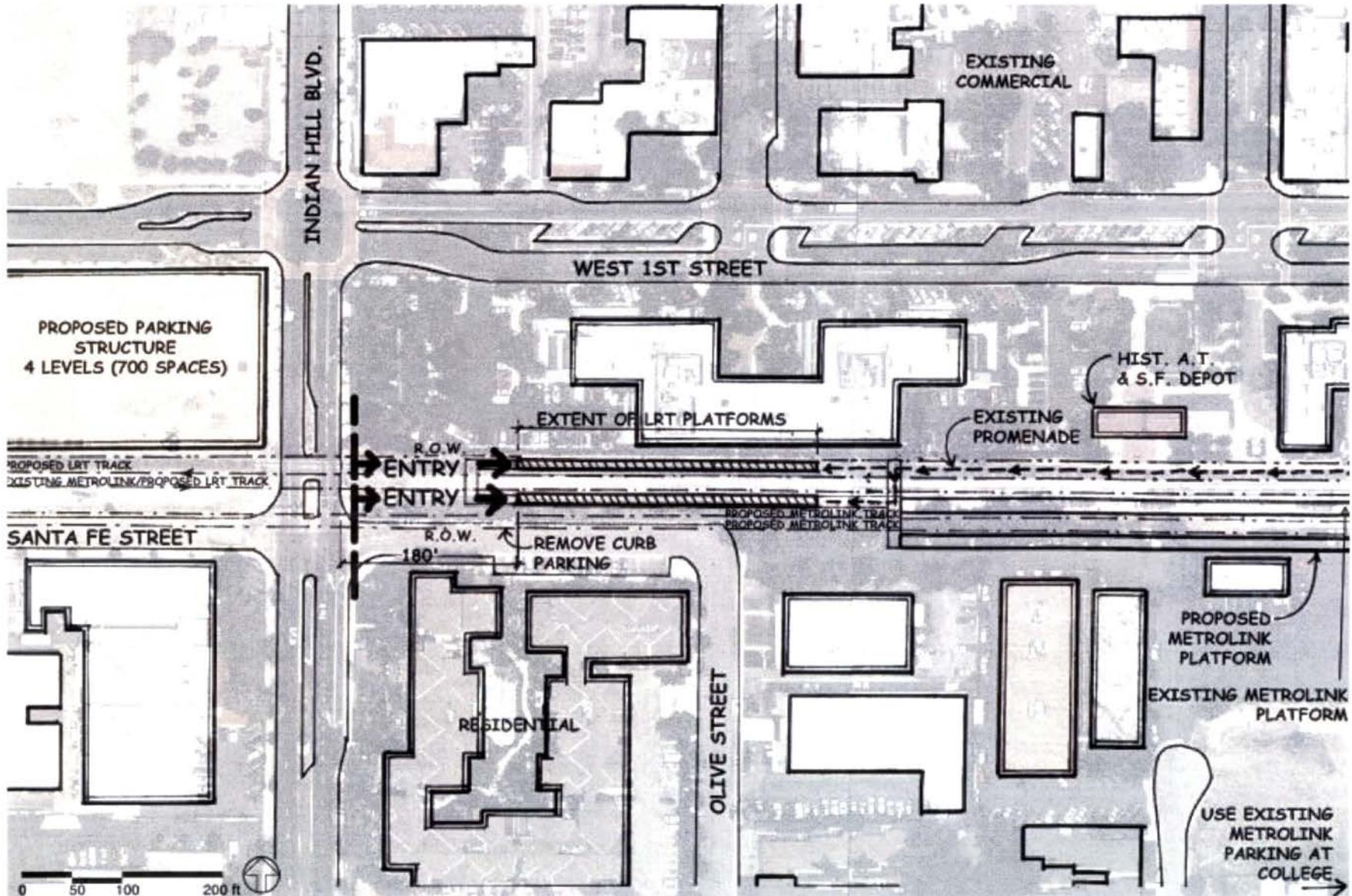


Figure 2-64: Site Plan: City of Claremont Station

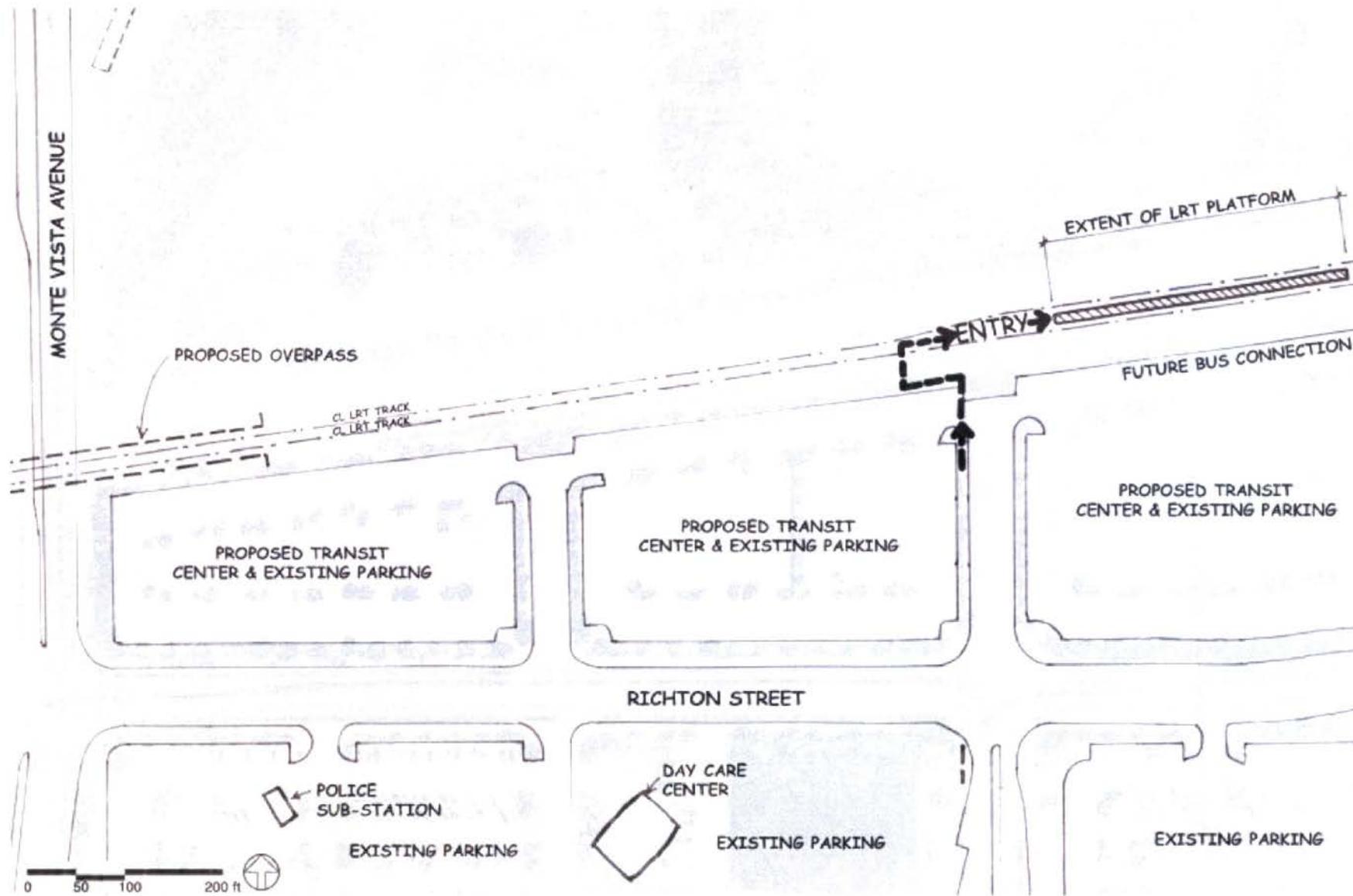


Figure 2-65: Site Plan: City of Montclair Station, (North)

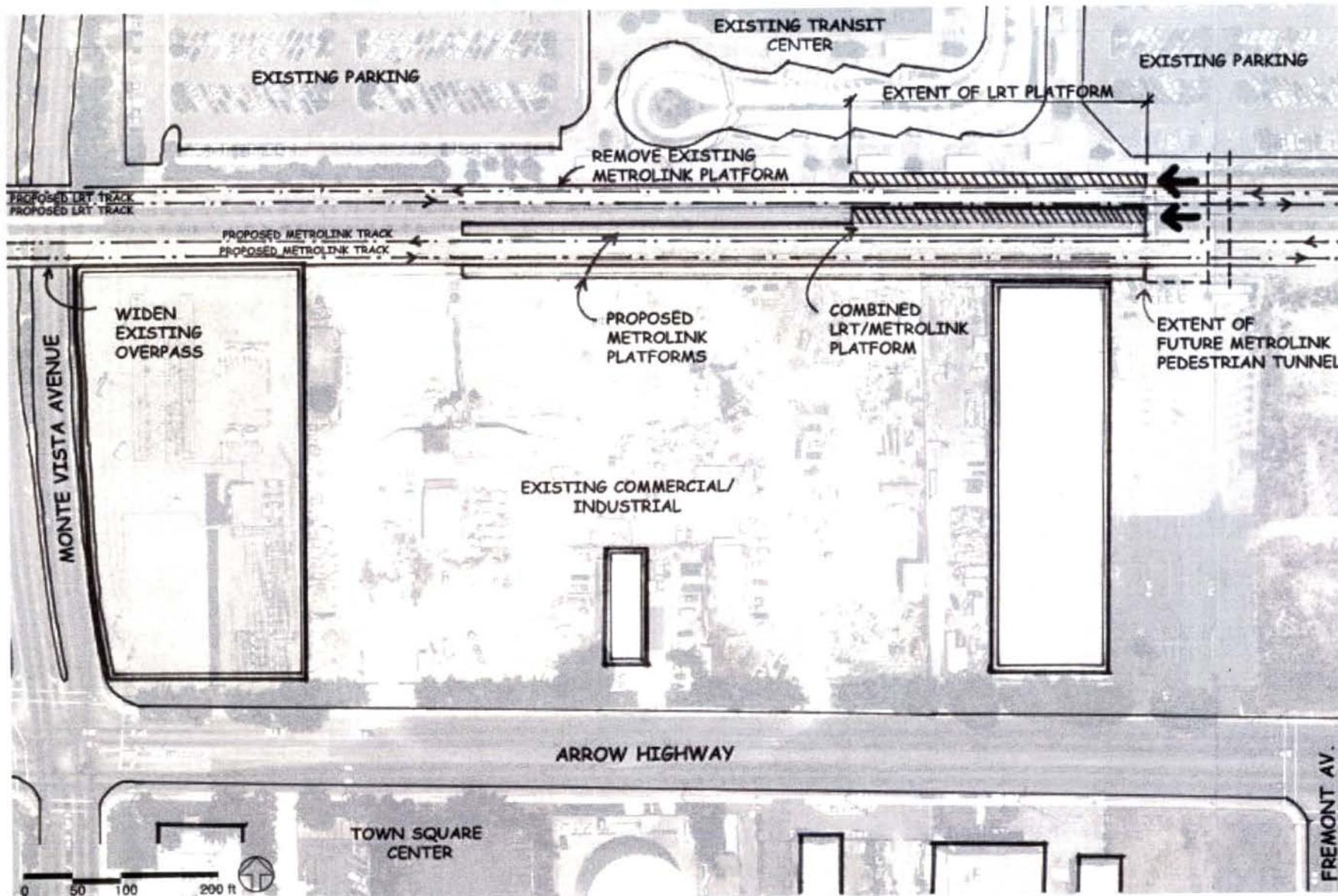


Figure 2-66: Site Plan: City of Montclair Station (South), Option G

Maintenance and Operations Facility

The Irwindale Maintenance and Operations Facility is proposed to be located on Miller Brewing Company property that is currently vacant, or that is leased for truck storage. Refer to Volume II of the EIS/EIR for the Maintenance and Operations Facility layout and **Figure 2-67** for a site plan. The proposed Maintenance and Operations Facility site is west of the brewing facility. It would utilize heretofore “unusable” elongated and irregular segments of property that abut an abandoned gravel quarry that is both sizable and deep (reaching a maximum depth of approximately 250 feet), as well as a heavily secured area used for liquor tax calculations for outgoing product shipments from the Miller Brewing facility. The proposed 33-acre site would not interfere with the present rail operations serving the brewery. Access to the proposed site would be grade-separated from the railroad operations that now occur, and may occur, on the proposed LRT alignment. There is also a potential for expanding the facility an additional 8 or 9 acres, which would encompass the northerly swath of land adjacent to the LACMTA-owned railroad right-of-way.

The conceptual design of the Maintenance and Operations Facility has been based on a need to adequately handle all fleet requirements for an ultimate Gold Line operation that would include the Eastside Extension, Phase I, and Phase II. The impacts associated with the site are discussed in Chapter 3, and are entirely “owned” by Phase II. Capital costs for the facility would be shared between the Eastside Extension, Phase I, and Phase II. The proposed site would be conveniently located at about the midpoint of this combined route. Vehicular access to accommodate delivery of goods and supplies is very close to the I-210/Irwindale Avenue interchange.

□ Brief Description of Facility

The terrain of the proposed site slopes slightly downward (in the order of 1 percent) in a southwesterly direction from the proposed LRT mainline. The area best suited for maintenance, due to its broader expanse and proximity to goods and supplies, is located about 3,000 feet away and about 30 feet lower than the LRT mainline (which is at approximately elevation of 556.5 feet). The main entrance to the facility would be off of West First Street (an elevation of 523.5 feet) at the southeasterly corner of the property. The maintenance area would be level at an elevation of 526.5 feet, and the first 1,800 feet of the storage yard would be constructed with a slight northerly ascending grade of 0.20 percent, followed by a descending grade of 0.24 percent to the LRT mainline. At this point, the yard lead tracks would be about 21 feet lower than the proposed LRT mainlines, making it convenient to grade separate the railroad by way of an underpass. There are three underpasses under the freight line, for two inbound tracks and one outbound track between the yard and the mainline.

□ Rail Access to the LRT Mainline

In designing the track connections to the LRT mainline, two options were considered that would allow a single track connection in each direction along the mainline, while also maintaining grade separation from the railroad. Option 1 provided aerial structures over the railroad and Option 2 called for railroad underpasses. After extensive analysis, including costing, construction phasing, railroad operations, and site conditions, the railroad underpass option had little or no adverse slope to contend with and turned out to be slightly less costly and have greater overall benefits than the aerial option.

Time-saving measures, such as 48-hour freight railroad closures to quickly construct the required underpasses using precast concrete tunnel segments, would seem appropriate since the brewery generally operates six days a week and the effective closure for brewery shipping would only be one day. This matter was discussed with BNSF personnel who cited similar examples on the recently completed

Alameda Corridor Project. It should be noted that constructing aerial structures would likely call for long periods of “slow order” railroad operations, which would only add to the cost differential of the two options.

Building on Option 2, an Option 3 was subsequently developed that added a second east connector that would allow separate dedicated inbound and outbound tracks for vastly improved operations to and from the facility.

□ Operational Capabilities

The Irwindale Maintenance and Operations Facility site would be a stand-alone facility capable of performing all levels of maintenance on the LRT vehicle fleet based there. When completed, it would handle approximately 171 railcars, enough to cover the requirements of the Eastside Extension and Phases I and II, and would include the following:

- A storage yard for approximately 121 light rail vehicles, with an adjacent 30,000-square-foot transportation building complete with recreational facilities, an eating and food service area, a meet and greet area (train operator/maintenance personnel interface), offices, and its own parking facility (213 spaces) that would also accommodate visitors.
- A maintenance area (that would be sufficient to store an additional 50 vehicles) that would include a 100,000-square-foot maintenance building with facilities for daily servicing, preventive maintenance, running repairs, heavy repairs, blowdown, wheel truing, parts storage and material control, component troubleshooting and repair, maintenance administration, and employee welfare and support areas.
- An approximately 8,000-square-foot paint shop and paint prep (body shop) with associated sheet metal, welding, and paint storage areas.
- A 35,000-square-foot operations center (as a second floor to a portion of the maintenance building) to house rail operations, maintenance and operation training, and the signals and communications department. The overall maintenance area would have its own parking facility (161 spaces).
- A 12,000-square-foot maintenance-of-way building to serve the track department that will include a storage track and lay down area.
- A TPSS for the yard and shop.
- Approximately 40 percent of the capital cost of the Maintenance and Operations Facility is attributable to the Phase II extension. Refer to Section 5-1.2 for additional cost information.

□ Facility Access

The conceptual layout for rail access to the facility calls for one egress track (to inject light rail vehicles into the mainline) and one ingress track (to remove them from the mainline). These two tracks would tie directly into the Irwindale station platform area. A third track going to the west would normally serve as an ingress track, but could be used as an egress track in emergencies. The access tracks would continue in a southerly direction leading first to an eight-track storage yard (with run-around tracks on each side) and eventually to the maintenance complex (that would include a maintenance-of-way facility). Refer to **Figure 2-67** for a site plan.

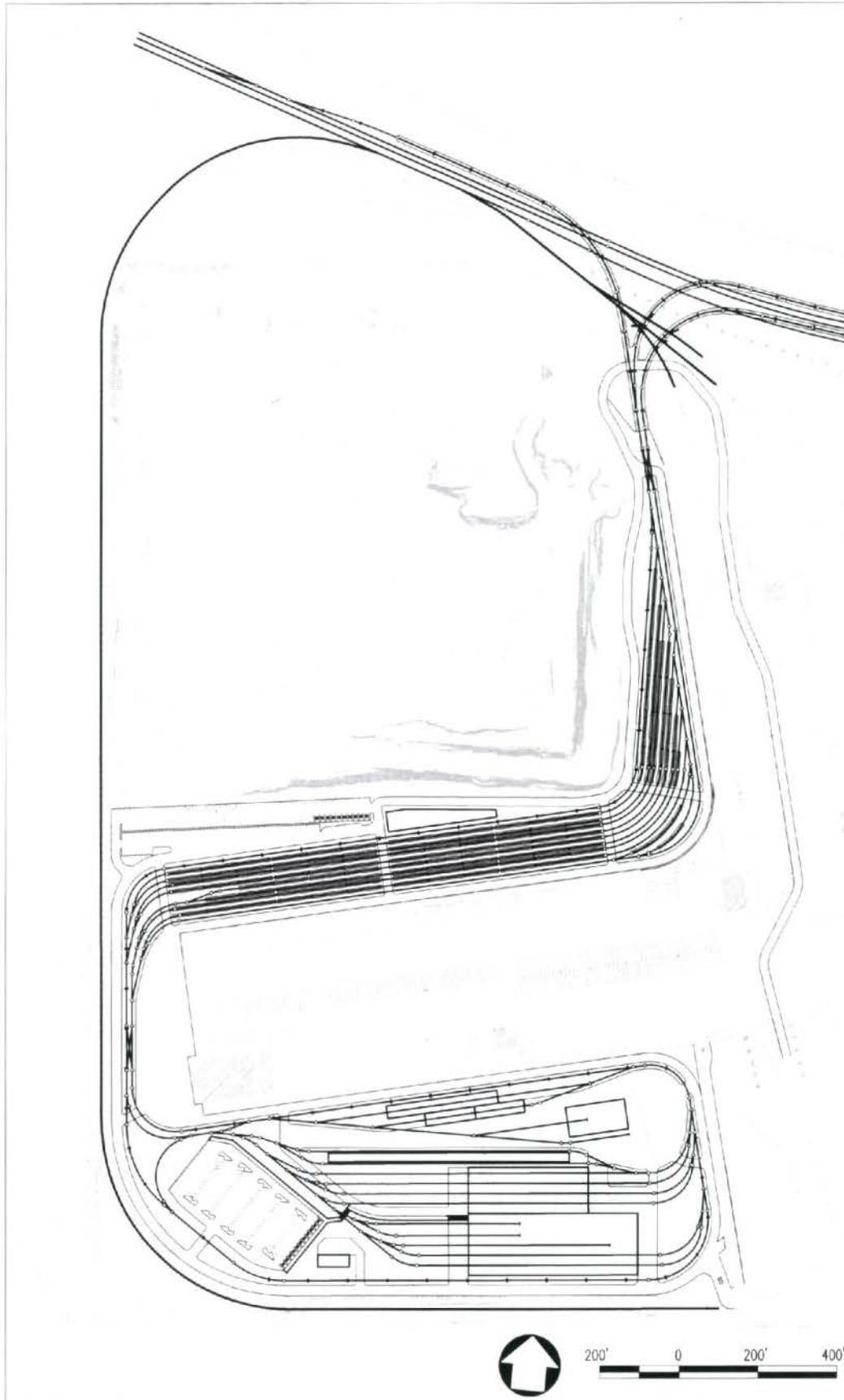


Figure 2-67: Site Plan: Maintenance and Operations Facility, Irwindale

The main entrance to the facility for vehicular access would be from West First Street at its southeastern corner. The two-lane roadway (26 feet wide) would follow along the southerly and westerly edges of the maintenance area, passing the parking entrance for this area and continuing to the parking area for the storage yard. This main road would have no grade crossings with LRT tracks.

A secondary (emergency) vehicular access road (22 feet wide) would be located north of the storage yard and would connect with existing roads in the Miller Brewery facility. The use of roads within this facility would require obtaining an easement for approximately 2,000 to 2,500 feet of roadway.

b. Traction Power Substations

In order to provide electrical power to the light rail vehicles, the proposed project required a series of TPSSs along the alignment. Typically, these TPSSs are pre-fabricated buildings, approximately 14 feet wide by 43 feet long and 16 feet high. Around this building there would be a perimeter ground mat, access for equipment, and parking. The overall property requirement would be 40 feet by 70 feet (2,800 square feet), not including roadway access. Refer to **Figure 2-68** below. The TPSSs would be located within the existing right-of-way where possible; a few substations are located on vacant properties immediately adjacent to the existing right-of-way. They would be designed to be compatible with the surrounding land uses through the use of architectural treatments, landscaping, and other means as appropriate for the individual locations. Locations of the TPSSs are independent of the station option locations described previously.



FIGURE 2-68: TYPICAL EXISTING TPSS FACILITY LOCATED ON GOLD LINE PHASE I

The Full Build Alternative will require 21 TPSS sites along the 24 miles of the alignment, including one in the proposed Maintenance and Operations Facility. This number of TPSS locations was obtained after an analysis of the ultimate light rail operations of 3-car trains at 5-minute headways. Two types of

criteria were utilized in the analysis: electrical criteria and other criteria, such as right-of-way, visual intrusion, and proximity of primary feeders. Refer to **Figures 2-69 through 2-89** for the locations of TPSSs along the alignment.

When information was available, these criteria were used in the selection of the TPSS locations. Further refinements will be made during the preliminary engineering phase, when additional technical information that is needed to finalize locations would be available. TPSS spacing for all TPSS (except the two end-of-line TPSS) is estimated at 6,500 feet for the operation of three-car trains at 5-minute headways. The estimated number and location of traction power supply substations for the Full Build Alternative is provided below in **Table 2.5**.



Figure 2-69: Traction Power Substation Sites, City of Arcadia, (1 of 21)



Figure 2-70: Traction Power Substation Sites, City of Arcadia, (2 of 21)



Figure 2-71: Traction Power Substation Sites, City of Arcadia, (3 of 21)



Figure 2-72: Traction Power Substation Sites, City of Monrovia, (4 of 21)



Figure 2-73: Traction Power Substation Sites, City of Duarte, (5 of 21)

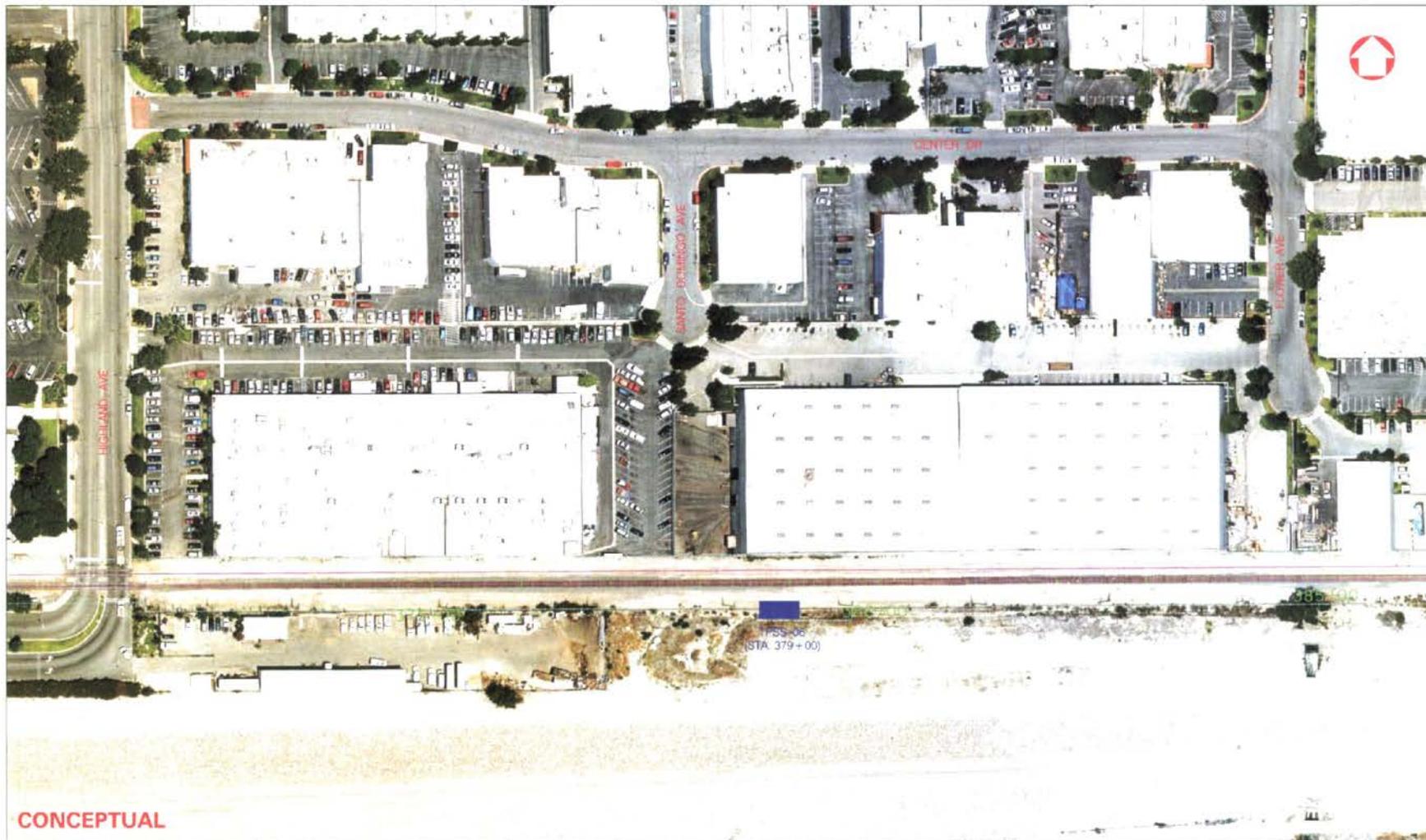


Figure 2-74: Traction Power Substation Sites, City of Duarte, (6 of 21)



Figure 2-75: Traction Power Substation Sites, City of Irwindale, (7 of 21)

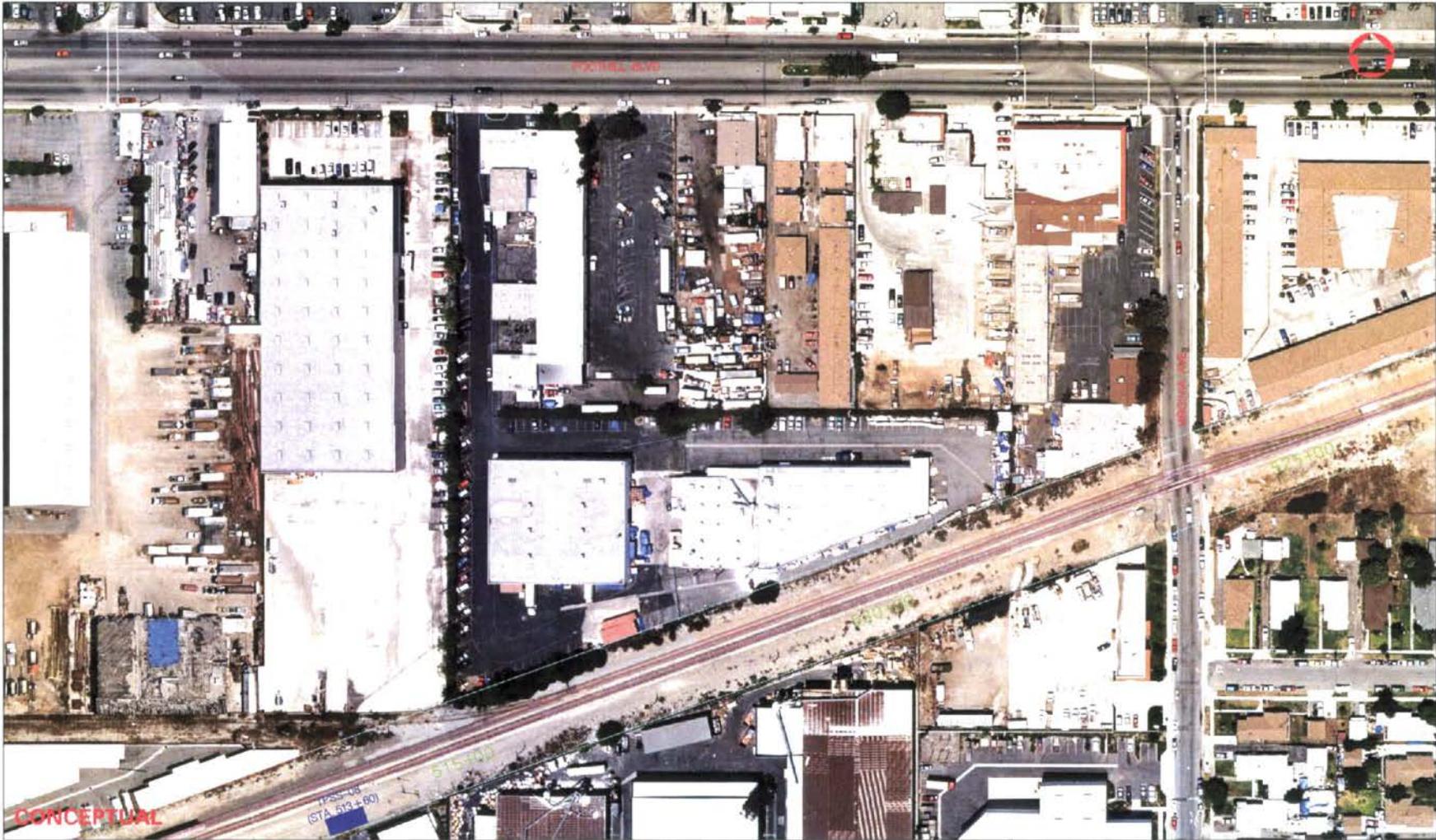


Figure 2-76: Traction Power Substation Sites, City of Azusa, (8 of 21)



Figure 2-77: Traction Power Substation Sites, City of Azusa, (9 of 21)

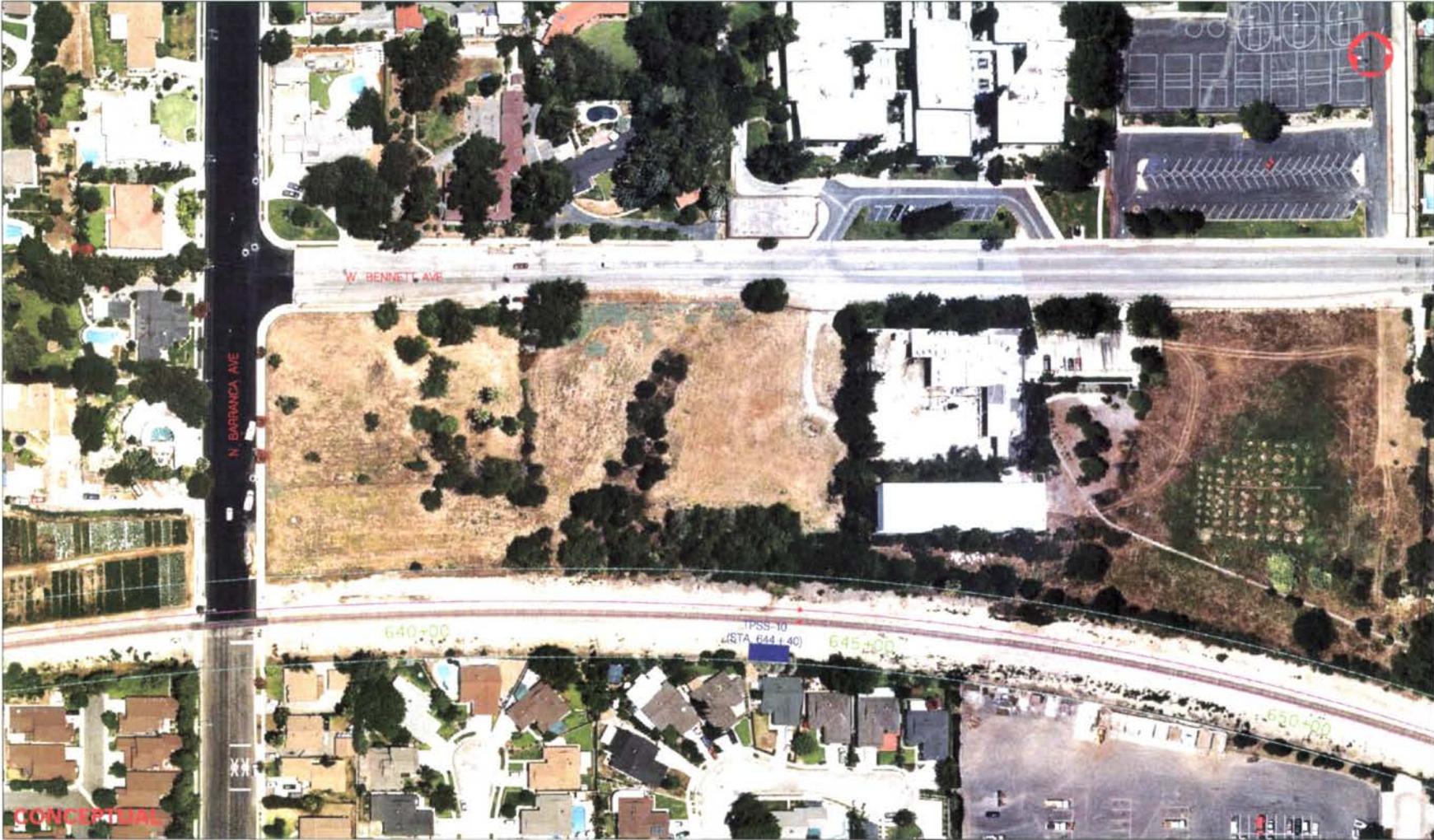


Figure 2-78: Traction Power Substation Sites, City of Glendora, (10 of 21)





Figure 2-79: Traction Power Substation Sites, City of Glendora, (11 of 21)

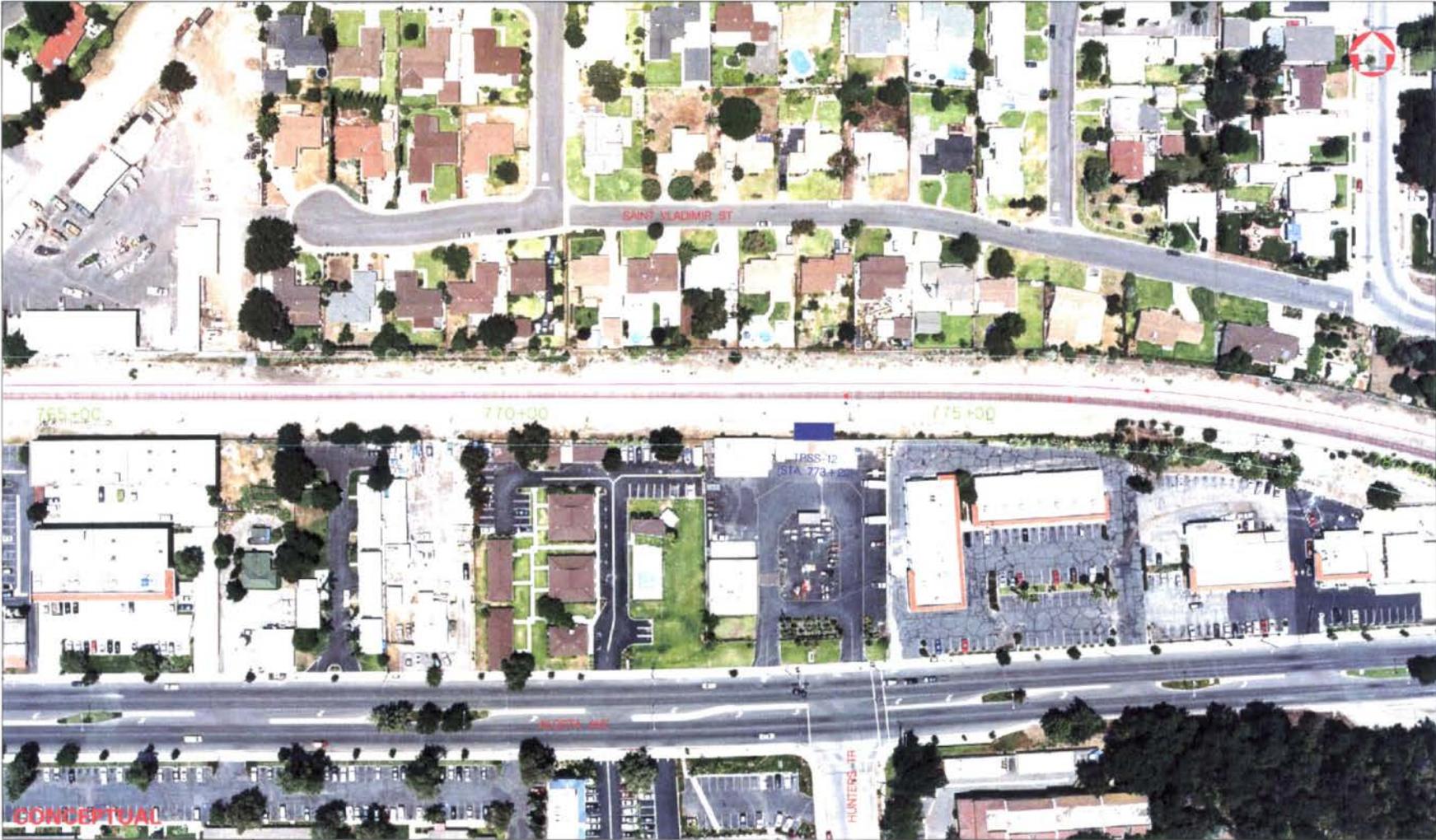


Figure 2-80: Traction Power Substation Sites, City of Glendora, (12 of 21)





Figure 2-81: Traction Power Substation Sites, City of Glendora, (13 of 21)



Figure 2-82: Traction Power Substation Sites, City of San Dimas, (14 of 21)

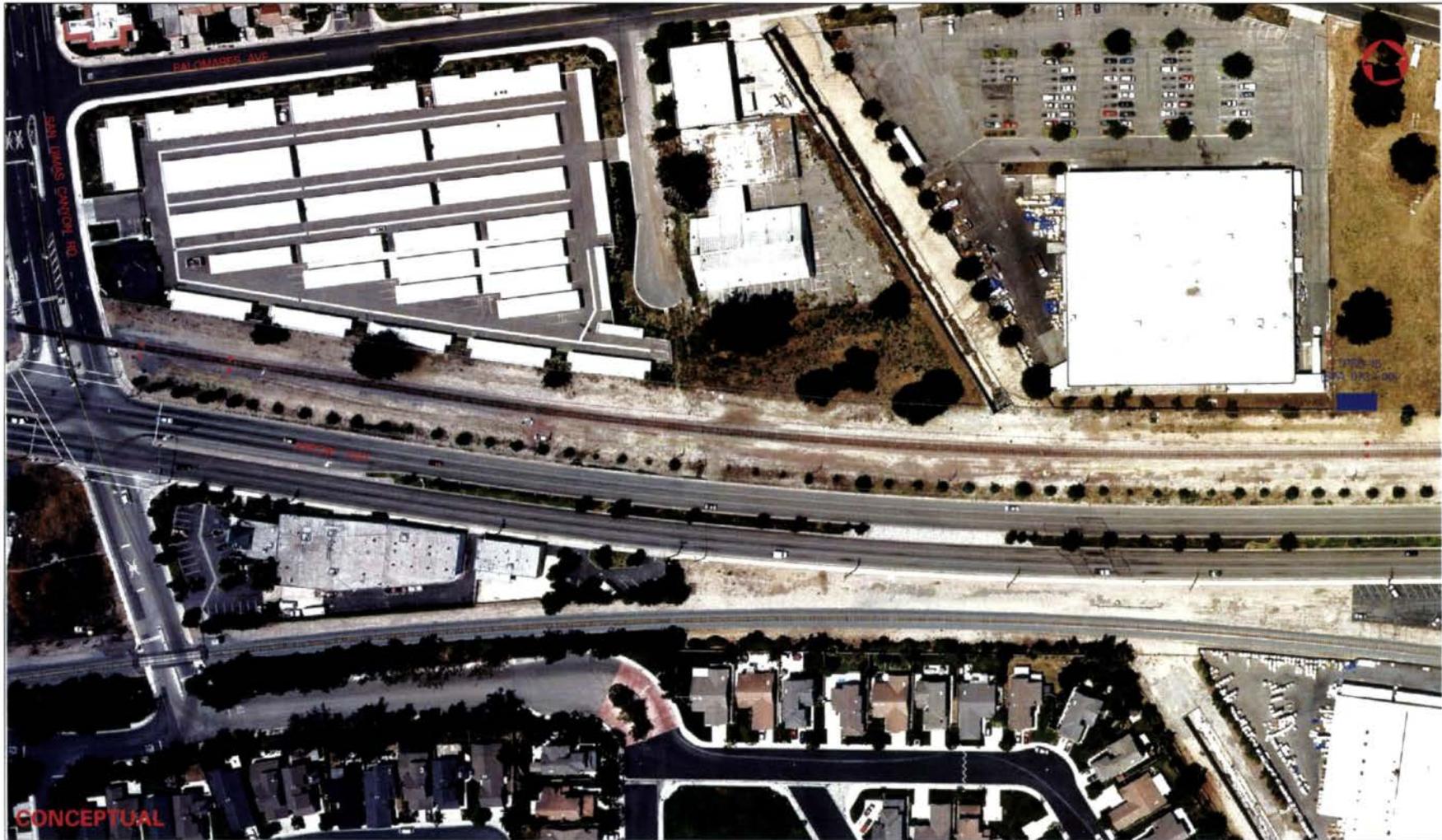


Figure 2-83: Traction Power Substation Sites, City of La Verne, (15 of 21)



Figure 2-84: Traction Power Substation Sites, City of La Verne, (16 of 21)



Figure 2-85: Traction Power Substation Sites, City of Pomona, (17 of 21)



Figure 2-86: Traction Power Substation Sites, City of Claremont, (18 of 21)

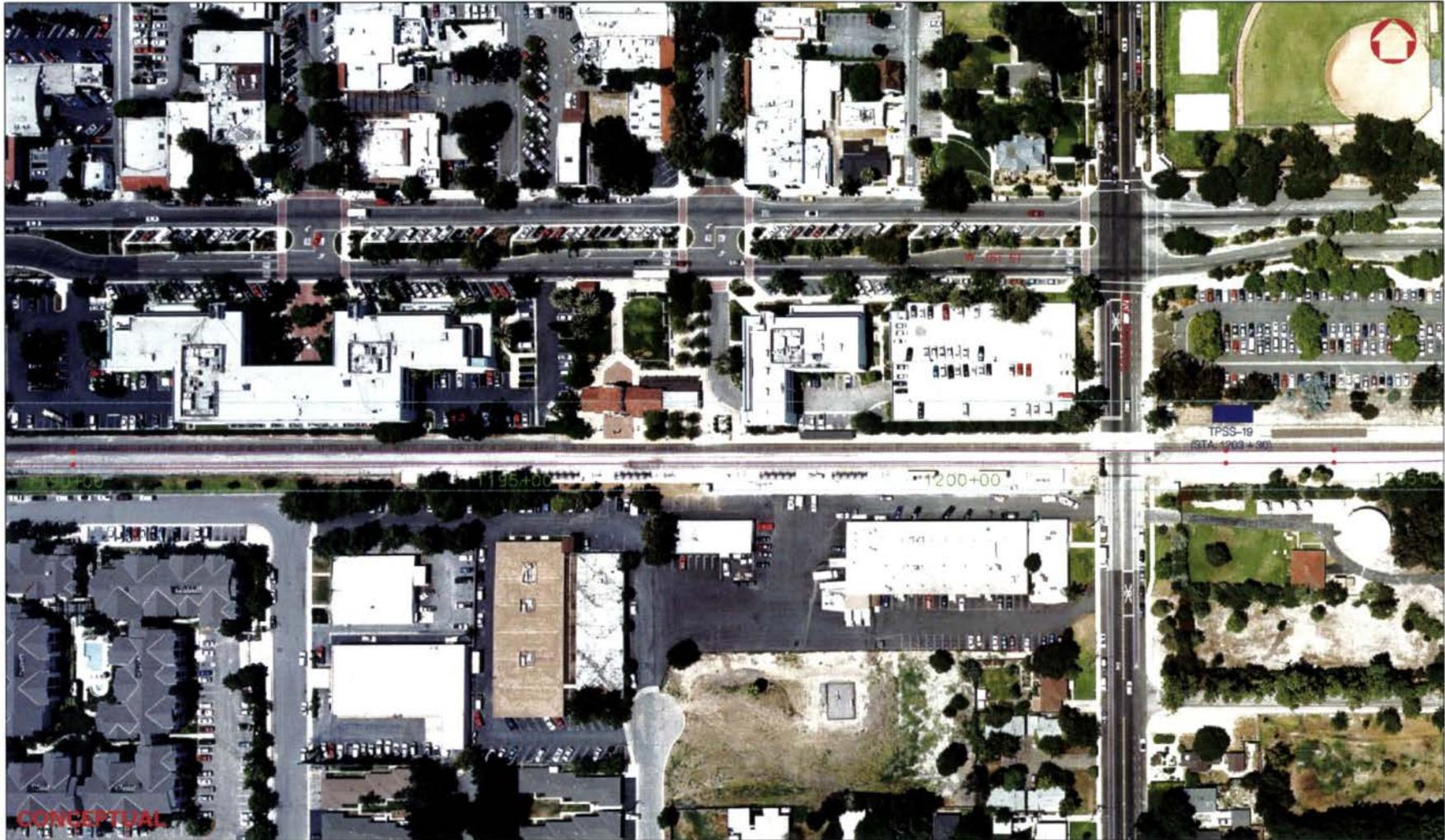


Figure 2-87: Traction Power Substation Sites, City of Claremont, (19 of 21)



Figure 2-88: Traction Power Substation Sites, City of Claremont, (20 of 21)

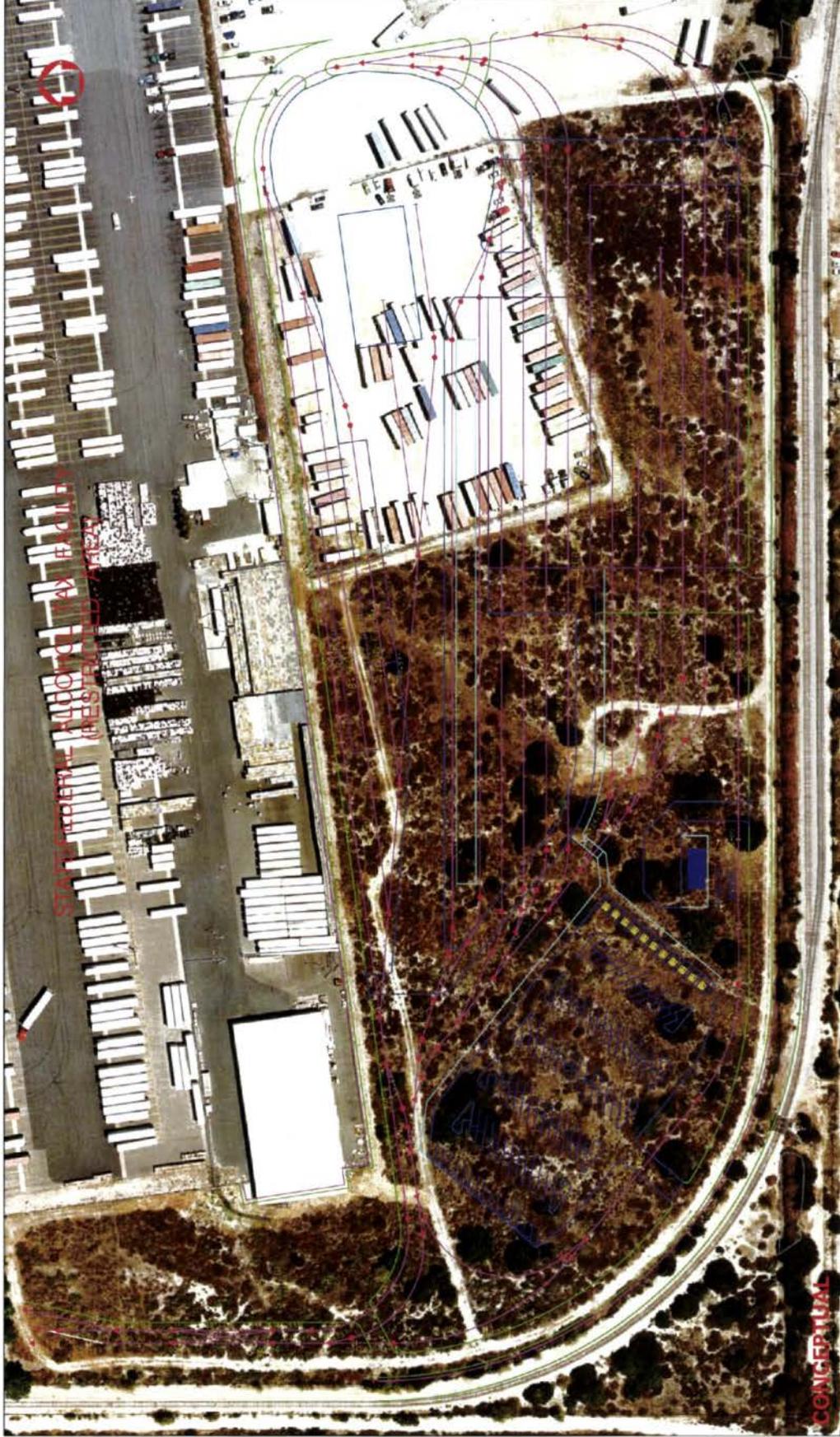


Figure 2-89: Traction Power Substation Sites, M&O Facility (21 of 21)

**TABLE 2-5
LOCATION OF TRACTION POWER SUPPLY SUBSTATIONS,
FULL BUILD ALTERNATIVE**

| TPSS Number | Figure Number ¹ | TPSS Number | Figure Number |
|-------------|----------------------------|--|---------------|
| 0 | Existing, N/A | 11 | 2-74 |
| 1 | 2-64 | 12 | 2-75 |
| 2 | 2-65 | 13 | 2-76 |
| 3 | 2-66 | 14 | 2-77 |
| 4 | 2-67 | 15 | 2-78 |
| 5 | 2-68 | 16 | 2-79 |
| 6 | 2-69 | 17 | 2-80 |
| 7 | 2-70 | 18 | 2-81 |
| 8 | 2-71 | 19 | 2-82 |
| 9 | 2-72 | 20 | 2-83 |
| 10 | 2-73 | 21 (Maintenance and Operations Facility) | 2-84 |

¹ Figures located at the end of this chapter.

Source: Parsons Brinckerhoff, 2003.

c. Parking at Stations

Estimates of parking needs at stations in 2025 were obtained from the regional model runs. **Table 2-6** shows the number of spaces that will be required at each station in 2025. Locations for the parking at each station were identified through discussions with City staff and via field visits. Parking would be free to Gold Line users and would be managed by the Construction Authority.

**TABLE 2-6
PARKING AT STATIONS
FULL BUILD ALTERNATIVE**

| <i>Station</i> | <i>Parking Space Estimate (2025)</i> |
|---------------------------------------|--------------------------------------|
| Pasadena ¹ | 1,000 |
| Arcadia | 800 |
| Monrovia | 600 |
| Duarte | 250 |
| Irwindale | 700 |
| Azusa (Downtown) | 400 |
| Azusa (Monrovia Nursery) ² | 350 |
| Glendora | 400 |
| San Dimas | 750 |
| La Verne | 600 |
| Pomona | 800 |
| Claremont | 700 |
| Montclair ¹ | 800 |

¹ Utilize Existing Parking Facility
² Parking to be provided by developer

2-2.3.2 Operational Assumptions

The headways for the initial travel forecasts for the Full Build Alternative would be 10-minute peak service and 20-minute off-peak service. This would mean that every other train would proceed from the Sierra Madre Villa Station to the Montclair TransCenter. Two LRT operating lines would be operated for the Gold Line service for this alternative. The operations would be (1) Line 1 from Pomona Boulevard /Atlantic Boulevard Station to Sierra Madre Villa Station (10-minute peak/20-minute off-peak) and (2) Line 2 from Pomona Boulevard /Atlantic Boulevard Station to the Montclair TransCenter (10-minute peak/20-minute off-peak). The travel time for Line 1 (Pomona Boulevard /Atlantic Boulevard Station to Sierra Madre Villa Station [Eastside Extension + Phase I]) would be approximately 53 minutes for the 20-mile distance. The travel time from Union Station to Sierra Madre Villa Station would be approximately 36 minutes for the 13.7 miles (current Phase I operation). The travel time from Sierra Madre Villa Station to the Montclair TransCenter is estimated to be 35 minutes for the 24-mile Phase II extension. The stations, distances, and estimated travel times are shown in **Table 2-7**.

| TABLE 2-7 TRAVEL FORECAST DATA FULL BUILD ALTERNATIVE | | | | |
|--|--|---|---|--|
| Station | Distance Between Stations (miles) | Cumulative Travel Distance (miles) | Travel Time Between Stations (minutes) | Elapsed Travel Time (minutes) |
| Sierra Madre Villa | | | | |
| | 3.13 | | 4.22 | |
| Arcadia | | 3.13 | | 4.22 |
| | 1.70 | | 2.67 | |
| Monrovia | | 4.83 | | 6.89 |
| | 1.47 | | 2.41 | |
| Duarte | | 6.30 | | 9.30 |
| | 2.38 | | 3.41 | |
| Irwindale | | 8.68 | | 12.71 |
| | 1.75 | | 2.71 | |
| Azusa (Azusa Ave.) | | 10.43 | | 15.42 |
| | 0.91 | | 1.80 | |
| Azusa (Citrus Ave.) | | 11.34 | | 17.22 |
| | 1.64 | | 2.60 | |
| Glendora | | 12.98 | | 19.82 |
| | 4.15 | | 5.34 | |
| San Dimas | | 17.13 | | 25.16 |
| | 2.12 | | 3.12 | |
| La Verne | | 19.25 | | 28.28 |
| | 1.24 | | 2.16 | |
| Pomona | | 20.49 | | 30.44 |

| TABLE 2-7' continued TRAVEL FORECAST DATA FULL BUILD ALTERNATIVE | | | | |
|--|-----------------------------------|------------------------------------|--|-------------------------------|
| Station | Distance Between Stations (miles) | Cumulative Travel Distance (miles) | Travel Time Between Stations (minutes) | Elapsed Travel Time (minutes) |
| | 1.92 | | 2.91 | |
| Claremont | | 22.41 | | 33.35 |
| | 1.50 | | 1.55 | |
| Montclair | | 23.91 | | 34.90 |
| Total | 23.91 | | 34.90 | |

Source: Parsons Brinckerhoff, 2003.

2-2.3.3 Operational Alternatives

Options for freight railroad track configurations/operations were studied to compare the impacts of maintaining or removing the existing freight service between Monrovia and Montclair. There are currently daily freight movements between Irwindale and Montclair, and weekly movements to five locations between Monrovia and Montclair.

Three freight rail configurations/operations were studied for the Full Build Alternative: (1) triple track with two tracks for LRT and one track for freight service; (2) LRT double track with freight service removed; and (3) LRT double track with time separation for freight operation on the LRT tracks. In the areas where Metrolink provides service (i.e., between La Verne and Montclair), the Metrolink track will be maintained and relocated as needed.

a. Triple Track Configuration (Continuing Freight)

This configuration has two light rail tracks and one freight rail track for most of the alignment length. Two light rail tracks would continue from the existing Sierra Madre Villa Station to the terminus at Montclair. A single freight rail track would extend from Monrovia, where the western-most freight customer is located, to the eastern border of the City of La Verne, where it would link up with the existing Metrolink track. The existing Metrolink track would have to be relocated within the right-of-way in order to provide room for the two light rail tracks.

b. Double Track Configuration (No Freight)

This configuration assumes that the freight interests along this corridor would be negotiated to move to other modes of access. This results in two LRT tracks along the corridor from Sierra Madre Villa Station to the eastern border of the City of La Verne, where the existing Metrolink track shares the right-of-way.

c. Double Track Configuration (With Freight and Time Separation)

This configuration has freight and light rail vehicles sharing the same tracks along the right-of-way. Freight operations would occur during a time separated window when LRT operations would cease. This results in two LRT tracks along the corridor from Sierra Madre Villa Station to the eastern border of the City of La Verne, where the existing Metrolink track begin to share the right-of-way.

2-2.3.4 Bus Service

The bus network in the study area for the Full Build Alternative would be similar to the No Build and TSM Alternatives and would include the addition of community feeder service to the stations when there is not local service provided by Foothill Transit, Omnitrans, or LACMTA. Additionally, peak and off-peak service was added to LACMTA Routes 177 and 188 and Foothill Transit Routes 184, 187, 189, and 690.

2-2.4 Build LRT Alternative to Maintenance Facility

2-2.4.1 Physical Components

A second Build Alternative that encompasses only Segment 1 would extend the current Gold Line LRT system from the existing Sierra Madre Villa Station to the proposed Irwindale station (approximately 8.7 miles). Volume II of this EIR/EIS is the plan/profiles for the Build LRT Alternative to Maintenance Facility. That document includes plans, profiles, station layouts, and bridge analysis. The Build LRT Alternative to Maintenance Facility will use the same LRT technology and the same types of system components would be used as are in the existing Phase I segment from Los Angeles to Pasadena, and in the soon-to-be built Eastside Extension. This Build Alternative would include four LRT stations (Arcadia, Monrovia, Duarte, and Irwindale). The proposed stations would be the same as described under the Full Build Alternative. Parking facilities would be provided at each new station, and in the same locations as identified for the Full Build Alternative. The location of the Maintenance and Operations Facility would be the same as identified for the Full Build Alternative. Seven TPSSs would be constructed along the route in order to provide electrical power to the line, in addition to one TPSS at the Maintenance and Operations Facility. The Build Alternative to Maintenance Facility alignment can be seen in Figures 2-20 through 27, shown previously for the Full Build Alternative. An overview of this alternative is shown in Figure 2-19. The Build LRT Alternative to Maintenance Facility is the same as the Full Build Alternative but only extends 8.7 miles east from Sierra Madre Villa Station to the Irwindale Station.

a. Stations

The Build Alternative to Maintenance Facility would include a total of four new stations. The proposed stations would be the same as described under the Full Build Alternative for the cities of Arcadia, Monrovia, Duarte, and Irwindale. Parking demand at stations under the Build Alternative to Maintenance Facility would be the same as under the Full Build Alternative. Refer to Figures 2-46 to 2-52 for the proposed stations (and options) in Phase II Segment 1.

b. Maintenance and Operations Facility

The proposed Maintenance and Operations Facility for the Build Alternative to Maintenance Facility would be the same as under the Full Build Alternative.

c. Traction Power Substations

The Build Alternative to Maintenance Facility will require eight TPSS sites along the 9 miles of the alignment, including one in the maintenance yard. This number of TPSS locations was obtained after an analysis of the ultimate light rail operations of three-car trains at 5-minute headways. Two types of criteria were utilized in the analysis: electrical criteria and other criteria, such as right-of-way, visual intrusion, and proximity of primary feeders. Refer to **Figure 2-68** for a typical TPSS from Phase I.

Further refinements will be made during the preliminary engineering phase, when additional technical information that is needed to finalize locations would be available. TPSS spacing for all TPSS (except the two end-of-line TPSS) is estimated at 6,500 feet for the operation of three-car trains at 5-minute headways. The estimated number and location of TPSSs for the Build Alternative to Maintenance Facility is shown in **Table 2-8**. Refer to **Figures 2-69** through **2-75** for the location of TPSSs in Phase II Segment 1 cities and to **Figure 2-89** for the location of the TPSS at the M&O facility.

| TPSS Number | Figure Number ¹ | TPSS Number | Figure Number |
|-------------|----------------------------|--|---------------|
| 0 | Existing, N/A | 5 | 2-68 |
| 1 | 2-64 | 6 | 2-69 |
| 2 | 2-65 | 7 | 2-70 |
| 3 | 2-66 | 21 (Maintenance and Operations Facility) | 2-84 |
| 4 | 2-67 | | |

¹ Figures located at the end of this chapter.
Source: Parsons Brinckerhoff, 2003.

2-2.4.2 Operational Assumptions

The headways for the initial travel forecasts for the Build Alternative to Maintenance Facility would be 10-minute peak service and 20-minute off-peak service. This would mean that every other train would proceed from the Sierra Madre Villa Station to the Irwindale station. Two LRT operating lines would be operational for the Gold Line for this alternative. The operations would be (1) Line 1 from Pomona Boulevard /Atlantic Boulevard Station to Sierra Madre Villa Station (10-minute peak/20-minute off-peak) and (2) Line 2 from Pomona Boulevard /Atlantic Boulevard Station to the Irwindale station (10-minute peak/20-minute off-peak). The travel time for Line 1 (Pomona/Atlantic to Sierra Madre Villa Station [Eastside Extension and Phase I]) would be approximately 53 minutes for the 20-mile distance. The

travel time from Union Station to Sierra Madre Villa Station would be approximately 36 minutes for the 13.7 miles (current Phase I operation). The travel time from Sierra Madre Villa Station to the Irwindale station is estimated to be approximately 13 minutes for the 8.7 miles. The stations, distances, and estimated travel times are shown in **Table 2-9**.

| Station | Distance Between Stations (miles) | Cumulative Travel Distance (miles) | Travel Time Between Stations (minutes) | Elapsed Travel Time (minutes) |
|--------------------|---|--|--|----------------------------------|
| Sierra Madre Villa | | | | |
| | 3.13 | | 4.22 | |
| Arcadia | | 3.13 | | 4.22 |
| | 1.70 | | 2.67 | |
| Monrovia | | 4.83 | | 6.89 |
| | 1.47 | | 2.41 | |
| Duarte | | 6.30 | | 9.30 |
| | 2.38 | | 3.41 | |
| Irwindale | | 8.68 | | 12.71 |
| Total | 8.68 | | 12.71 | |

Source: Parsons Brinckerhoff, 2003.

2-2.4.3 Operational Alternatives

Options for freight railroad track configurations/operations were studied to compare the impacts of maintaining or removing the existing freight service between Monrovia and Irwindale. There is currently one weekly freight movement between Monrovia and Irwindale, and daily freight movements between Irwindale and the eastern portion of the line.

Three freight rail configurations/operations were studied for the Build LRT Alternative to Maintenance Facility: (1) triple track with two tracks for LRT and one track for freight service; (2) LRT double track with freight service removed; and (3) LRT double track with time separation for freight operation on the LRT tracks.

a. Triple Track Configuration (Continuing Freight)

This configuration has two light rail tracks and one freight rail track for most of the alignment length. Two light rail tracks would continue from the existing Sierra Madre Villa Station to the terminus at Irwindale. A single freight rail track would extend from Monrovia, where the western-most freight customer is located, to the terminus at Irwindale station, where it would link with the existing freight track.

b. Double Track Configuration (No Freight)

This configuration assumes that the freight interests along this corridor would be negotiated to move to other modes of access. This would result in two LRT tracks along the corridor from Sierra Madre Villa Station to the terminus at the Irwindale station.

c. Double Track Configuration (With Freight and Time Separation)

This configuration has freight and light rail vehicles sharing the same tracks along the right-of-way. Freight operations would occur during a time separated window when LRT operations would cease. This would result in two LRT tracks along the corridor from Sierra Madre Villa Station to the terminus at the Irwindale station.

2-2.4.4 Bus Service

The bus network in the study area for the Build Alternative to Maintenance Facility will be similar to the No Build Alternative but would include the addition of community feeder service to the four proposed stations when there is not local service provided by Foothill Transit or LACMTA. In order to provide bus service to the balance of Phase II, Foothill Routes 187, 189, and 690 would be modified to provide increased frequencies east of Irwindale and provide connections to the proposed Irwindale station for all trips. These routes are described in detail in the TSM Alternative (Section 2-2.2). The headways on Routes 187 and 189 would be changed to be 20 minutes peak/40 minutes off-peak east of Irwindale and 30 minutes peak/40 minutes off-peak west of Irwindale. Route 690 would be changed to provide two-way all-day service east of Irwindale, with 15-minute peak/30 minute off-peak service. The Route 690 service would provide the same service west of Irwindale as provided in the Full Build Alternative. **Table 2-10** illustrates the bus service headways for all of the alternatives.

| TABLE 2-10 BUS SERVICE HEADWAYS ALL ALTERNATIVES | | | | | | | | |
|---|----------|----------|------|----------|----------------|----------|-----------------------------------|----------|
| | No Build | | TSM | | Full Build LRT | | Build LRT to Maintenance Facility | |
| | Peak | Off-Peak | Peak | Off-Peak | Peak | Off-Peak | Peak | Off-Peak |
| MTA 177 | 30 | 60 | 20 | 40 | 20 | 40 | 20 | 40 |
| MTA 188 | 45 | 60 | 20 | 40 | 20 | 40 | 20 | 40 |
| FT 184 | 60 | 60 | 30 | 30 | 30 | 30 | 30 | 30 |
| FT 187 (W) | 30 | 60 | 20 | 40 | 30 | 40 | 30 | 40 |
| FT 187 (E) | - | - | - | - | - | - | 20 | 40 |
| FT 189 (W) | 30 | 60 | 20 | 40 | 30 | 40 | 30 | 40 |
| FT 189 (E) | - | - | - | - | - | - | 20 | 40 |
| FT 494 | 30 | 0 | 20 | 0 | 30 | 0 | 30 | 0 |
| FT 690 (W) | 30 | 0 | 10 | 20 | 20 | 30 | 20 | 30 |
| FT 690 (E) | - | - | - | - | - | - | 15 | 30 |

MTA – Los Angeles County Metropolitan Transportation Authority (LACMTA)
 FT – Foothill Transit
 W – West of Irwindale
 E – East of Irwindale

2-3 CONSTRUCTION SCENARIOS

The two Build Alternatives have similar construction scenarios, while the No Build and TSM Alternatives require no physical construction.

2-3.1 No-Build Alternative

The No Build Alternative does not require any construction by the proposed project, as all improvements are either operational improvements or to be implemented by others.

2-3.2 TSM Alternative

The TSM Alternative does not require substantial construction, as improvements would be operational rather than physical improvements. Changes to bus stop facilities to improve service, such as changing of signs, are assumed to be minor.

2-3.3 Build Alternatives

The construction of either Build Alternative would involve conventional construction techniques and equipment used in the southern California region. Major project elements would include:

- Demolition of existing structures
- Roadway improvements
- Relocation of the existing freight lines
- Construction of new bridges and renovation/widening of existing bridges
- Construction of at-grade trackwork and stations
- Construction of aerial station and pedestrian tunnels
- Installation of specialty system work, such as overhead contact electrification systems and communications and signaling systems
- Construction of TPSSs
- Construction of parking lots and parking structures
- Sub-grade preparation and placement of rail ballast.

All work would conform to industry specifications and standards. The equipment used in construction would include pile drilling and trenching equipment, bulldozers, rollers, cranes, concrete trucks, pumping equipment, flatbed trucks, dump trucks, and rail-mounted equipment. Temporary traffic detours and truck routes would be required during construction. The total time that would be required to construct the Full Build Alternative would be 8 to 10 years, with expected completion by 2014. Construction of the Build Alternative to the Maintenance Facility would take 3 to 5 years, with expected completion in 2009.

The required construction easements (i.e., the areas needed temporarily in addition to the actual project footprint during the construction period) would vary depending on the type of construction and the adjacent land use. Generally, easements would be minimized as much as possible to avoid impacts to adjacent traffic and land uses, and right-of-way already owned by the Construction Authority would be

utilized as much as possible. Lane and/or road closures would be scheduled so as to be least disruptive, and traffic management plans would be approved by the individual cities prior to construction. Freight movements would be impacted as little as possible. Construction staging areas would be identified during preliminary engineering.

The Full Build Alternative would be constructed during an approximate 8 to 10 year period. Construction would occur simultaneously at several locations along the selected route. Construction of the project would follow all applicable local, state, and general laws for building and safety. Working hours would be varied to meet special circumstances. Standard construction methods would be used for traffic control and noise, vibration, and dust control, consistent with all applicable laws and as described in the following paragraphs. Actual durations for construction activities would be dependent upon such variables as final designs, the contractors' means and methods, project funding, and restrictions on working hours and other variables. Durations estimated below are based on similar projects and the conceptual designs.

2-3.3.1 At-Grade Construction

a. Demolition of Existing Structures

In some locations, demolition and the associated reconstruction of existing structures would be required to accommodate widened cross sections within the right-of-way. Demolition would comply with applicable regulations, and disposal and/or recycling of material would be performed in accordance with standard construction practices. For further discussion of the disposal of hazardous materials, refer to Chapter 3 of this EIS/EIR. Demolition activities are estimated to be completed over 18 months at several locations.

b. Utility Relocations

Both aboveground and underground utilities would need to be relocated, modified, or protected in place in some portions of the build alternatives' construction area if they would interfere with construction or if they become damaged during construction. In some cases, major utilities, such as water supply and distribution lines and sewer mains, may need to be relocated to maintain access and appropriate spacing. Most of this work would be completed before other construction work commenced. Chapter 3, Section 3-16, includes more information about the types and locations of utilities that would be affected. Utility relocation, including relocation of major utilities, would take about 18 months to complete ahead of rail, street, or station construction in the area.

c. Street Improvements

In some segments of both Build Alternatives, particularly in the City of Duarte near the Duarte station, the narrow right-of-way will require taking the northern parking lane of Duarte Road (currently a no-parking zone). This work would begin before the construction of the actual rail components to allow the maximum room for detouring traffic during construction. The period of time necessary for street construction would be about 1 year ahead of rail construction in the area.

At the final stage in the construction of both Build Alternatives, streets and crossings would be restored to their preconstruction conditions. In some cases, street improvements would be made, such as new site modifications, cul-de-sacs, landscaping, traffic control modifications, signage, and lighting. Some of these improvements would be accomplished simultaneously with other construction activities and would require about 2 years to complete.

d. Trackwork

Both Build Alternatives would be located within the existing right-of-way. Trackwork construction would involve relocating the existing freight line (for the Triple Track Configuration) or removing it altogether (Double Track Configurations), preparing the track bed and ballast, and installing rails. In areas where the rail alignment runs next to and parallel to a local street, periodic lane closures may be required for delivery of materials. Minor cross streets may be temporarily closed, but access to adjacent properties would be maintained through detours or alternative access routes. Major cross streets would require partial closures, at half of the street at a time. Bridges shorter than 200 feet long would have ballasted trackways, while bridges longer than 200 feet in length would use direct fixation track. Trackwork is anticipated to take up to two years to complete.

e. Stations

Stations could be constructed simultaneously with the various aspects of the Build Alternatives. At-grade station construction involves removing existing surface materials, preparing subgrade, forming and constructing an elevated concrete platform, ramps and stairs, as well as installing the station furnishings, such as the canopy, hand railings, lighting, signage, and ticket vending machines. Design and installation would be according to LACMTA Design Criteria, and similar to that constructed for Phase I. Construction would take up to 6 months per station, but several could be constructed concurrently.

f. Operating Systems Installation

The operating systems for the Build Alternatives would include communications, train control, and traction power supplied through an overhead contact system. The overhead contact system would consist of poles connected to drilled shaft foundations with overhead wires to supply power to the trains. (See also Traction Power Substations, described on the following pages.) In addition, communications and control systems would be installed along the alignment. The installation of the operating systems would occur simultaneously with other construction, and would require up to 18 months to complete and test.

g. Special Construction Issues

The Build Alternatives cross a number of freeways along the length of the corridor. The Full Build Alternative runs in the median of I-210, crosses over I-210 EB twice and over I-210 WB once, under I-210 once, crosses under I-605, and crosses under State Route 57. Coordination with Caltrans would be required for each crossing. In Caltrans right-of-way, Caltrans design and construction standards, as well as approvals, are typically required.

2-3.3.2 Elevated Construction

The City of Arcadia desires a grade separation over Santa Anita Avenue, which would result in an above-grade station near N. First Street. If an above-grade station were selected, the following construction scenarios are identified.

a. Demolition of Existing Structures

If Option B, the elevated segment in Arcadia, were selected in either Build Alternative, a limited amount of property acquisition would occur, requiring removal of some existing structures. This demolition would take less than 2 months.

b. Utility Relocations

Some utility relocation, modification, and protection in place would be required for the elevated portions of the Build Alternatives, but the amount of such work would be limited to areas where there are conflicts with the existing overhead utilities and the underground utilities that would be affected by the foundations of columns and the street level entrance to the Arcadia Option B station.

c. Foundations and Support Columns

If Options A or B were to be selected in either Build Alternative, portions of the track and possibly a station will be elevated on columns and earth-fill sections. Construction of the column foundations for the elevated portions of the track would use cast-in-place drilled shafts, rather than driven piles. These shafts could be 80 to 100 feet deep. Temporary or permanent steel casings may be required to support the drilled holes where the water table is high. After the pile steel reinforcement is placed, the concrete would be placed. Once these foundations are complete, the columns themselves would be formed and cast in place on the shafts. Foundations and support columns would be constructed in alternate blocks to limit traffic impacts. The construction period of the columns is included with that of the overhead structure (superstructure) or filled section.

d. Superstructure

The elevated superstructure itself could be constructed using either cast-in-place concrete or precast concrete elements that would be erected and installed at the site. Because multiple construction activities would be simultaneously occurring along the length of the elevated structure, the construction period of the superstructure, along with the support columns, would vary from about 18 to 24 months, depending on the construction method used. Construction of the platform of the elevated Arcadia Option B station would also be included in this construction period.

e. Installation of Other System Components

Once construction of the superstructure is completed, most work on the remaining elements of the elevated portions would be accomplished from on top of the structure. Trackwork, the catenary system, station furnishings, and other components would be installed during a construction period of about one year.

f. Transitions

The transitions from an at-grade alignment to the elevated alignment would require the placement of retained fill on both sides of the aerial guideway. Much of this construction could occur at the same time as other components of the elevated portions of either Build Alternative. Foundations and retaining walls would be constructed, fill materials would be imported and placed, the track bed would be constructed, and the track would be laid. Necessary safety features and other minor components would be installed. Construction of these transitions would require up to nine months.

2-3.3.3 Maintenance and Operations Facility

Construction of the Maintenance and Operations Facility would require clearing and grubbing (removal of plant and root materials), followed by site grading, paving, installation of track overhead contact systems and signaling equipment, construction of maintenance buildings, and construction of perimeter

walls or fences. Construction methods to be used would be similar to those for typical industrial building site construction, with the addition of site work and trackwork. Construction of the Maintenance and Operations Facility is estimated to require approximately two years.

The location of the Maintenance and Operations Facility necessitates an elevated portion of track above the existing Miller Brewery facility rail yard. For the construction of the underpass for the Miller yard, construction of a temporary rail detour (shoo-fly) around the portion of track affected by the underpass may be required. The underpass would be constructed by cut-and-cover construction methods, where a box shape trench is excavated and supported as necessary, a top is constructed, the freight tracks are returned to their original location within the box section, and the rail detour is demolished. Alternatively, because the Miller Brewery receives six shipments a week, it may be possible to fast-track construction of the underpass within 48 hours, and limit the impact on Miller operations. These alternatives would be explored further during Preliminary Engineering.

2-3.3.4 Traction Power Substations

TPSSs require approximately a 1,000-square-foot footprint. Preliminary planning has placed the TPSSs within existing railroad right-of-way or on property to be acquired for stations/parking or the proposed Maintenance and Operation facility. Each of these sites would include a substation concrete slab with grounding mat. The TPSS itself would be a prefabricated structure approximately 14 feet wide by 43 feet long and 16 feet high. It would be delivered to the site, connected to the slab, and connected to the utilities. Fencing would be installed around the perimeter of the site and architectural and landscaping treatments could be provided, as appropriate. Construction of a TPSS would require about 3 months. A typical TPSS is shown in **Figure 2-68**.

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CHAPTER 3 - ENVIRONMENTAL EVALUATION

The Intent of this Chapter

This chapter presents information to help decision makers and the public to understand the potential environmental impacts of the alternatives and ways to avoid those impacts. This chapter is composed of 18 subsections covering the range of environmental topics and other key information required in the evaluation of impacts under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

What the Chapter Includes

Each topical section begins with a brief Summary of Impacts, followed by detailed discussions of:

- Existing Conditions
- Environmental Impacts (for each of 4 Alternatives: No-Build; TSM; Build LRT to Maintenance Facility; Full Build LRT Alternative; and, for Triple Track and Double Track options for the 2 LRT alternatives)
 - Evaluation Methodology
 - Impact Criteria for NEPA and CEQA
 - Construction-Period Impacts
 - Long-Term Impacts
 - Cumulative Impacts
 - Impacts Addressed by Regulatory Compliance, for the Construction Period and Long Term
- Potential Mitigation Measures (beyond those addressed by regulatory compliance) for the Construction Period and Long Term
- Impact Results with Mitigation, for the construction period and long term.

Impacts are broken out geographically. For the LRT alternatives, discussions of impacts associated with the Triple Track and Double Track operating scenarios are provided, for each of the segments and their respective cities. Impacts are summarized for the two proposed LRT alternatives. Readers wishing to focus on a particular city can do so by using the headings to locate discussions as follows.

- Phase I includes the cities of Los Angeles, South Pasadena, and Pasadena to the east of Sierra Madre Villa Station. Discussions encompass impacts of both the existing Phase I Gold Line from Union Station to Pasadena and the soon-to-be built Eastside LRT from Union Station to East Los Angeles. These discussions are provided in response to community concerns about potential impacts that might be generated from the proposed Phase II into the Phase 1 area.
- Phase II, Segment 1, includes the cities of Pasadena (west of the Sierra Madre Villa Station), Arcadia, Monrovia, Duarte and Irwindale. Segment 1 is synonymous with the entire Build LRT to Maintenance Facility Alternative; it is also the western portion of the Full Build Alternative.
- Phase II, Segment 2, includes the cities of Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair and Upland. Segment 2 is the eastern portion of the Full Build Alternative.

Using this system, if interested only in issues for the city of Arcadia, scan for the heading Phase II, Segment 1. Similarly, if interested only in issues for the city of Azusa, scan for the heading Phase II, Segment 2.

How Impacts are Discussed

For impacts that are assessed under NEPA, the level of impact is expressed in terms of whether it is *not adverse*, *potentially adverse*, or *adverse*. NEPA assessments often do not have specific impact criteria and documents typically do not specify whether impacts are significant. CEQA, on the other hand, requires that determinations of significance be made. Accordingly for impacts assessed under CEQA the level of impact is expressed in terms of whether it is *not significant* (or no effect), *less than significant*, *potentially significant*, or *significant* when compared to specific criteria of significance. Please see the Introduction for additional discussion of NEPA and CEQA language.

3-1 ACQUISITIONS AND DISPLACEMENTS

Summary of Impacts

No acquisitions or displacements have been identified for the No-Build or TSM Alternatives. For the LRT Alternatives, construction staging is assumed to occur within railroad right-of-way or on parcels that would be a acquired for stations or parking. Temporary construction easements may also be needed.

For the Build LRT Alternative to Maintenance Facility, no acquisitions or displacements would occur in Pasadena. In Arcadia, depending on the station option chosen, up to 7 full-parcel acquisitions (along with up to 11 business relocations) would occur. No partial acquisitions are needed. In Monrovia, 2 full-parcel acquisitions (along with 2 business relocations), and acquisition of a portion of 1 parcel would occur. In Duarte, acquisition of a portion of 6 parcels (none requiring relocation) would occur for the Triple Track option. In Irwindale, 1 full-parcel acquisition (with perhaps 1 business relocation), along with acquisition of a portion of 1 parcel would occur.

For Segment 1 of the Full Build Alternative, acquisitions would be the same as for the Build LRT Alternative to Maintenance Facility.

For Segment 2 of the Full Build Alternative, the following acquisitions and displacements were identified. In Azusa, 8 acquisitions (along with 8 residential and 2 business relocations) would occur for the Alameda Station and parking. No acquisitions or displacements would occur for the Citrus Station and parking. No partial acquisitions are needed for either station. In Glendora, 2 full-parcel acquisitions (along with 6 business relocations) would occur. No partial acquisitions are needed. In San Dimas, 22 full-parcel acquisitions (along with 2 business relocations) would occur. No partial acquisitions are needed. In La Verne, up to 2 full-parcel acquisitions (along with 1 business relocations) would occur. No partial acquisitions are needed. In Pomona, depending on the station option chosen, up to 2 full-parcel acquisitions (along with 1 business relocation) would occur. One partial acquisition would be needed. In Claremont, up to 5 full-parcel acquisitions (with no business relocations) would occur. Seven partial acquisitions would be needed. Acquisitions would be needed in Montclair or Upland.

3-1.1 Existing Conditions

The proposed Gold Line Phase II project would primarily be located within the former Atchison, Topeka and Santa Fe Railway Pasadena Line railroad right-of-way, which was purchased by the Los Angeles County Metropolitan Transportation Authority (LACMTA) for transportation purposes in 1994. The rail right-of-way is now under the control of the Los Angeles to Pasadena Metro Blue Line Construction Authority (also known as the Gold Line Construction Authority, and referred to herein as the Construction Authority) under the terms of the Master Cooperative Agreement between LACMTA and the Construction Authority. The portion in this right-of-way included in the proposed project extends from the existing Sierra Madre Villa LRT Station in Pasadena to the Los Angeles County border in Claremont. The proposed project would extend to Montclair in San Bernardino County, using one of two rail rights-of-way owned by San Bernardino Associated Governments (SANBAG). LACMTA owns several other parcels along the alignment that were purchased to accommodate potential parking lots and stations. Some of these parcels are currently leased out to tenants that may be displaced as a result of the proposed project.

In general, the proposed project is located within an urban environment. Residential, commercial, industrial, and institutional (including public agencies and nonprofit organizations) land uses are located

immediately adjacent to the LACMTA and SANBAG rights-of-way. A more complete discussion of both local and regional land uses can be found in Section 3-10.

3-1.1.1 Regulatory Setting

The following policies govern the acquisition of properties by public entities, which will result in the displacement of the current occupant or owner. These policies apply to both residential and business acquisitions.

a. Federal

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended (Uniform Act) mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced by construction and operation of transit-related projects. The Act establishes uniform and equitable procedures for land acquisition, and provides for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs. The proposed project is a federally assisted project; and the LACMTA would comply with these regulations to address relocations in Los Angeles County that result due to the Gold Line Phase II project. Any relocations that occur in San Bernardino County would also be governed by the Uniform Act, but would be implemented by SANBAG.

b. State

According to §6018 of the Relocation Assistance and Real Property Acquisitions Guidelines (California Code of Regulations), the provisions of the *California Relocation Act* of 1969 (Government Code §§7260-7277) shall apply in the absence of federal funds and/or involvement if a public entity undertakes a project and consequently must provide relocation assistance and benefits. The *California Relocation Act*, which is consistent with the intent and guidelines of the Uniform Relocation Act, seeks to (1) ensure the consistent and fair treatment of owners of real property, (2) encourage and expedite acquisitions by agreement to avoid litigation and relieve congestion in the courts, and (3) promote confidence in public land acquisitions. The *California Relocation Act* requires that relocation assistance be provided to any person, business, or farm operation displaced because of the acquisition of real property by a public entity for public use. In addition, comparable replacement properties must be available or provided for each displaced person within a reasonable period of time prior to displacement.

LACMTA and SANBAG have established relocation policies that are consistent with the state and federal relocation acts. Qualified tenants and owners would be relocated in accordance with these policies.

3-1.2 Environmental Impacts

Overview: Implementation of the No Build and TSM Alternatives would not involve any temporary or permanent acquisitions of properties or displacement of persons, businesses or parking. Implementation of either of the proposed LRT alternatives (Build LRT Alternative to Maintenance Facility or Full Build) in both the Triple Track or Double Track options, would involve the permanent acquisition of properties and the possible displacement of persons, businesses, and parking located on those properties. Permanent easements would also be required in some locations. Any acquisitions, displacements, and easements related to the construction of the proposed LRT alternatives are considered temporary in nature. Construction-period acquisitions are discussed in detail in section 3-1.2.3. The acquisitions, displacements, and easements necessary for the operation of the proposed corridor are considered to be permanent; these acquisitions are discussed in section 3-1.2.4.

3-1.2.1 Evaluation Methodology

Parcels that appear to be necessary for implementation of the LRT Alternatives were identified from conceptual drawings of the proposed alignments, stations, and parking facilities overlaid on maps that show parcel boundaries. To assess potential impacts, the parcels that would need to be acquired for the build alternatives were reviewed for the following circumstances.

- Whether the acquisition would be permanent or temporary
- What type of acquisition would be required (full acquisition or easement)
- Whether the acquisition would include relocation.
- Whether LACMTA-owned property is leased to a tenant that would be displaced.

3-1.2.2 Impact Criteria

The acquisitions and displacements impact criteria under NEPA and CEQA would be the same. Adverse impacts under NEPA would also be considered significant impacts under CEQA.

Impacts to property owners and occupants would occur when parcels of private property are partially or fully acquired. Additional impacts occur when those acquisitions result in the displacement of residences or businesses. Impacts may also occur when a business is displaced from a property that is leased from a private owner or from the LACMTA. Before mitigation, the impacts of acquisition would be considered adverse under NEPA and significant under CEQA. If, after mitigation (in this case, acquisition at fair market value and application of government relocation programs), the compensation package does not satisfactorily compensate for the effects of displacements, the remainder impacts would be considered adverse under NEPA and significant under CEQA.

Temporary construction easements are defined as those acquisitions of property necessary to permit temporary use of the property for construction staging and equipment storage areas, and for access to utilities and construction sites not otherwise accessible through public rights-of-way. Under NEPA, construction period impacts are typically not considered to be adverse because of their temporary nature. Under CEQA, construction period impacts can be significant; when a preliminary determination of significance is made, it is required that mitigation measures be developed in efforts to reduce impacts to less than significant levels. A determination of whether the remainder construction-period impacts are still significant when the mitigation measures are incorporated is made.

Permanent acquisitions include both full acquisitions of property, where an entire parcel would be acquired, and partial acquisitions of property, where only a portion of land, landscaping, parking, and/or structure would be acquired. Full permanent acquisitions would apply to both residential and non-residential properties, and it is assumed that any existing uses on the property would not be expected to continue. Full acquisitions of non-residential property that require temporarily relocation of the tenants occupying the property are considered to be temporary.

Partial permanent acquisitions would apply to both residential and non-residential properties where only a portion of land, landscaping, parking, and/or structure would be acquired. In such cases, if the portion of property that is acquired could not be returned to its owner and existing uses could not resume operation after construction is completed, it would be considered to be permanent. The assessment of impacts from permanent acquisitions under NEPA and CEQA is described above.

3-1.2.3 Construction-Period Impacts

a. No-Build Alternative

Under the No Build Alternative, the existing lease agreements along the LACMTA right-of-way would not be affected. In addition, full or partial acquisitions of properties outside either the LACMTA or SANBAG rights-of-way would not be required. Therefore, neither residential nor business displacements would occur. There would be no impacts in any of the cities in Phase I, Phase II Segment 1, or in Phase II Segment 2.

b. Transportation System Management (TSM) Alternative

The TSM Alternative would include improvement to the transportation system within existing street rights-of-way. It is assumed that this alternative would not affect the existing lease agreements and would not require the partial or full acquisition of property outside the LACMTA right-of-way. Therefore, no residential or business displacements would occur. There would be no impacts in any of the cities in Phase I, Phase II Segment 1, or in Phase II Segment 2.

c. LRT Alternatives

The anticipated construction staging areas along the entire LRT alignment would be located within the existing railroad right-of-way or within the parcels permanently acquired for the proposed project. Therefore, it is unlikely that any additional parcels along the LRT alignment would need to be temporarily acquired for construction staging purposes, except for some possible temporary easements that would be necessary for access to utilities and construction areas. The precise location of the temporary easements will be known with more certainty once final engineering design plans have been completed.

In most instances temporary construction easements would not be expected to adversely affect properties in the project area. The temporary, periodic nature of construction activities would limit the duration and intensity of the potential effects that construction easements might have on the affected parcels. All construction related noise and traffic impacts would be mitigated; therefore, most of the construction-related impacts would be minimized. It is assumed that construction easements would be granted by the governing cities to accommodate the laying of new tracks through streets intersecting the alignment.

3-1.2.4 Long-Term Impacts

These sections describe the nature and extent of potential acquisitions in each city along the alignment.

a. LRT Triple Track Configuration

Phase I – The Cities Affected and the Effects

The Triple Track configuration would not affect any existing lease agreements and would not require the partial or full acquisition of property outside the LACMTA right-of-way in any Phase I city. Therefore, no residential or business displacements would occur.

Phase II, Segment 1 – The Cities Affected and the Effects

Pasadena

The Triple Track configuration would not affect any existing lease agreements and would not require the partial or full acquisition of property outside the LACMTA right-of-way in Pasadena. Therefore, no residential or business displacements would occur.

Arcadia

There are three station options in Arcadia, which would all require different acquisitions. **Table 3-1.1** and **Figure 3-1.1** describe the potential acquisitions associated with each option.

| TABLE 3-1.1 POTENTIAL ARCADIA STATION ACQUISITIONS | | | | |
|---|-----------------------|--------|---------------------------------|-----------------------|
| APN* | Property Address | Impact | Use | Number of Relocations |
| Base Station and Option B (aerial) | | | | |
| 5773-006-910 | N/A | Full | Light Industrial (LACMTA Lease) | 1 business |
| 5773-005-028** | N/A | Full | Lumber Yard | |
| Option A <i>continued</i> | | | | |
| 5773-005-027** | 310 N Santa Anita Ave | Full | Light Industrial | 1 business |
| Parking – Wheeler Ave. & Santa Anita Ave. | | | | |
| 5773-012-901 | N/A | Full | Municipal Property | 0 |
| 5773-012-902 | N/A | Full | Municipal Property | 0 |
| Parking – Santa Clara St. & Front St. | | | | |
| 5773-006-015 | 45 E. Santa Clara St | Full | Office Building | 1 business |
| 5773-006-037 | 29 E Santa Clara St | Full | Light Industrial/ Commercial | 9 businesses |
| * APN = Assessor Parcel Number | | | | |
| ** The lumber storage shed located on parcel 5773-006-910 is assumed to be essential to the operation of the adjacent lumber yard and it would not be able to operate without the leased space. | | | | |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The Arcadia Base Station would require the revocation of a leased portion of the right-of-way, and the demolition of a lumber storage shed. The lumber storage shed is assumed to be essential to the operation of the adjacent lumberyard and it would not be able to operate without the leased space. Therefore, parcels 5733-005-27 and 5733-005-28 would also be acquired. The plumbing company that currently occupies parcel 5733-005-001 may be able to remain on site and the parcel may not be acquired.

The proposed parking structure that would be located at Wheeler Avenue and Santa Anita Avenue would be located on property that is currently owned by the City of Arcadia and is used for parking. Therefore no relocations would be required.

The proposed parking lot at Santa Clara Street and Front Street would require the acquisition of two parcels that are occupied by Nutrition Works, Grand Heating and Air Conditioning and several retail shops (approximately eight). All of the businesses on the site would be displaced as a result of the project.

The Arcadia Station Option A would not require the demolition of the lumber shed and would avoid the acquisition of the lumberyard operations. Option A would also only have one parking area, which would be an 800-space structure at Wheeler Avenue and Santa Anita Avenue. No displacements would occur as a result of this option.

The Arcadia Station Option B (Aerial Station) would require the same property acquisitions as the Arcadia Base Station option. Both options would displace 11 businesses.



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

0 132 264 Feet

LEGEND

- Full Aquisition
- Partial Aquisition
- Lease Aquisition
- Municipal Aquisition
- Station Boundary
- Railroad Right of Way
- Potential Parking



Figure 3-1.1: Arcadia Station Acquisitions

Monrovia

The Monrovia Station would require the acquisition of three parcels. Plastech, a specialty printing company is currently located on parcel 8507-006-045 with company parking on parcel 8507-003-046. The Monrovia Recycling Center and Nu-Way Carwash are currently located on parcel 8507-003-044. All of the buildings on the site, except for the carwash, would be demolished and the businesses would be displaced to accommodate a 500-space parking structure. The carwash operations would not be affected by the proposed project. **Table 3-1.2** and **Figure 3-1.2** describe potential acquisitions for the Monrovia Station.

| TABLE 3-1.2 POTENTIAL MONROVIA STATION ACQUISITIONS | | | | |
|--|--------------------|---------|--------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Parking Structure | | | | |
| 8507-003-044 | 145 W. Duarte Road | Partial | Commercial Acreage | 1 business |
| 8507-003-045 | 205 W. Duarte Road | Full | Heavy Industrial | 1 business |
| 8507-003-046 | N/A | Full | Parking Lot | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

A transit center with surface parking has been proposed north of the Monrovia Station; however, that project would be completed by the Redevelopment Agency of Monrovia and is not included in the proposed project.

Duarte

Table 3-1.3 and **Figure 3-1.3** and **Figure 3-1.4** describe potential acquisitions for the Duarte Station and right-of-way.

| TABLE 3-1.3 POTENTIAL DUARTE STATION ACQUISITIONS | | | | |
|--|-------------------------------|---------|----------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Right-of-Way | | | | |
| 8528-005-035 | 1400 Three Ranch Rd | Partial | Residential | 0 |
| 8528-005-034 | 1358 Three Ranch Rd | Partial | Residential | 0 |
| N/A | Duarte Road on street parking | Partial | Road | 0 |
| Parking | | | | |
| 8533-005-008 | 1500 Duarte Road | Partial | Hospital Parking Lot | 0 |
| 8533-005-015 | N/A | Partial | Hospital Parking Lot | 0 |
| 8533-005-905 | N/A | Partial | Municipal Property | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

0 132 264 Feet



LEGEND

- Full Acquisition
- Partial Acquisition
- Lease Acquisition
- Municipal Acquisition
- Station Boundary
- Railroad Right of Way
- Potential Parking

Figure 3-1.2: Monrovia Station Acquisitions



Sources: C&C Aerial Mapping Corp., 2003, Jones & Stokes Associates, 2004.

0 264 528 Feet

- LEGEND**
- Full Aquisition
 - Partial Aquisition
 - Lease Aquisition
 - Municipal Aquisition
 - Station Boundary
 - Railroad Right of Way
 - Potential Parking



Figure 3-1.3: Duarte Station Acquisitions



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.



LEGEND

- | | |
|--|---|
|  Full Aquisition |  Station Boundary |
|  Partial Aquisition |  Railroad Right of Way |
|  Lease Aquisition |  Potential Parking |
|  Municipal Aquisition | |

Figure 3-1.4: Duarte & Cinco Robles Right-of-Way Acquisition

The triple track configuration would require the acquisition of two small slivers of residential property located north of the intersection of Duarte Road and Cinco Robles Drive. Both acquisitions would be located in the backyard near the fence line. The acquisitions would be relatively small and would not result in any displacements.

The triple track configuration would also require 7 feet of on street parking near the proposed station and north of the City of Hope. The parking is typically used during performances at the City of Hope Auditorium. Partial acquisition of a parking lot owned by the City of Hope National Medical Center would also be required under this alternative. A new 250-space parking garage would be built on the site. The acquisition of on street parking and the City of Hope parking lot would not substantially affect the operation of the City of Hope medical center or auditorium.

Irwindale

Table 3-1.4 and Figure 3-1.5 describe potential acquisitions for the Irwindale Station and Maintenance Facility.

| TABLE 3-1.4 POTENTIAL IRWINDALE STATION AND MAINTENANCE FACILITY ACQUISITIONS | | | | |
|--|-------------------------|---------------|-----------------|------------------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Parking Structure | | | | |
| 8533-009-023 | 15801 1st Street | Partial | Food Processing | 0 |
| Irwindale Maintenance Facility | | | | |
| 8533-009-021 | 81 E. 1st Street | Full | Food Processing | 1 institution* |
| * The ATF facility would either remain in place, or it would be relocated to a vacant portion of the Miller property, just east of the existing facility. Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The Irwindale Station parking structure would require the partial acquisition of land owned by the Miller Brewing Company. The portion of the property that would be acquired is currently landscaped and maintained by the Miller Company, but is not essential to brewery operations.

A second parcel of land, also owned by Miller and located west of the Miller plant, would be acquired to build the Irwindale Maintenance Facility. The property is currently undeveloped except for a small portion that is occupied by the Federal Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). The ATF facility would either remain in place, or it would be relocated to a vacant portion of the Miller property, just east of the existing facility.



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

- LEGEND**
- Full Aquisition
 - Partial Aquisition
 - Lease Aquisition
 - Municipal Aquisition
 - Station Boundary
 - Railroad Right of Way
 - Potential Parking

Figure 3-1.5: Irwindale Station Acquisitions

Phase II, Segment 2 – The Cities Affected and the Effects

Azusa

The Azusa-Alameda Avenue Station would require the acquisition of eight parcels (for the parking structure) and the closure of North Alameda Avenue at the alignment. Currently there are eight residences, and two businesses located on the site of the proposed parking garage. The businesses include a furniture manufacturing company and a masonry company. All of the residences and businesses would be displaced as a result of the proposed parking structure.

Table 3-1.5 and Figure 3-1.6 describe potential acquisitions for the Azusa-Alameda Station.

| TABLE 3-1.5 POTENTIAL AZUSA-ALAMEDA AVENUE STATION ACQUISITIONS | | | | |
|--|-----------------------|----------------|-------------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Station | | | | |
| N/A | North Alameda Avenue | Street Closure | Public Street | 0 |
| Parking Structure | | | | |
| 8608-027-001 | 817 N. Dalton Avenue | Full | Triplex | 3 residences |
| 8608-027-002 | 813 N. Dalton Avenue | Full | Single Family Residence | 1 residence |
| 8608-027-003 | 809 N. Dalton Avenue | Full | Single Family Residence | 1 residence |
| 8608-027-005 | 824 N. Alameda Avenue | Full | Single Family Residence | 1 residence |
| 8608-027-006 | 822 N. Alameda Avenue | Full | Duplex | 2 residences |
| 8608-027-007 | 810 N. Alameda Avenue | Full | Commercial/ Industrial | 1 business |
| 8608-027-008 | 803 N. Dalton Avenue | Full | Warehouse | 1 business |
| 8608-027-009 | 805 N. Dalton Avenue | Full | Light Industrial | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

No acquisitions would be required for the construction of the proposed Azusa-Citrus Avenue Station; the developer developing the Monrovia Nursery site would provide station parking at a later date.



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

LEGEND

- Full Aquisition
- Partial Aquisition
- Lease Aquisition
- Municipal Aquisition
- Station Boundary
- Railroad Right of Way
- Potential Parking

0 264 528 Feet



Figure 3-1.6: Azusa - Alameda Avenue Station Acquisition

Glendora

Table 3-1.6 and Figure 3-1.7 describe potential acquisitions for the Glendora Station.

| TABLE 3-1.6 POTENTIAL GLENDORA STATION ACQUISITIONS | | | | |
|--|-----------------------|--------|------------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Surface Parking | | | | |
| 8639-002-001 | 255 S. Vermont Avenue | Full | Commercial/ Industrial | 6 businesses |
| 8639-002-019 | 255 S. Vermont Avenue | Full | Industrial Acreage | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The Glendora Station would include a surface parking lot west of Vermont Avenue and north of the proposed alignment. The 400-space surface parking lot would require the acquisition of two parcels. There are 6 businesses currently operating on the site. All of the businesses would be displaced as a result of the proposed project.

San Dimas

Table 3-1.7 and Figures 3-1.8 and 3-1.9 describe potential acquisitions for the San Dimas Station.

| TABLE 3-1.7 POTENTIAL SAN DIMAS STATION ACQUISITIONS | | | | |
|--|------------------|--------|------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Parking – North of the Alignment and West of Eucla Ave. | | | | |
| 8386-006-010 | 155 N. Eucla Ave | Full | Lumber Yard | 1 business |
| 8386-006-025 | N/A | Full | Industrial Lot | 0 |
| 8386-006-027 | N/A | Full | Industrial Lot | 0 |
| 8386-006-028 | N/A | Full | Commercial Lot | 0 |
| 8386-006-026 | N/A | Full | Industrial Lot | 0 |
| Parking – North of the Alignment and West of Acacia St. | | | | |
| 8386-015-015 | 127 N. Acacia St | Full | Light Industrial | 1 business |
| 8386-015-020 | N/A | Full | Vacant Land | 0 |
| 8386-015-814 | N/A | Full | Railroad | 0 |
| 8386-015-021 | N/A | Full | Industrial Lot | 0 |
| 8386-015-023 | N/A | Full | Commercial Lot | 0 |
| 8386-015-024 | N/A | Full | Commercial Lot | 0 |
| 8386-015-815 | N/A | Full | Railroad | 0 |
| 8386-016-035 | N/A | Full | Industrial Lot | 0 |

| TABLE 3-1.7 <i>continued</i> | | | | |
|--|-------------------|--------|--------------------|-----------------------|
| POTENTIAL SAN DIMAS STATION ACQUISITIONS | | | | |
| APN | Property Address | Impact | Use | Number of Relocations |
| Parking – South of the Alignment and West Monte Vista Ave. | | | | |
| 8390-021-905 | N/A | Full | Municipal Property | 0 |
| Parking – South of the Alignment and West of San Dimas Ave. | | | | |
| 8390-021-904 | 100 W. Railway St | Full | Park and Ride Lot | 0 |
| 8390-021-905 | N/A | Full | Park and Ride Lot | 0 |
| 8390-021-906 | N/A | Full | Park and Ride Lot | 0 |
| 8390-021-907 | N/A | Full | Park and Ride Lot | 0 |
| 8390-021-908 | N/A | Full | Park and Ride Lot | 0 |
| 8390-021-909 | N/A | Full | Park and Ride Lot | 0 |
| 8390-021-910 | N/A | Full | Park and Ride Lot | 0 |
| 8390-021-912 | 124 W. Railway St | Full | Park and Ride Lot | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The proposed San Dimas Station Triple Track configuration would include four parking lots. The first parking lot would be located north of the proposed alignment and west of Eucla Avenue; it would require the acquisition of 5 parcels. Four of the parcels are vacant. However, Henkels and McCoy, Inc., a national engineering and construction firm, have offices and an equipment yard located on parcel 8386-006-010. The construction yard and offices would be displaced as a result of the proposed project.

The second parking lot would be located north of the proposed alignment and west of Acacia Street; it would require the acquisition of eight parcels. Most of the parcels are used for parking and storage. A sign company located on parcel 8386-015-015 would be displaced as a result of the proposed project.

The third parking lot would be located south of the proposed alignment and west of Monte Vista Avenue; it would require the acquisition of one parcel. The parcel is currently owned by the City of San Dimas, and it is vacant. This parking lot would not result in any displacements.

The fourth parking lot would be located south of the proposed alignment and west of San Dimas Avenue; it would require the acquisition of 8 parcels. The parcels are all currently owned by the City of San Dimas, and are used for park and ride parking. This parking lot would not result in any displacements.



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

0 264 528 Feet

- LEGEND**
- Full Aquisition
 - Partial Aquisition
 - Lease Aquisition
 - Municipal Aquisition
 - Station Boundary
 - Railroad Right of Way
 - Potential Parking



Figure 3-1.7: Glendora Station Acquisition



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

LEGEND

- Full Aquisition
- Partial Aquisition
- Lease Aquisition
- Municipal Aquisition
- Station Boundary
- Railroad Right of Way
- Potential Parking

Figure 3-1.8: San Dimas Station Acquisitions



Sources: C&C Aerial Mapping Corp., 2003, Jones & Stokes Associates, 2004

LEGEND

- | | | | |
|---|----------------------|---|-----------------------|
|  | Full Aquisition |  | Station Boundary |
|  | Partial Aquisition |  | Railroad Right of Way |
|  | Lease Aquisition |  | Potential Parking |
|  | Municipal Aquisition | | |

Figure 3-1.9: San Dimas Station Parking Acquisition

La Verne

The La Verne Station – E Street Option and D Street Option would not require any acquisitions. The stations would be located within the existing LACMTA right-of-way and the parking would be at the existing Fairplex parking lot southeast of the proposed stations.

Table 3-1.8 and Figure 3-1.10 describe potential acquisitions for the La Verne Station.

| TABLE 3-1.8 POTENTIAL LAVERNE STATION – FAIRPLEX OPTION D ACQUISITIONS | | | | |
|---|--------------------|--------|------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Transit Center | | | | |
| 8377-028-005 | 2321 Arrow Highway | Full | Heavy Industrial | 1 business |
| 8377-028-006 | 1943 N. White Ave | Full | Commercial Lot | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The La Verne Station – Fairplex Option D would require the acquisition of two parcels. Parcels 8377-028-005 and 8377-028-006 would be acquired to accommodate a joint LRT/MetroLink/bus transit center with a parking lot. The building on the site would be demolished and the business, Paper Pak Corporation, would be displaced. The building is currently used as a manufacturing facility for the production of adult incontinence products.

Pomona

Table 3-1.9 and Figure 3-1.11 describe potential acquisitions for the Pomona Station—Garey Avenue/MetroLink Option.

| TABLE 3-1.9 POTENTIAL POMONA STATION – GAREY AVE/METROLINK OPTION ACQUISITIONS | | | | |
|---|-------------------|---------|------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Parking | | | | |
| 8371-011-001 | 2771 N. Garey Ave | Partial | Heavy Industrial | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The Pomona Station – Garey Avenue/MetroLink Option would include the partial acquisition of one parcel. Currently the Hamilton Sundstrand offices are located on a portion of the site. However, there is a large undeveloped area that would be acquired for the construction of an 800 space parking structure. The partial acquisition of this parcel is not anticipated to substantially affect business operations at Hamilton Sundstrand and no displacements would occur.

Table 3-1.10 and **Figure 3-1.12** describe potential acquisitions for the Pomona Station—Towne Avenue Option A.

| TABLE 3-1.10 POTENTIAL POMONA STATION – TOWNE AVE OPTION A ACQUISITIONS | | | | |
|--|-------------------|--------|--------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Parking | | | | |
| 8313-001-001 | N/A | Full | Industrial Acreage | 0 |
| 8313-001-002 | 2710 N. Towne Ave | Full | Light Industrial | 1 Business |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The Pomona Station – Towne Avenue Option A would include the full acquisition of two parcels to accommodate an 800-space surface parking lot. One parcel (8313-001-001) is vacant, and would not result in any displacements. The other parcel (8313-001-002) is mostly vacant; however, Ray Silva Painting operates out of a small building in the southwest portion of the lot. This business would be displaced as a result of the proposed parking area.

Claremont

Table 3-1.11 and **Figures 3-1.13, 3-1.14, and 3-1.15** describe potential acquisitions for the Claremont Station.

| TABLE 3-1.11 POTENTIAL CLAREMONT STATION ACQUISITIONS | | | | |
|---|-------------------------------|----------------|---------------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Right-of-Way | | | | |
| Santa Fe Street | From Bucknell Ave to Olive Ct | Street Closure | Public Street | 0 |
| 8313-024-022 | 100 S Indian Hill Blvd | Partial | Residential | 0 |
| 8313-023-019 | 108 Olive St | Partial | Commercial/ Industrial | 0 |
| 8313-023-020 | 109 Spring St | Partial | Commercial/ Industrial | 0 |
| 8313-022-001 | 111 S. College Ave | Partial | Commercial/ Industrial | 0 |
| 8314-018-800 | N/A | Partial | Utilities | 0 |
| Northern Alignment Right-of-Way (Former Pacific Electric Right-of-Way) | | | | |
| 8314-012-015 | N/A | Full | Vacant | 0 |
| 1007-073-21-0000 | N/A | Partial | Vacant | 0 |
| 1007-073-20-0000 | N/A | Partial | Residential | 0 |

| TABLE 3-1.11 <i>continued</i> | | | | |
|---|-------------------------|---------------|--------------------|------------------------------|
| POTENTIAL CLAREMONT STATION ACQUISITIONS | | | | |
| APN | Property Address | Impact | Use | Number of Relocations |
| Parking – West of Indian Hill Blvd and South of First St | | | | |
| 8313-009-901 | N/A | Full | Municipal Property | 0 |
| 8313-009-905 | 101 S. Indian Hill Blvd | Full | Municipal Property | 0 |
| Parking – East of College Ave and South of First St | | | | |
| 8313-009-905 | 101 S. Indian Hill Blvd | Full | Municipal Property | 0 |
| 8314-017-900 | N/A | Full | Municipal Property | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

To accommodate the proposed Triple Track configuration, additional right-of-way would be required south of the existing right-of-way between Bucknell Avenue and College Park. Santa Fe Street would be closed, or reduced to one-way, from Bucknell Avenue to Olive Street. The closure of Santa Fe Street would restrict access to 19 residential parking spaces on parcel 8313-024-022. It is not anticipated that the loss of parking would substantially affect the residential development since other parking for the property is available and no displacements are anticipated.

Parking on parcels 8313-023-019 and 8313-023-020 would also be eliminated; however additional parking on both parcels is available. It is not anticipated that the loss of parking would result in the displacement of the businesses located on these parcels.

A portion of parcel 8313-022-001 would be required to accommodate the proposed alignment; however, it is not anticipated that the acquisition would require the demolition of the two buildings currently located on the site. Currently there are 9 businesses located in the buildings; none of the businesses would be displaced as a result of the proposed project.

There are five water tanks on parcel 8314-018-800, which may be removed as a result of the proposed project. It is anticipated that the tanks could be avoided by project construction; however, if necessary the tanks may be relocated within the existing parcel.

The proposed alignment forks just east of the Claremont Station and there are two potential alignments; a northern alignment that parallels Huntington Drive in abandoned railroad right-of-way owned by SANBAG and a southern alignment that continues along the existing alignment. If the northern alignment were selected three parcels would have to be acquired along the right-of-way. Parcel 8314-012-015 is located in Los Angeles County and is vacant. Parcels 1007-073-20-0000 and 1007-073-21-0000 are located in San Bernardino and are residential. However, the partial acquisition would not result in the displacement of the residences located on the parcels.

The Claremont Station would have two parking lots. A 700-space parking structure would be located on parcels 8313-009-905 and 8314-017-900, which are owned by the City of Claremont Redevelopment Agency and are currently vacant. No displacements would result from the construction of this parking structure.



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

LEGEND

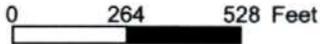
- Full Aquisition
- Partial Aquisition
- Lease Aquisition
- Municipal Aquisition
- Station Boundary
- Railroad Right of Way
- Potential Parking



Figure 3-1.12: Pomona - Towne Avenue Station Acquisition



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.



LEGEND

- Full Aquisition
- Partial Aquisition
- Lease Aquisition
- Municipal Aquisition
- Station Boundary
- Railroad Right of Way
- Potential Parking

Figure 3-1.13: Claremont Station Acquisitions



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

LEGEND

| | |
|--|---|
|  Full Aquisition |  Railroad Right of Way |
|  Partial Aquisition |  Potential Parking |
|  Lease Aquisition | |
|  Municipal Aquisition | |

Figure 3-1.14: Claremont Station Parking Acquisitions



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.



LEGEND

- | | |
|--|---|
|  Full Aquisition |  Station Boundary |
|  Partial Aquisition |  Railroad Right of Way |
|  Lease Aquisition |  Potential Parking |
|  Municipal Aquisition | |

Figure 3-1.15: Northern Alignment Right-Of-Way (Former Pacific Electric Right-Of-Way) Acquisitions

The second parking lot would be located east of College Avenue and South of First Street in the existing Metrolink parking lot. Metrolink passengers could continue to parking at the site, and no displacements would occur.

Montclair

The Montclair Station (North) would not require any acquisitions. Parking would be accommodated within the existing TransCenter parking.

Table 3-1.12 and Figure 3-1.16 describe potential acquisitions for the Montclair Station.

| TABLE 3-1.12 POTENTIAL MONTCLAIR STATION (SOUTH) ACQUISITIONS | | | | |
|--|----------------------------|---------|------------------------|-----------------------|
| APN | Property Address | Impact | Use | Number of Relocations |
| Station | | | | |
| 1007-070-02-0000 | N/A | Partial | Utilities | 0 |
| 1007-070-04-0000 | 4952-5050 E. Arrow Highway | Partial | Commercial/ Industrial | 0 |
| 1007-070-01-0000 | 5150 E. Arrow Highway | Partial | Commercial/ Industrial | 0 |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | | |

The Montclair Station (South) would require the relocation of the Metrolink platform to the south side of the rail right-of-way in order for the LRT tracks to be placed on the north side of the right-of-way. The southern LRT platform would be located immediately next to a relocated Metrolink side platform.

The Southern station would also require three partial acquisitions. The portion of the property that would be acquired is currently vacant. The acquisitions would not displace any businesses or substantially affect the operation of the businesses.

Upland

The proposed project would not require any acquisitions in the City of Upland.



Sources: C&C Aerial Mapping Corp., 2003; Jones & Stokes Associates, 2004.

0 264 528 Feet

LEGEND

- | | |
|--|--|
| Full Aquisition | Station Boundary |
| Partial Aquisition | Railroad Right of Way |
| Lease Aquisition | Potential Parking |
| Municipal Aquisition | |



Figure 3-1.16: Montclair Station Acquisitions

Summary of Impacts for Full Build Alternative, Triple Track Configuration

Table 3-1.13 summarizes the potential acquisitions for the Full Build Alternative, Triple Track configuration by city.

| TABLE 3-1.13 SUMMARY OF POTENTIAL TRIPLE TRACK ACQUISITIONS FULL BUILD ALTERNATIVE BY CITY | | | |
|--|--|---|---|
| City | Number of Full Acquisitions | Number of Partial Acquisitions | Number of Relocations |
| Pasadena | 0 | 0 | 0 |
| Arcadia | 7 (Arcadia Station), 3 (Option A), 7 (Option B) | 0 | 11 businesses (Arcadia Station), 0 (Option A), 11 (Option B) |
| Monrovia | 2 | 1 | 2 businesses |
| Duarte | 0 | 6 | 0 |
| Irwindale | 1 | 1 | 1 institution* |
| Azusa | 8 (Azusa-Alameda Station), 0 (Azusa-Citrus Station) | 0 | 8 residences 2 businesses (Azusa-Alameda Station), 0 (Azusa-Citrus Station) |
| Glendora | 2 | 0 | 6 businesses |
| San Dimas | 22 | 0 | 2 businesses |
| La Verne | 0 (E St Option), 0 (D St Option), 2 (Fairplex Option) | 0 | 0 (E St Option), 0 (D St Option), 1 business (Fairplex Option) |
| Pomona | 0 (Garey Ave Option), 2 (Towne Ave Option) | 1 (Garey Ave Option), 0 (Towne Ave Option) | 0 (Garey Ave Option), 1 business (Towne Ave Option) |
| Claremont | 5 | 7 | 0 |
| Montclair | 0 | 0 (North Station Option), 3 (South Station Option) | 0 |
| Upland | 0 | 0 | 0 |
| *The ATF Facility would either remain in place, or it would be relocated to a vacant portion of the Miller property | | | |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | |

Summary of Impacts for Build LRT Alternative to Maintenance Facility, Triple Track Configuration

Table 3-1.14 summarizes the potential acquisitions for the Build LRT Alternative to Maintenance Facility, Triple Track configuration.

| TABLE 3-1.14 SUMMARY OF POTENTIAL TRIPLE TRACK ACQUISITIONS BUILD LRT TO MAINTENANCE FACILITY ALTERNATIVE BY CITY | | | |
|---|---|--------------------------------|--|
| City | Number of Full Acquisitions | Number of Partial Acquisitions | Number of Relocations |
| Pasadena | 0 | 0 | 0 |
| Arcadia | 7 (Arcadia Station), 3 (Option A), 7 (Option B) | 0 | 11 businesses (Arcadia Station), 0 (Option A), 11 (Option B) |
| Monrovia | 2 | 1 | 2 businesses |
| Duarte | 0 | 6 | 0 |
| Irwindale | 1 | 1 | 1 institution* |
| *The ATF Facility would either remain in place, or it would be relocated to a vacant portion of the Miller property, just east of the existing facility. | | | |
| Source: Myra L. Frank & Associates, Inc., 2003. | | | |

b. LRT, Double Track Configurations

The permanent acquisitions required for the Double Track configurations would be identical to the acquisitions for the Triple Track configuration except in Duarte. The Double Track configurations would not require the acquisition of 7-feet of on street parking on Duarte Road near the City of Hope National Medical Center. The configuration of the stations may differ between the double and Triple Track configurations; however, the required acquisitions would be the same for both alternatives, with the exception of the Duarte Road right-of-way.

3-1.2.5 Cumulative Impacts

The No Build and TSM Alternatives would not require any acquisitions or displacements and therefore would not contribute to any significant cumulative impacts.

The Double Track and Triple Track LRT Alternatives would require residential, commercial, and industrial acquisitions and displacements. However, compliance with the Uniform Relocation Assistance Act and the California Relocation Assistance Guidelines would mitigate the project effects to a less than significant level.

Many developments have been proposed within a one-mile radius of the proposed alignment (see the related projects summary in the appendices). However, most of the developments are small infill projects that would not result in any displacements. Therefore, it is not anticipated that there would be a cumulative negative impact as a result of the proposed developments along the Gold Line Phase II Alignment. Future redevelopment of vacant parcels that may result from transit-oriented development would be under the guidance of the city in which the project was located.

In addition, the proposed project would not considerably contribute to cumulative impacts related to acquisitions and displacements. The proposed project corridor is 24 miles and would result in the displacement of less than 38 businesses and 8 residences, all of which would receive relocation assistance as mandated under the Uniform Relocation Act and the California Relocation Guidelines.

3-1.2.6 Impacts Addressed by Regulatory Compliance

a. No Build Alternative

The No Build Alternative would not require any acquisitions or displacements. Consequently no regulatory compliance would be required to address impacts from the No Build Alternative.

b. Transportation System Management (TSM) Alternative

The TSM Alternative would not require any acquisitions or displacements. Consequently no regulatory compliance would be required to address impacts from the No Build Alternative.

c. LRT Alternatives

The potential effect of property acquisitions would be mitigated to a less than significant level through compliance with applicable federal and state laws governing property acquisition procedures. The Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970, as amended (Uniform Act), mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced as a direct result of programs or projects undertaken by a federal agency or with federal financial assistance. The Uniform Act provides for uniform and equitable treatment of persons displaced from their homes or businesses who are eligible for assistance and establishes uniform and equitable land acquisition policies. Generally, the Uniform Act requires that all aspects of property acquisition, including notice, appraisal, negotiation, and payment, be as reasonable and fair as possible and be handled as expeditiously as practicable.

According to section 6018 of the Relocation Assistance and Real Property Acquisitions Guidelines (California Code of Regulations), the provisions of the California Relocation Act (California Act) (Government Code sections 7260-7277) shall apply in the absence of federal funds and/or involvement if a public entity undertakes a project and consequently must provide relocation assistance and benefits. The California Act, which is consistent with the intent and guidelines of the Uniform Act, seeks to (1) ensure the consistent and fair treatment of owners of real property, (2) encourage and expedite acquisitions by agreement to avoid litigation and relieve congestion in the courts, and (3) promote confidence in public land acquisitions.

The Uniform Act requires both financial assistance and programmatic assistance to eligible displaced persons, businesses and non-profits, as described below.

Financial Assistance: Eligible displaced businesses and non-profit organizations are entitled to compensation for: reasonable moving expenses, direct losses of tangible personal property (not to exceed the cost of moving such property), expenses of searching for replacement property and expenses of reestablishing a small business or non-profit (not to exceed \$10,000). In lieu of the foregoing payments, a displaced business or non-profit can elect to receive a fixed relocation assistance payment of between \$1,000 and \$20,000.

Programmatic Assistance: Eligible displaced persons, businesses and non-profit organizations are entitled to certain programmatic assistance in addition to monetary compensation. This assistance takes the form of coordinated relocation planning and counseling and may include recommendations on replacement housing or new business locations, information on other government assistance programs, and any other advisory services that may minimize the hardships of relocation. Programmatic assistance also would include the provision of certain "last resort" housing in the event that comparable replacement housing that is decent, safe, and sanitary is not available to displaced persons.

3-1.3 Potential Mitigation

3-1.3.1 Construction Period Mitigation Measures

The No-Build and TSM Alternatives would not require any acquisitions or displacements, and would therefore not have any impacts to mitigate.

3-1.3.2 Long Term Mitigation

All significant impacts related to project acquisitions or displacements for the LRT Double and Triple Track configurations would be mitigated to a less-than-significant level through compliance with the Uniform Act and the California Act as described in Section 3-1.2.6 above.

3-1.4 Impact Results with Mitigation

The following sections show the results of complying with regulatory requirements and proposed mitigation measures. This section summarizes where identified impacts have been eliminated or reduced to less than adverse/less than significant levels, or whether there may be remainder impacts.

3-1.4.1 Construction Period

a. No-Build Alternative

Construction impacts for the No-Build Alternative would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

b. TSM Alternative

Construction impacts for the TSM Alternative would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

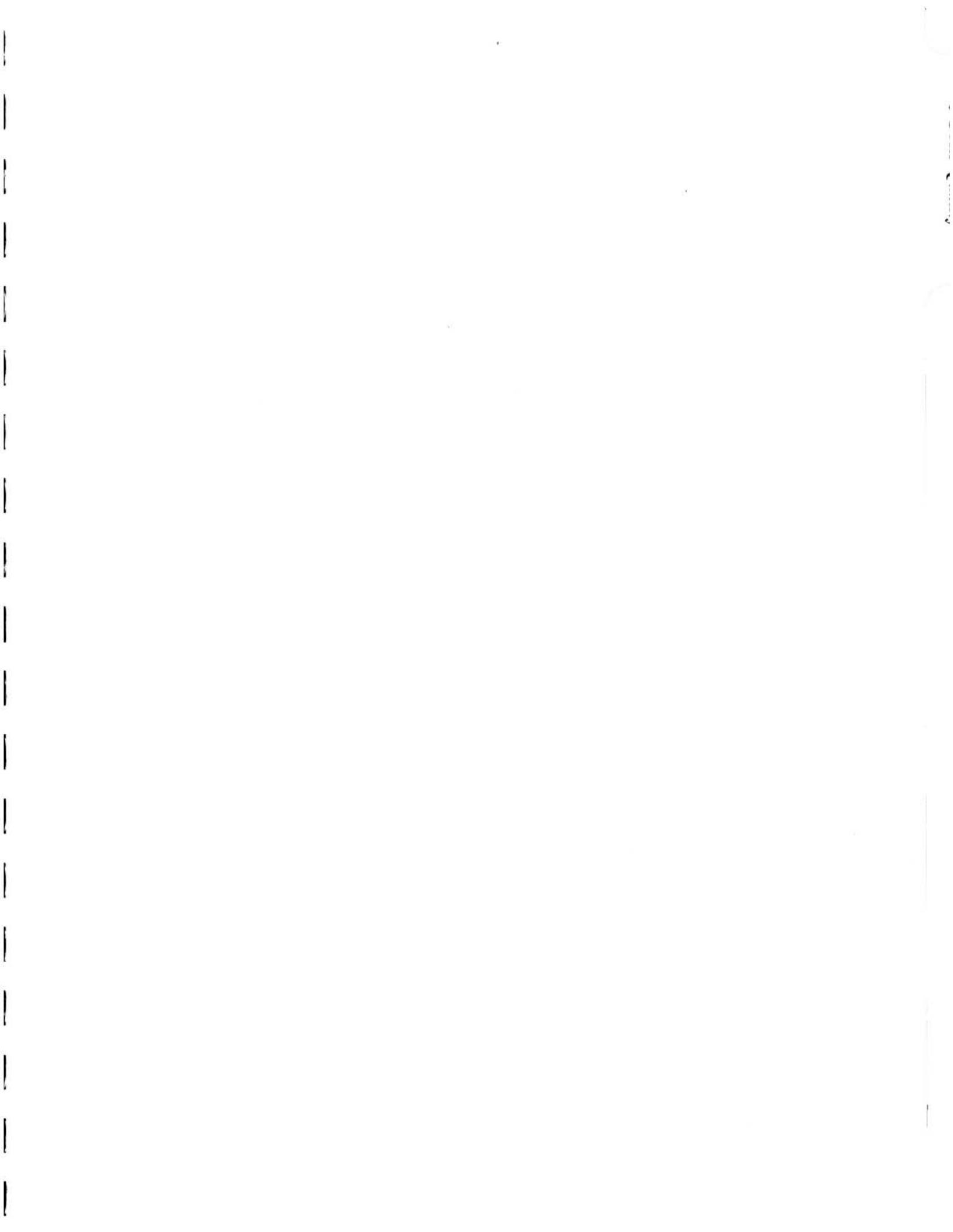
c. LRT Alternatives

Construction period impacts would be eliminated or reduced to less-than-adverse/less-than-significant levels by complying with the local, state, and/or federal regulatory requirements and/or permits identified in Section 3-1.2.6, and no additional measures to mitigate impacts were identified in Section 3-1.3. As a result of these two conditions, construction period impacts would be not adverse under NEPA and not significant under CEQA.

3-1.4.2 Long Term

Long-term impacts for the all of the alternatives would not change from the level of long-term impact initially identified since no mitigation measures would be required or implemented.

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3-2 AIR QUALITY

Summary of Impacts

The result of the mesoscale (regional) analysis is that proposed projects alternatives would have a small affect on regional emission rates – the LRT alternative would slightly reduce emissions and the TSM alternative would increase emission rates by amounts that, with one exception, are not considered to be significant by the South Coast Air Quality Management District (SCAQMD). Only NO_x emissions are estimated to increase by an amount greater than the emission threshold (i.e., 62 pounds per day as compared with a threshold value of 55 pounds per day).

The result of the localized (microscale) analysis is that proposed project alternatives would not cause or exacerbate a violation of a state or national ambient air quality standard.

During construction, the CEQA (SCAQMD) quarterly impact thresholds for NO_x and particulate matter would be exceeded and mitigation measures are required. However, even after mitigation measures are applied, impacts would remain significant.

3-2.1 Introduction

The proposed project alternatives would alter traffic conditions in the study area. Air quality, which is a general term used to describe pollutant levels in the atmosphere, will be affected by these changes. Potential air quality impacts could result from changes in traffic volumes and traffic patterns at congested locations near proposed transit stations and associated parking facilities.

This chapter assesses air quality impacts associated with the proposed alternatives. Air quality analyses were conducted to estimate the potential impacts associated with increased traffic volumes or changes in traffic patterns at congested intersections. In addition, changes in vehicular emissions generated in the study area as a result of the proposed alternatives were estimated, and determinations were made as to whether these changes conform to air quality regulatory requirements.

3-2.2 Applicable Pollutants

3-2.2.1 Criteria Pollutants

The following air pollutants have been identified by the U.S. Environmental Protection Agency (EPA) as being of concern nationwide: carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO_x), photochemical oxidants, lead (Pb), sulfur dioxide (SO₂), and particulate matter. In urban areas, ambient concentrations of CO, HC, and photochemical oxidants are predominantly influenced by motor vehicle activity; NO_x are emitted from both mobile and stationary sources; emissions of sulfur oxides (SO_x) are associated mainly with stationary sources; and emissions of particulate matter are associated with stationary sources, and to a lesser extent, diesel-fueled mobile sources (heavy trucks and buses). Lead emissions, which historically were principally influenced by motor vehicle activity, have been substantially reduced due to the elimination of lead from gasoline.

a. Carbon Monoxide

CO is a colorless and odorless gas that is generated in the urban environment primarily by the incomplete combustion of fossil fuels in motor vehicles. Prolonged exposure to high levels of CO can cause headaches, drowsiness, loss of equilibrium, or heart disease. CO concentrations can vary greatly over relatively short distances. Relatively high concentrations of CO are typically found near congested intersections, along heavily used roadways carrying slow-moving traffic, and in areas where atmospheric dispersion is inhibited by urban “street canyon” conditions. Consequently, CO concentrations must be predicted on a localized, or microscale, basis.

b. Hydrocarbons, Nitrogen Oxides, and Photochemical Oxidants

Hydrocarbons include a wide variety of volatile organic compounds, emitted principally from the storage, handling, and use of fossil fuels. NO_x constitute a class of compounds that include nitrogen dioxide (NO₂) and nitric oxide, both of which are emitted by motor vehicles and stationary sources. Both hydrocarbons and NO_x are of concern primarily because most of those compounds react in sunlight to form photochemical oxidants, including ozone. This reaction occurs comparatively slowly and ordinarily takes place far downwind from the site of actual pollutant emission. The effects of these pollutants are normally examined on an area wide, or mesoscale, basis.

c. Lead

Lead emissions are principally associated with industrial sources and motor vehicles using gasoline containing lead additives. As the availability of leaded gasoline has decreased, motor vehicle-related lead emissions have decreased resulting in a significant decline of concentrations of lead. Atmospheric lead concentrations in California are well below national standards. Lead concentrations are expected to continually decrease; therefore an analysis of lead from mobile sources is not warranted.

d. Sulfur Dioxide

High concentrations of SO₂ affect breathing and may aggravate existing respiratory and cardiovascular disease. SO₂ emissions are generated from the combustion of sulfur-containing fuels—oil and coal—largely from stationary sources such as coal and oil-fired power plants, steel mills, refineries, pulp and paper mills, and nonferrous smelters. In urban areas, especially in the winter, smaller stationary sources such as space heating contribute to elevated SO₂ levels. Although diesel-fueled heavy-duty vehicles also emit SO₂, transportation sources are not considered by EPA (and other regulatory agencies) to be significant sources of this pollutant that should be quantitatively evaluated in a mobile source impact analysis.

e. Particulate Matter

Particulate matter is a broad class of air pollutants that exist as liquid droplets or solids, with a wide range of sizes and chemical composition. Particulate matter is emitted by a variety of sources, both natural and man-made. Natural sources include the condensed and reacted forms of natural organic vapors, salt particles resulting from the evaporation of sea spray, wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and debris from live and decaying plant and animal life, particles eroded from beaches, desert, soil and rock, particles from volcanic and geothermal eruptions and forest fires. Major man-made sources of particulate matter include the combustion of fossil fuels such as vehicular exhaust, power generation and home heating, chemical and manufacturing processes, all types of construction, agricultural activities, and wood-burning fireplaces.

Of particular health concern are those particles that are smaller than or equal to 10 microns (PM₁₀) in size and 2.5 microns (PM_{2.5}) in size. The principal health effects of airborne particulate matter are on the respiratory system. Regional emissions of PM₁₀ are considered for this analysis. However, since diesel fueled vehicles are the principal localized mobile source of PM₁₀ emissions and the project alternatives will not measurably affect diesel emissions, localized PM₁₀ impacts were not considered.

Because the PM_{2.5} standards are relatively new (i.e., effective September 16, 1997), the EPA is allowing time to build a nationwide monitoring network—to collect and analyze the data needed to designate areas as to whether or not they meet these standards, as well as to develop implementation plans for areas that will be designated as not being in attainment for these standards. In addition, until a comprehensive PM_{2.5} modeling system is promulgated by the EPA, compliance with national standards cannot be determined.

3-2.2.2 Non-Criteria Pollutants

Toxic air pollutants, also called air toxics, are those pollutants that cause or may cause cancer or other serious health effects. The primary sources of air toxic contaminants are commercial and industrial facilities. Examples of toxic air pollutants include benzene, which is found in gasoline; perchlorethylene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. Examples of other air toxics include dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.

Diesel exhaust, which is produced when an engine burns diesel fuel and is commonly found throughout the environment, is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses and cars and off-road diesel engines that include locomotives, marine vessels and heavy duty equipment. Particulate matter from diesel-fueled engines has been identified as a toxic air contaminant (TAC) by the California Air Resources Board (CARB) and diesel particulate matter (DPM) is considered a TAC under California's air toxics program. DPM is a complex mixture of thousands of gases and fine particles (commonly known as soot) that contains more than 40 toxic air contaminants. These include many known or suspected cancer-causing substances, such as benzene, arsenic, formaldehyde, and nickel. The sizes of DPM that are of greatest health concern are those that are in the categories of fine and ultra fine particles. The composition of these particles may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals and other trace elements.

As the project alternatives are not anticipated to measurably affect air toxic emissions on either a local or regional basis, an analysis of these emissions is not warranted

3-2.2.3 Pollutants for Analysis

The air pollutants identified as being of concern that were considered for this analysis are as follows:

- CO is the pollutant of concern for the localized air quality analysis of emissions from motor vehicles; and
- Project-related changes in regional CO, NO_x, hydrocarbon, and PM₁₀ emissions are considered to determine whether the proposed project alternatives will adversely affect the region's compliance with the ozone standards.

3-2.3 Air Quality Standards and Regulations

3-2.3.1 Standards

National Ambient Air Quality Standards (NAAQS) have been established for the following air pollutants: CO, NO₂, ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), SO₂, and lead (Pb). The “primary” standards have been established to protect the public health. The “secondary” standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the general welfare. The State of California has also established ambient air quality standards, known as the California Ambient Air Quality Standards (CAAQS). These standards are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. The state and national standards are presented in **Table 3.2-1**. Because the CAAQS are more stringent than the NAAQS, they are used as the comparative standard in the analysis contained in this report.

| Pollutant | Averaging Time | California Standards ¹ | | Federal Standards ² | | |
|-------------------|------------------------------|--|--|--|--------------------------------|--|
| | | Concentration ³ | Method ⁴ | Primary ^{3,6} | Secondary ^{3,6} | Method ⁷ |
| O ₃ | 1 hour | 0.09 ppm (180 ug/m ³) | Ultraviolet Gravimetric or Beta Attenuation | 0.12 ppm (235 ug/m ³) ⁵ | Same as primary | Ultraviolet photometry |
| | 8 hour | N/A | | 0.08 ppm (157 ug/m ³) ⁵ | | |
| PM ₁₀ | 24 hour | 50 ug/m ³ | Ultraviolet Gravimetric or Beta Attenuation | 150 ug/m ³ | Same as primary standard | Inertial Separation and Gravimetric Analysis |
| | Annual arithmetic mean | 20 ug/m ³ | | 50 ug/m ³ | | |
| PM _{2.5} | 24 hour | No Separate State Standard | Gravimetric or Beta Attenuation | 65 ug/m ³ | Same as primary standard | Inertial Separation and Gravimetric Analysis |
| | Annual arithmetic mean | 12 ug/m ³ | | 15 ug/m ³ | | |
| CO | 8 hour | 9.0 ppm (10 mg/m ³) | Non-dispersive infrared photometry (NDIR) | 9 ppm (10 mg/m ³) | None | Non- Dispersive Infrared Photometry (NDIR) |
| | 1 hour | 20 ppm (23 mg/m ³) | | 35 ppm (40 mg/m ³) | | |
| | 8 hour (Lake Tahoe) | 6 ppm (7 mg/m ³) | | N/A | | |
| NO ₂ | Annual arithmetic mean | N/A | Gas phase chemilum- inescence | 0.053 ppm (100 ug/m ³) | Same as primary standard | Gas Phase Chemilum- inescence |
| | 1 hour | 0.25 ppm (470 ug/m ³) | | N/A | | |
| Pb ⁹ | 30 days average | 1.5 ug/m ³ | Atomic Absorption | N/A | N/A | High Volume Sampler and Atomic Absorption |
| | Calendar quarter | N/A | | 1.5 ug/m ³ | | |
| SO ₂ | Annual arithmetic mean | N/A | Ultraviolet | 0.030 ppm (80 ug/m ³) | N/A | Spectro- photometry (Pararosaniline method) |
| | 24 hour | 0.04 ppm (105 ug/m ³) | Fluorescence | 0.14 ppm (365 ug/m ³) | | |

TABLE 3.2-1 *continued*
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS

| Pollutant | Averaging Time | California Standards ¹ | | Federal Standards ² | | |
|---|---|--|--------------------------|--------------------------------|-----------------------------------|---------------------|
| | | Concentration ³ | Method ⁴ | Primary ^{3,5} | Secondary ^{3,6} | Method ⁷ |
| | 3 hour | N/A | | N/A | 0.5 ppm (1300 ug/m ³) | |
| | 1 hour | 0.25 ppm (655 ug/m ³) | | N/A | N/A | |
| Visibility reducing particles | 8 hour (10 a.m. to 6 p.m., Pacific Standard Time) | In sufficient amount to produce an extinction coefficient of 0.23 per km-visibility of 10 mi (16 km) or more (0.07-30 mi [0.11-48 km] or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape. | | No federal standards | | |
| Sulfates | 24 hour | 25 ug/m ³ | | | | |
| Hydrogen sulfide | 1 hour | 0.03 ppm (42 ug/m ³) | Ultraviolet Fluorescence | | | |
| Vinyl Chloride ⁹ | 24 hour | 0.01 ppm (26 ug/m ³) | Gas Chromatography | | | |
| <p>1. California standards for O₃, CO (except Lake Tahoe), SO₂ (1 and 24 hour), NO₂, suspended particulate matter-PM₁₀, PM_{2.5}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.</p> <p>2. National standards (other than O₃, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 ug/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standards. Contact EPA for further clarification and current federal policies.</p> <p>3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° C (77° F) and a reference pressure of 760 mm (30 in) of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25° C (77° F) and reference pressure measurements of air quality are to be corrected to a reference temperature of 25° C (77° F) and a reference pressure of 760 mm (30 in) of mercury (1,013.2 milibar [1 atmosphere]); ppm in this table refers to ppm volume, or micromoles of pollutant per mole of gas.</p> <p>4. Any equivalent procedure that can be shown to the satisfaction of CARB to give equivalent results at or near the level of the air quality standard may be used.</p> <p>5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.</p> <p>6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.</p> <p>7. Reference method as described by EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by EPA.</p> <p>8. U.S. EPA promulgated new federal 8-hour O₃ and PM_{2.5} standards on July 18, 1997. Contact U.S. EPA for further clarification and current federal policies.</p> <p>9. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.</p> | | | | | | |
| Source: California Air Resources Board (7/9/03) | | | | | | |

3-2.3.2 Impact Criteria

In addition to the federal and state standards, the South Coast Air Quality Management District (SCAQMD), which is the air pollution control agency for Orange County and major portions of Los Angeles, San Bernardino and Riverside counties in Southern California, has established significance thresholds to measure the impact of estimated increments. The impacts from the construction and/or operation of a project that would increase emissions by less than these values are considered insignificant. These thresholds appear in **Table 3.2-2**.

| Criteria Pollutant | Construction Period | Operations Period |
|----------------------------|---------------------|-------------------|
| Carbon Monoxide | 550 | 550 |
| Reactive Organic Gas (ROG) | 75 | 55 |
| Nitrogen Oxides (NOx) | 100 | 55 |
| Sulfur Oxides (SOx) | 150 | 150 |
| Particulates (PM10) | 150 | 150 |

¹ Expressed in pounds per day. The LRT Build Alternatives do not contain lead, hydrogen sulfide, or sulfate emissions sources; therefore emissions and concentrations related to these pollutants were not analyzed in this report.
Source: South Coast Air Quality Management District

3-2.4 Existing Conditions and Regulatory Setting

3-2.4.1 Study Area Designation

The federal Clean Air Act (CAA) defines non-attainment areas as geographic regions that have been designated as not meeting one or more of the NAAQS. Air quality maintenance areas are regions that have recently attained compliance with the NAAQS. The portions of Los Angeles and San Bernardino Counties that contain the project study area are currently designated as a non-attainment area for ozone, CO, and PM₁₀. The air basin is designated as an attainment area for NO₂ and SO₂.

3-2.4.2 Conformity Requirements

The CAA requires that a State Implementation Plan (SIP) be prepared for each non-attainment area, and a maintenance plan be prepared for each former non-attainment area. A SIP is a state's plan on how it will meet the NAAQS under the deadlines established by the CAA. EPA's Transportation Conformity Rule requires metropolitan planning organizations, the Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) to make conformity determinations on projects before they are approved. Transit projects that are funded or approved by the FTA must be found to conform. Since the proposed project is a non-exempt project under these regulations, it must be demonstrated that it would be consistent with the policies and purpose of the conforming transportation plan.

Conformity to the purpose of a SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS.

Several years of monitoring and planning will be required before EPA imposes local control measures based on the new air quality standards for O₃ and PM_{2.5}. EPA is in the process of determining which areas are in attainment of the standard, and which ones will require new controls. States must submit their revised SIPs for achieving the new standards. These new standards will not require any new local controls until later in 2004 for O₃ and 2005 for PM_{2.5}. The new air quality standards will not require conformity determination for transportation projects until the EPA approves the new SIPs. As the new transitional rules regarding evaluation and requirements for transportation projects have not been established, there are no current requirements for the evaluation of transportation projects with regard to these new standards.

3-2.4.3 South Coast Air Quality Management District

Because Southern California has one of the worse air quality problems in the nation, the SCAQMD was created by the 1977 Lewis Air Quality Management Act, which merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. The SCAQMD is the agency principally responsible for comprehensive air pollution control in the Basin. Specifically, the SCAQMD is responsible for monitoring air quality and planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs developed include air quality rules and regulations that regulate stationary source emissions, including area sources and point sources and certain mobile source emissions. The SCAQMD is also responsible for establishing permitting requirements for stationary sources and ensuring that new, modified, or relocated stationary sources do not create net emissions increases and, therefore, are consistent with the region's air quality goals. The SCAQMD enforces air quality rules and regulations through a variety of means, including inspections, educational or training programs, or fines, when necessary.

The SCAQMD has jurisdiction over a 12,000 square mile area, commonly referred to as the South Coast Air Basin (SCAB). This area includes Orange County, Los Angeles County, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. It is home to approximately half the population of the State of California. The SCAB is bounded by the Pacific Ocean to the west; by the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and the east; and by the San Diego County line to the south (**Figure 3.2-1**).

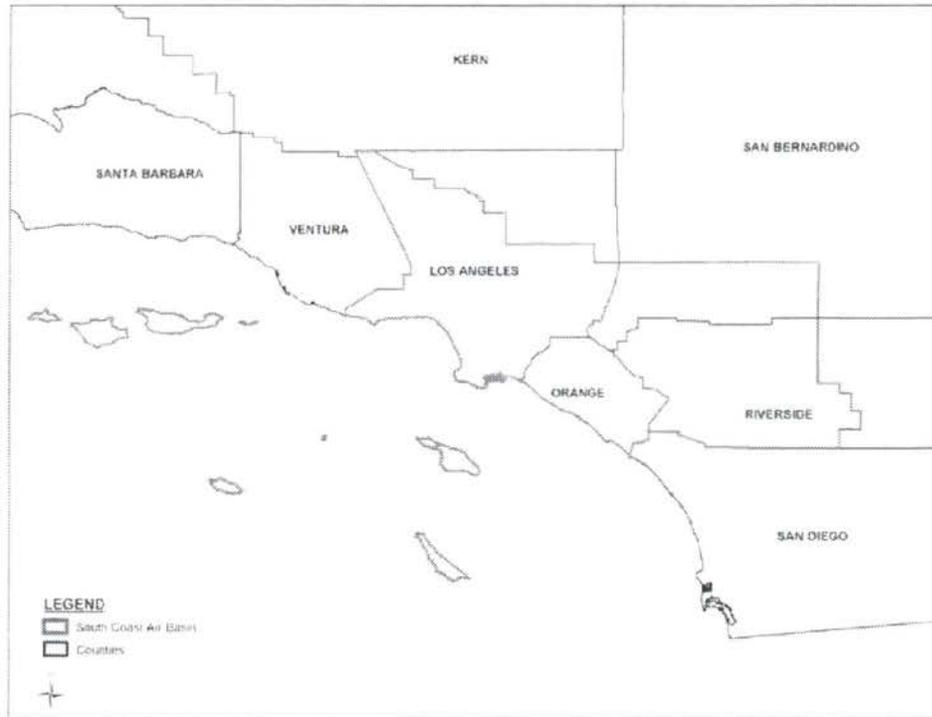


FIGURE 3.2-1: SOUTH COAST AIR BASIN

3-2.4.4 Air Quality Management Plan

Within the project area, the SCAQMD and the Southern California Association of Governments (SCAG) have responsibility for preparing the Air Quality Management Plan (AQMP), which address federal and state Clean Air Act requirements. The AQMP details goals, policies, and programs for improving air quality and establishes thresholds for daily source emission limits. Environmental review of individual projects within the region must demonstrate that daily construction and operational emissions thresholds as established by the SCAQMD would not be exceeded, nor would the number or severity of existing air quality violations.

In August of 2003 the SCAQMD adopted the 2003 AQMP. The ARB adopted the plan on October 23, 2003. The AQMP addressed CCAA requirements, which are intended to bring the SCAQMD into compliance with federal and state air quality standards. The 2003 AQMP points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/99 Plan) from all sources, specifically those under the jurisdiction of the California Air Resources Board and the US EPA, which account for approximately 80 percent of the ozone precursor emissions in the Basin.

The 2003 AQMP addresses several state and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes and new air quality modeling tools. The 2003 AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the Ozone SIP for the SCAB for the attainment of the federal ozone air quality standard. The 2003 AQMP updates the demonstration of attainment with the federal standards for ozone and PM₁₀; replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a maintenance plan for CO for the future; and updates the maintenance plan for the federal NO₂ standard that the SCAB has met since 1992.

3-2.4.5 Regional Transportation Plan

The Regional Transportation Plan (RTP) is a 20-year transportation plan for six counties within the Southern California region (Ventura, Los Angeles, Orange, San Bernardino, Riverside, and Imperial counties). The RTP provides long-term solutions to the region's transportation needs under a framework that meets mobility, air quality regulations, and other regional goals. The RTP is a critical document for projects to qualify for future federal, state, and local funding sources. SCAG revises the RTP every three years. The last updated plan was adopted by SCAG in April 2001, and reflects changes in regional demographics, environmental factors, land-use forecasts, technology, and sub-regional planning. The next update is scheduled for adoption in April 2004. The Gold Line Phase II Extension is listed as a recommended major transit investment in the draft 2004 plan.

3-2.4.6 Local Meteorology and Monitored Ambient Air Quality Levels

The nature of the surrounding atmosphere is an important element in the consideration of ambient air quality in an area. The project is located in the SCAB. The SCAB, which is an area of high air pollution potential due to its climate and topography, experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. In addition, the mountains and hills within the area contribute to the variation of rainfall, temperature, and winds throughout the region. The region experiences frequent temperature inversions. Temperature inversions prevent air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, an upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. In addition, hydrocarbons and nitrogen dioxide react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland, toward the mountains.

The SCAQMD monitors air quality conditions at 37 locations throughout the SCAB. For the purposes of this report, data from the Pasadena South Wilson Street and Azusa monitoring stations were used to characterize existing conditions in the vicinity of the study area, and to establish a baseline for estimating future conditions both with and without the Project Build Alternatives. The Pasadena South Wilson Street Station air monitor is located along a secondary roadway approximately 1.25 miles from the 210 Freeway and 1.0 mile from the 110 Freeway. The Azusa air monitoring station is located on N. Todd Avenue and W. 8th Street, approximately 0.75 miles from the 210 Freeway and 0.20 miles from W. Foothill Boulevard (Route 66). A summary of the data recorded at these stations is presented in **Table 3.2-3** for existing levels of carbon monoxide, ozone, nitrogen dioxide, and particulate matter.

**TABLE 3.2-3
AIR QUALITY SUMMARY FOR STUDY AREA MONITORING STATIONS**

| Air Pollutant | Standard/ Exceedance | Pasadena – South Wilson Avenue | | | Azusa | | |
|---|--|-----------------------------------|-------|-------|-------|-------|-------|
| | | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 |
| Carbon Monoxide (CO) | Max. 8-hour Concentration (ppm) | 7.51 | 5.70 | 4.05 | 4.75 | 2.97 | 2.39 |
| | # Days>Federal 8-hour Std. of >9 ppm | 0 | 0 | 0 | 0 | 0 | 0 |
| | # Days>California 8-hour Std. of >9.0 ppm | 0 | 0 | 0 | 0 | 0 | 0 |
| Ozone (O ₃) | Max. 1-hour Concentration (ppm) | 0.157 | 0.160 | 0.137 | 0.174 | 0.189 | 0.136 |
| | Max. 8-hour Concentration (ppm) | 0.134 | 0.119 | 0.101 | 0.142 | 0.130 | 0.102 |
| | # Days>Federal 1-hour Std. of >0.12 ppm | 7 | 1 | 3 | 11 | 9 | 5 |
| | # Days>Federal 8-hour Std. Of >0.08 ppm | 13 | 9 | 10 | 15 | 18 | 11 |
| | # Days>California 1-hour Std. Of >0.09 ppm | 19 | 28 | 23 | 32 | 36 | 26 |
| Nitrogen Dioxide (NO ₂) | Max. 1-hour Concentration (ppm) | 0.173 | 0.149 | 0.154 | 0.154 | 0.124 | 0.121 |
| | Annual Arithmetic Mean (ppm) | 0.029 | 0.034 | 0.033 | 0.036 | 0.033 | 0.033 |
| | # Days>California 1-hour Std. of >0.25 ppm | 0 | 0 | 0 | 0 | 0 | 0 |
| Suspended Particulates (PM ₁₀) | Year Coverage* | NM | NM | NM | 95 | 94 | 98 |
| | Max. 24-hour Concentration (µg/m ³) | | | | 94.0 | 106.0 | 91.0 |
| | #Days>Fed. 24-hour Std. of >150 µg/m ³ | | | | 0 | 0 | 0 |
| | #Days>California 24-hour Std. of >50 µg/m ³ | | | | 24 | 22 | 23 |
| | State Annual Average (µg/m ³) | | | | 42 | 39 | 42 |
| Suspended Particulates (PM _{2.5}) | Year Coverage* | 100 | 96 | 100 | 100 | 100 | 100 |
| | Max. 24-hour Concentration (µg/m ³) | 66.3 | 78.1 | 57.8 | 92.5 | 79.7 | 72.4 |
| | #Days>Fed. 24-hour Std. of >65 µg/m ³ | 1 | 1 | 0 | 5 | 4 | 1 |
| | National Annual Average (µg/m ³) | 19.4 | 20.9 | 20.3 | 20.2 | 21.7 | 20.7 |

* Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations were expected.

NM: Pollutant not monitored

NA: Not available

Source: California Air Resources Board, 2001, 2001, 2002.

3-2.5 Microscale Analysis

3-2.5.1 Methodology

The following calculation methods and estimation models were utilized in estimating air quality concentration and project impacts: SCAQMD construction emissions calculation formulas, the CARB EMFAC2002 Version 2.2 emissions factor model, and the USEPA CAL3QHC dispersion model software.

3-2.5.2 Analysis Years

Analyses were conducted for 2004 existing conditions and for 2025 under future conditions with and without the proposed alternatives. The existing year results are used in conjunction with the results of the future No-Build year to illustrate the predicted air quality trends at the study locations without the project.

3-2.5.3 Background Values

Air quality modeling is used to predict pollutant concentrations resulting from emissions from motor vehicles using roadways immediately adjacent to the locations at which predictions are being made. Background levels must be added to these values to account for pollutants entering the area from other sources upwind of the receptors.

A one-hour CO background level of 3.7 ppm and an eight-hour background level of 2.7 ppm were added to the mobile source results at each analysis site. These values are the second-highest one-hour and eight-hour readings from the Azusa air monitoring station for the years 2001 – 2003.

3-2.5.4 Traffic Data

Traffic data for this analysis was derived from traffic counts and other information developed as part of an overall traffic analysis for the project. The microscale CO analysis was performed based on data from this analysis for the PM peak traffic periods. This is the period when maximum traffic volumes occur on local streets and when the greatest traffic and air quality impacts of the proposed project are expected. The worst-case traffic volume was selected from all of the build alternatives and used to represent the future air quality levels with the LRT Build Alternatives.

3-2.5.5 Microscale Modeling

The microscale mobile source analysis was conducted using the following procedures and assumptions:

a. Vehicular Emissions

Vehicular Emissions were estimated using CARB's EMFAC2002 (April 2003) emission factor program. EMFAC2002 is a mobile source emission estimate program that provides current and future estimates of emissions from highway motor vehicles. The latest in the EMFAC series, EMFAC2002, was designed by the CARB to address a wide variety of air pollution modeling needs. This latest version incorporates updated information on basic emission rates, more realistic driving patterns, separation of start and running emissions, improved correction factors, and changing fleet composition. It also includes the effects of new regulations that have been recently promulgated.

b. Dispersion Model

Mobile source models are the basic analytical tools used to estimate CO concentrations expected under given traffic, roadway geometry, and meteorological conditions. The mathematical expressions and formulations that comprise the various models attempt to describe an extremely complex physical phenomenon as closely as possible. The dispersion modeling program used in this study for estimating pollutant concentrations near roadway intersections is the CAL3QHC (Version 2.0) dispersion model developed by the EPA and released in 1992.

CAL3QHC is a Gaussian model recommended in the *EPA Guidelines for Modeling Carbon Monoxide from Roadway Intersections* (EPA-454/R-92-005). Gaussian models assume that the dispersion of pollutants downwind of a pollution source follow a normal distribution from the center of the pollution source.

Different emission rates occur when vehicles are stopped (idling), accelerating, decelerating, and moving at different average speeds. CAL3QHC simplifies these different emission rates into two components:

- Emissions when vehicles are stopped (idling) during the red phase of a signalized intersection
- Emissions when vehicles are in motion during the green phase of a signalized intersection

The CAL3QHC (Version 2.0) air quality dispersion model has undergone extensive testing by the EPA and has been found to provide reliable estimates of inert (nonreactive) pollutant concentrations resulting from motor vehicle emissions. A complete description of the model is in the *User's Guide to CAL3QHC version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations near Roadway Intersections* (EPA-454/R-92-006).

c. Site Selection

Analysis sites were selected through a screening analysis based on overall intersection volumes, changes in intersection volumes, and changes in level of service (LOS) estimates. Intersections which demonstrate a traffic LOS of A, B or C passed the screening test (i.e., they are not expected to cause a violation of the NAAQS). Intersections which demonstrate a LOS of D or worse were considered to have the potential to cause a violation of the NAAQS and thus failed the screening analysis. Of the sites that failed this initial screen, those with the highest volumes, proximity to major roadways and sensitive receptors and of community concern were chosen for detailed analysis. One hundred and twenty two intersections were subject to this screening analysis based on future traffic conditions with and without the project. These are the intersections within the study area that are expected to be impacted by the project. For geographical representation, one site near each proposed station was chosen, based on the screening criteria described.

Based on the results of the screening analysis, CO levels were estimated at 12 locations within the defined study area. These sites and the cities they are located in are listed in Table 3.2-4. Receptors were chosen at each site in accordance with the guidelines found in the EPA's *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA-454/R-92-005).

| TABLE 3.2-4 AIR QUALITY ANALYSIS SITES | |
|---|-------------|
| Intersection | City |
| Sierra Madre Boulevard and Foothill Boulevard | Pasadena |
| Santa Anita Avenue and Santa Clara Street | Arcadia |
| Myrtle Avenue and Evergreen Avenue | Monrovia |
| Buena Vista Street and Duarte Road | Duarte |
| Irwindale Avenue and Foothill Boulevard | Irwindale |
| Citrus Avenue and Foothill Boulevard | Azusa |
| Glendora Avenue and Alostia Avenue | Glendora |
| Cataract Avenue and Bonita Avenue | San Dimas |
| White Avenue and Arrow Highway | La Verne |
| Towne Avenue and Arrow Highway | Pomona |
| Indian Hill Boulevard and Arrow Highway | Claremont |
| Central Avenue and Arrow Highway | Montclair |

d. Receptor Sites

The locations at which pollutant concentrations are estimated are known as “receptors.” Following guidelines established by the EPA, receptors were located where the maximum projected total concentration is likely to occur and where the general public (or any significant segment thereof) is likely to have access. For this analysis, receptors were distributed along sidewalks near the major roadway links surrounding each analysis site. The exact placement of these receptors was determined on the basis of traffic conditions (roadways with high volumes and low vehicle speeds), roadway geometry (including the potential cumulative impacts of several roadway links with adjacent parking lot contributions), and the potential location of queued traffic (identified on the basis of locations of high existing and future volume-to-capacity [V/C] ratios).

e. Meteorological Conditions

The transport and concentration of pollutants emitted from motor vehicles are influenced by three principal meteorological factors: wind direction, wind speed, and the atmosphere’s temperature profile. The values for these parameters were chosen for this analysis to maximize pollutant concentrations at each prediction site (that is, to establish a conservative, worst-case situation).

- **Wind Direction.** Maximum CO concentrations normally are found when the wind is assumed to blow parallel to a roadway adjacent to the receptor location. At complex intersections, it is difficult to predict which wind angle will result in maximum concentrations. Therefore, the approximate wind angle that would result in maximum pollutant concentrations at each receptor location was used in the analysis. All wind angles from 0° to 360° (in 5° increments) were considered.
- **Wind Speed.** CO concentrations are greatest at low wind speeds. A conservative wind speed of one meter per second (2.2 miles per hour) was used to predict CO concentrations during peak traffic periods.
- **Temperature and Profile of the Atmosphere.** An ambient temperature of 45° F, a “mixing” height (the height in the atmosphere to which pollutants rise) of 1000 meters, and neutral atmospheric stability (stability class D) conditions were used in estimating microscale CO concentrations.

The CO levels estimated by the model are the maximum concentrations which could be expected to occur at each air quality receptor site analyzed, given the assumed simultaneous occurrence of a number of worst-case conditions: peak-hour traffic conditions, conservative vehicular operating conditions, low wind speed, low atmospheric temperature, neutral atmospheric conditions, and maximizing wind direction.

f. Persistence Factor

Persistence factors take account of the fact that over 8 hours (as distinct from a single hour), vehicle volumes will fluctuate downward from the peak, vehicle speeds may vary, and meteorological conditions including wind speeds and wind direction will change, to some degree, as compared to the conservative assumptions used for the single maximizing hour.

Peak eight-hour concentrations of CO were obtained by multiplying the highest estimated peak one-hour CO estimates by 0.73. This factor was derived following the methodology in Caltrans’ CO Protocol, which recommends ratioing 10 years worth of 1-hour and 8-hour monitored data. Monitoring data for 1993-2003 from the Azusa station was used to derive this factor.

3-2.6 Regional Emissions Analysis

The regional or mesoscale analysis of a project determines the project's overall impact on regional air quality levels. The analysis was performed for CO, NOx, ROG, and PM10 to determine whether the proposed project alternatives would improve or degrade regional air quality. Emissions were based on daily estimates of VMT and vehicle hours traveled (VHT) in the study area for the 2025 analysis year under future No-Build conditions, and the proposed Build alternatives (i.e., the TSM and LRT alternatives). Emission estimate for the No-Build Alternative were used as a baseline to compare with the Project Build Alternatives.

3-2.7 Results of the Microscale Analysis

3-2.7.1 No-Build Alternative

The results of the mobile source analysis for existing conditions and the No-Build alternative, which are provided in **Table 3.2-5**, are that no CO concentrations are estimated to exceed the State's 1-hour or 8-hour standard of 20 ppm or 9 ppm, respectively. Detailed information regarding this analysis can be found in the Air Quality Technical Report in the Appendices.

| Intersection | One-Hour Concentration | | Eight-Hour Concentration | |
|-----------------------------------|------------------------|----------|--------------------------|----------|
| | Existing | No-Build | Existing | No-Build |
| Sierra Madre Blvd & Foothill Blvd | 6.7 | 4.2 | 4.9 | 3.1 |
| Santa Anita Ave & Santa Clara St | 5.0 | 3.8 | 3.6 | 2.8 |
| Myrtle Ave & Evergreen Ave | 5.8 | 4.1 | 4.2 | 3.0 |
| Buena Vista St & Duarte Rd | 5.3 | 3.9 | 3.9 | 2.8 |
| Irwindale Ave & Foothill Blvd | 6.1 | 4.4 | 4.5 | 3.2 |
| Citrus Ave & Foothill Blvd | 5.4 | 3.9 | 3.9 | 2.8 |
| Glendora Ave & Alostia Ave | 5.8 | 3.9 | 4.2 | 2.8 |
| Cataract Ave & Bonita Ave | 4.8 | 3.9 | 3.5 | 2.8 |
| White Ave & Arrow Highway | 6.3 | 4.2 | 4.6 | 3.1 |
| Towne Ave & Arrow Highway | 6.1 | 4.4 | 4.5 | 3.2 |
| Indian Hill Blvd & Arrow Highway | 5.5 | 3.9 | 4.0 | 2.8 |
| Central Ave & Arrow Highway | 5.8 | 4.1 | 4.2 | 3.0 |
| State Standard | 20.0 | | 9.0 | |

¹ Expressed in parts per million (ppm)
Includes background concentration of 3.7 ppm and 2.7 ppm for the 1-hour and 8-hour averaging period, respectively.

Source: Parsons Brinckerhoff, 2004

3-2.7.2 TSM Alternative

The results of the mobile source analysis for the future No-Build and TSM alternatives, which are provided in **Table 3.2-6**, are that no CO concentrations are estimated to exceed the State’s 1-hour or 8-hour standard of 20 ppm or 9 ppm, respectively. Detailed information regarding this analysis can be found in the Air Quality Technical Report in the Appendices.

| Intersection | One-Hour Concentration | | Eight-Hour Concentration | |
|-----------------------------------|------------------------|-----|--------------------------|-----|
| | No-Build | TSM | No-Build | TSM |
| Sierra Madre Blvd & Foothill Blvd | 4.2 | 4.2 | 3.1 | 3.1 |
| Santa Anita Ave & Santa Clara St | 3.8 | 3.8 | 2.8 | 2.8 |
| Myrtle Ave & Evergreen Ave | 4.1 | 4.1 | 3.0 | 3.0 |
| Buena Vista St & Duarte Rd | 3.9 | 3.9 | 2.8 | 2.8 |
| Irwindale Ave & Foothill Blvd | 4.4 | 4.4 | 3.2 | 3.2 |
| Citrus Ave & Foothill Blvd | 3.9 | 3.9 | 2.8 | 2.8 |
| Glendora Ave & Alostia Ave | 3.9 | 3.9 | 2.8 | 2.8 |
| Cataract Ave & Bonita Ave | 3.9 | 3.9 | 2.8 | 2.8 |
| White Ave & Arrow Highway | 4.2 | 4.2 | 3.1 | 3.1 |
| Towne Ave & Arrow Highway | 4.4 | 4.4 | 3.2 | 3.2 |
| Indian Hill Blvd & Arrow Highway | 3.9 | 3.9 | 2.8 | 2.8 |
| Central Ave & Arrow Highway | 4.1 | 4.1 | 3.0 | 3.0 |
| State Standard | 20.0 | | 9.0 | |

¹ Expressed in parts per million (ppm)
Includes background concentration of 3.7 ppm and 2.7 ppm for the 1-hour and 8-hour averaging period, respectively.

Source: Parsons Brinckerhoff, 2004

3-2.7.3 LRT Alternative

The results of the mobile source analysis for the future No-Build and Full Build LRT alternatives, which are provided in **Table 3.2-7**, are that no CO concentrations are estimated to exceed the State’s 1-hour or 8-hour standard of 20 ppm or 9 ppm, respectively. Detailed information regarding this analysis can be found in the Air Quality Technical Report in the Appendices.

| Intersection | One-Hour Concentration | | Eight-Hour Concentration | |
|-----------------------------------|------------------------|------------------|--------------------------|------------------|
| | No-Build | LRT Alternatives | No-Build | LRT Alternatives |
| Sierre Madre Blvd & Foothill Blvd | 4.2 | 4.2 | 3.1 | 3.1 |
| Santa Anita Ave & Santa Clara St | 3.8 | 4.0 | 2.8 | 2.9 |
| Myrtle Ave & Evergreen Ave | 4.1 | 4.1 | 3.0 | 3.0 |
| Buena Vista St & Duarte Rd | 3.9 | 3.9 | 2.8 | 2.8 |
| Irwindale Ave & Foothill Blvd | 4.4 | 4.4 | 3.2 | 3.2 |
| Citrus Ave & Foothill Blvd | 3.9 | 4.0 | 2.8 | 2.9 |
| Glendora Ave & Alostia Ave | 3.9 | 4.0 | 2.8 | 2.9 |
| Cataract Ave & Bonita Ave | 3.9 | 4.0 | 2.8 | 2.9 |
| White Ave & Arrow Highway | 4.2 | 4.2 | 3.1 | 3.1 |
| Towne Ave & Arrow Highway | 4.4 | 4.4 | 3.2 | 3.2 |
| Indian Hill Blvd & Arrow Highway | 3.9 | 4.0 | 2.8 | 2.9 |
| Central Ave & Arrow Highway | 4.1 | 4.1 | 3.0 | 3.0 |
| State Standard | 20.0 | | 9.0 | |

¹ Expressed in parts per million (ppm)
Includes background concentration of 3.7 ppm and 2.7 ppm for the 1-hour and 8-hour averaging period, respectively.

Source: Parsons Brinckerhoff, 2004

3-2.7.4 Park and Ride Lots

Potential impacts from the proposed park and ride facilities were estimated based on a microscale analysis of a worst-case facility. For this analysis, a 1,000 space, 3 level parking facility was analyzed during the PM peak period. Emission factors were obtained using the EMFAC2002 Version2.2 model. Dispersion analysis was done using the CAL3QHC model. A representative receptor was placed 15 feet from the closest traveled way within the facility.

The result of this analysis is that a peak one-hour contribution from the parking lot is 0.3 ppm. This will not cause or violate a standard at any of the microscale analysis sites evaluated.

3-2.8 Results of the Regional Analysis

The results of the regional (mesoscale) analysis for the future No-Build, TSM, and LRT alternatives are provided in **Table 3.2-8**. These results are as follows:

- The TSM Alternative will increase CO, NO_x, ROG, and PM₁₀ emissions by approximately 0.03 percent.
- The LRT Alternative will decrease CO, NO_x, ROG, and PM₁₀ emissions by approximately 0.04 percent.

| Measure | ALTERNATIVE | | |
|--|-------------|--------------|---------------|
| | No-Build | TSM | LRT |
| VMT | 449,198,594 | 449,313,961 | 449,016,273 |
| Speed | 15.84 | 15.83 | 15.86 |
| Regional Emissions (Pounds per Day) | | | |
| CO | 1,697,688 | 1,698,124 | 1,696,999 |
| Nox | 241,678 | 241,740 | 241,580 |
| ROG | 122,820 | 122,851 | 122,770 |
| PM ₁₀ | 64,382 | 64,398 | 64,355 |
| % Change from No-Build (Pounds per Day) | | | |
| CO | na | 0.03% (436) | -0.04% (-689) |
| Nox | na | 0.03% (62) | -0.04% (-98) |
| ROG | na | 0.03%31 (31) | -0.04% (-50) |
| PM ₁₀ | na | 0.03% (16) | -0.04% (-27) |

Source: Parsons Brinckerhoff, 2004

3-2.9 Regulatory Compliance

The result of the localized (microscale) analysis is that proposed project alternatives will not cause or exacerbate a violation of a state or national ambient air quality standard.

The result of the mesoscale (regional) analysis is that proposed projects alternatives will have a small affect on regional emission rates – the LRT alternative will slightly reduce emissions and the TSM alternative will increase emission rates by amounts that, with one exception, are not considered to be significant by the SCAQMD. Only NO_x emissions are estimated to increase by an amount greater than the emission threshold (i.e., 62 pounds per day as compared with a threshold value of 55 pounds per day).

Prior to the approval of the selected alternative by the Federal Transit Administration, an analysis will have to be conducted to demonstrate that this alternative will comply with EPA’s Conformity Rule. Should the TSM alternative be selected this analysis would have to demonstrate that the additional emissions would not cause the region’s allowable emission budgets (as specified in the SIP) to be exceeded. No such consideration would be required for the LRT alternative.

3-2.10 Construction-Period Impacts

3-2.10.1 No-Build

Only the construction period impacts for the Eastside LRT Extension element of the No-Build Alternative would be likely to exceed the CEQA quarterly impact thresholds set by the South Coast Air Quality Management District. These impacts are addressed in the Draft Supplemental Environmental Impact Statement (EIS)/Draft Subsequent Environmental Impact Report (FTA and LACMTA 2001). Other elements of the No-Build Alternative are small-scale in nature and duration and not likely to exceed the quarterly thresholds.

3-2.10.2 Transportation System Management (TSM) Alternative

Under the TSM Alternative major construction activities would not be required. Construction impacts under the TSM alternative are not anticipated to be significant.

3-2.10.3 LRT Alternatives

The proposed LRT Build Alternatives would generate pollutant emissions from the following construction activities: 1) the demolition of existing structures, 2) excavation related to preparation of track beds and installation of rail, 3) welding related to continuously welded rail (CWR) operations, 4) mobile emissions related to construction worker travel to and from project sites, 5) mobile emissions related to the delivery and hauling of construction supplies and debris to and from project sites, and 6) stationary emissions related to fuel consumption by on-site construction equipment.

Table 3.2-9 presents the estimated worst-case daily emissions associated with each construction phase. As indicated in the table, NO_x and PM₁₀ emissions are estimated to exceed SCAQMD significance thresholds during the construction period. Short-term dust nuisance impacts would also occur as a result of construction activity. The primary zone of dust deposition impact is generally less than 100 feet from the source.

| | Duration ² | CO | ROG | NO _x | SO _x | PM ₁₀ |
|---|-----------------------|-----|-----|-----------------|-----------------|------------------|
| SCAQMD Threshold | | 550 | 75 | 100 | 150 | 150 |
| Continuously Welded Rail (CWR) Operations | 26 | 44 | 14 | 99 | 11 | 12 |
| Platforms and Rail Installation | 26 | 54 | 10 | 76 | 5 | 493 |
| Simultaneous CWR and Rail Installation ³ | 26 | 98 | 24 | 175 | 16 | 505 |
| Potential Threshold Violation? | | No | No | Yes | No | Yes |

¹ Expressed in pounds per day. Daily emissions were derived using the applicable emission factors and formulas found in the SCAQMD CEQA Handbook, Appendix to Chapter 9.
² Expressed in months.
³ Worst-case NO_x emissions are expected to occur during simultaneous CWR and rail installation activities.

Source: Parsons Brinckerhoff, 2004

Although the construction period will last about four to five years, air quality impacts would still be localized and short-term. This is because construction equipment, and, therefore, air quality impacts, would move throughout the six-mile project alignment area. Thus, impacts on individual receptor locations within the area that may be affected by the proposed project would be short-term. Furthermore, because of the nature of construction activity and the phased construction schedule, some days will experience a higher level of construction activity (which in turn generates a higher level of emissions), while others will not.

a. Significance of Impacts

Air quality impacts during construction are potentially significant.

b. Mitigation

The construction contract for the selected alternative will require specific stipulations that the contractor must follow to meet criteria included in MTA's Systems Design Criteria and Standards, Volumes I through IV, to minimize adverse affects during construction. A Mitigation Plan will be required that will include a Fugitive Dust Plan using Best Management Practices (BMP) to control fugitive dust emissions. The Mitigation Plan should also include use of add-on controls, such as catalysts and particulate traps where suitable, and fuel with 15 ppm of sulfur or less unless unavailable. An idling limit (e.g., 5 to 10 minutes per hour) should be established, and engines should be tuned to manufacturers' specifications and at manufacturers' recommended frequency. The Plan should require continued adherence to manufacturers' recommendations and prohibit tampering on engines during the project. Leased equipment should be 1996 model or newer unless cost exceeds 110% of average lease cost. Seventy-five percent or more of total horsepower of owned equipment used for construction should be attributed to 1996 or newer models. At the construction site, reduce daily emissions and/or hours of work by using no more than two pieces of equipment simultaneously near or upwind from sensitive receptors. Establish additional emissions limits within 1,000 feet of any K-12 school. Provide notification to all schools within 1,000 feet, and reduce truck trips and/or restrict hours of driving through communities to minimize risk.

The following measures are options available to mitigate construction-related air quality impacts:

- **Diesel Equipment Usage.** Minimize use of on-site diesel construction equipment, particularly unnecessary idling.
- **Electric Powered Equipment.** Where feasible replace diesel equipment with electrically powered machinery.
- **Diesel Equipment Maintenance.** Construction contracts should explicitly stipulate that all diesel power equipment should be properly tuned and maintained.
- **Equipment Emissions.** Construction equipment will be shut off to reduce idling when not in direct use. Diesel engines, motors, or equipment should be located as far away as possible from existing residential areas. Low sulfur fuel should be used for construction equipment.
- **Location of Staging Areas.** If required, haul truck staging areas should be approved by the Los Angeles Department of Transportation. When feasible, haul trucks will be staged in non-residential areas away from school buildings and playgrounds. MTA will approve employee parking locations for construction sites. Construction workers will not be allowed to park on streets.
- **Truck Covering.** Require all trucks hauling dirt, sand, soil, or other loose substances and building materials to be covered.

- **Street Sweeping.** Utilize street sweeping equipment at site access points and all adjacent streets used by haul trucks or vehicles that have been on site in compliance with SCAQMD Rule 403.
- **Fugitive Dust Control.** Maintain a fugitive dust control program consistent with the provisions of SCAQMD Rules 403 and 1186 for any grading or earthwork activity that may be required.
- **Phasing.** To the extent feasible, phase construction activities to minimize concurrent dust generating activities within a 2,500-foot radius of shaft site locations.
- **Suspend Operations.** Suspend grading operations during first and second stage smog alerts, and during high winds (i.e., greater than 25 miles per hour).

In addition, a sidewalk and window-cleaning program shall be implemented during construction, if needed, to reduce impacts caused by dust generated during the construction.

Implementations of the above-mentioned mitigation measures are anticipated to result in a significant reduction in airborne particulate (PM₁₀) emissions; however, reductions in CO, ROG, NO_x, and SO_x emissions would be negligible. The estimated PM₁₀ emissions reduction for each major construction phase is presented in **Table 3.2-10**.

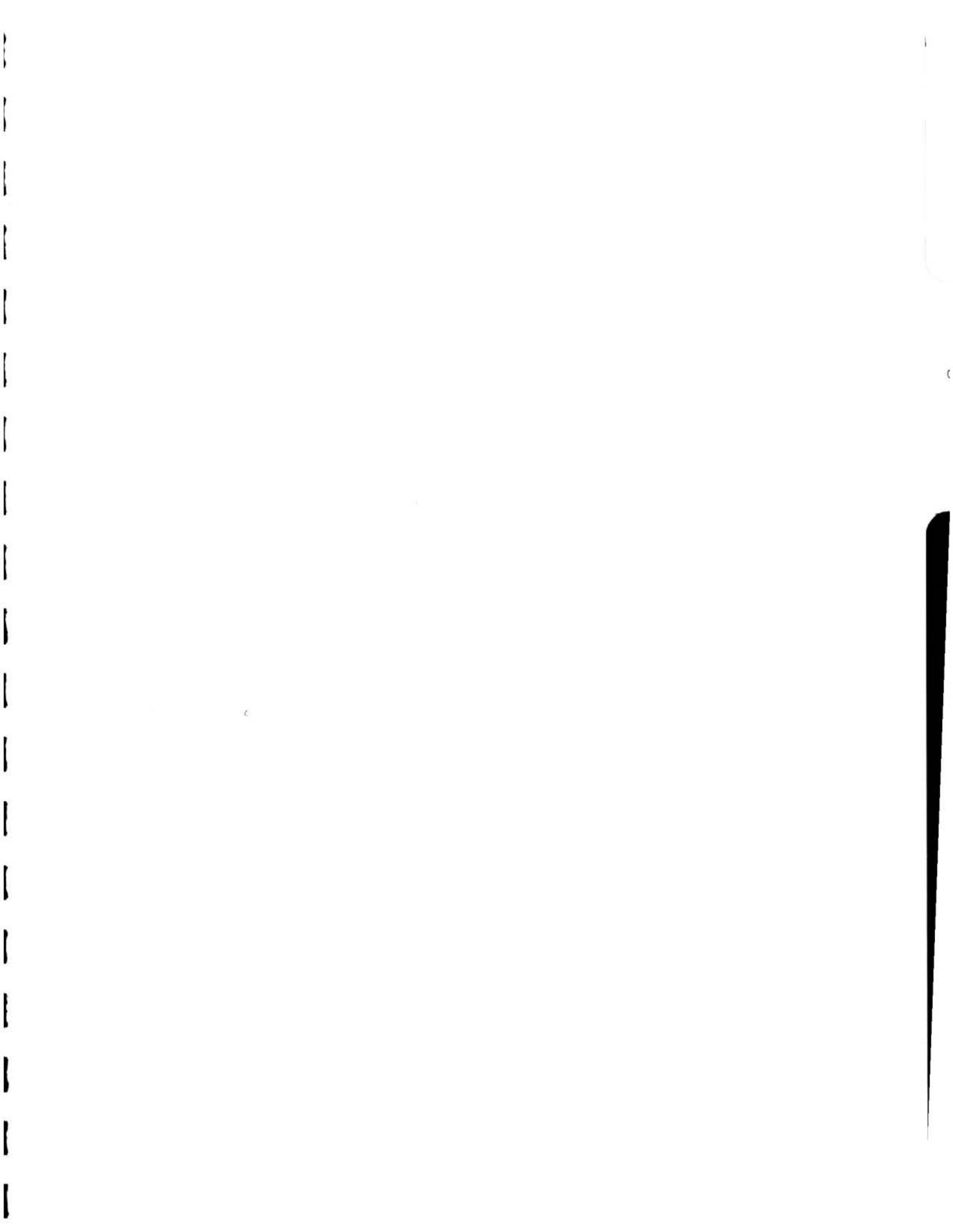
| TABLE 3.2-10 | | | |
|---|---------------------------|------------------------|--------------------|
| CONSTRUCTION PHASE DAILY PM₁₀ EMISSIONS¹ | | | |
| | Without Mitigation | With Mitigation | Net Benefit |
| Continuously Welded Rail (CWR) Operations | 12 | 12 | 0 |
| Platforms and Rail Installation | 493 | 181 | -315 |
| Simultaneous CWR and Rail Installation ³ | 505 | 193 | -315 |

¹ Expressed in pounds per day.
Source: Parsons Brinckerhoff

As indicated above, even with application of best available control measures, PM₁₀ emissions are anticipated to exceed the SCAQMD significance threshold of 150 ppm during the at-grade platforms and rail installation construction phases. Similarly, NO_x emissions are anticipated to exceed the SCAQMD significance threshold of 100 lb/day during periods of simultaneous continuously welded rail operations and rail installation. These short-term air quality impacts would be significant and unavoidable. Dust nuisance impacts are also anticipated to remain after application of best available control measures, although to a lesser extent. During preliminary engineering, MTA will continue to investigate alternative techniques to reduce temporary air quality impacts.

c. Significance of Impacts Remaining After Mitigation

Although mitigation would be provided to the greatest extent feasible, short-term PM₁₀ and NO_x emissions and dust nuisance impacts generated by construction activities would remain significant after mitigation.





3-3 BIOLOGICAL RESOURCES

Summary of Impacts

The No-Build and TSM alternatives does not include any elements that would affect biological resources in Phase I cities or in the Phase II study corridor.

For the LRT alternatives, biological impacts are limited to the proposed site of the Maintenance and Operations facility at Irwindale, the crossing of the San Gabriel River and adjoining parkland areas, and the sites that would be acquired for stations and/or parking in Glendora and in Pomona (Towne Ave. option). All other sites are current paved and thus have no virtually biological resources. Where trees may be disturbed at any location, preventative measures to avoid violation of the Migratory Bird Treaty Act would be included in construction contracts.

Development of the proposed Maintenance and Operation facility would be preceded by focused surveys to be conducted during Preliminary Engineering to determine the presence/absence of this federally or state-listed endangered plant or animal species. Until those surveys are completed, along with any necessary consultation with state and federal agencies, there is a presumed potentially adverse effect under NEPA and presumed potential significant impact under CEQA due to the loss of habitat and potential adverse effects to species associated with the habitat. Proposed mitigation measures have been developed.

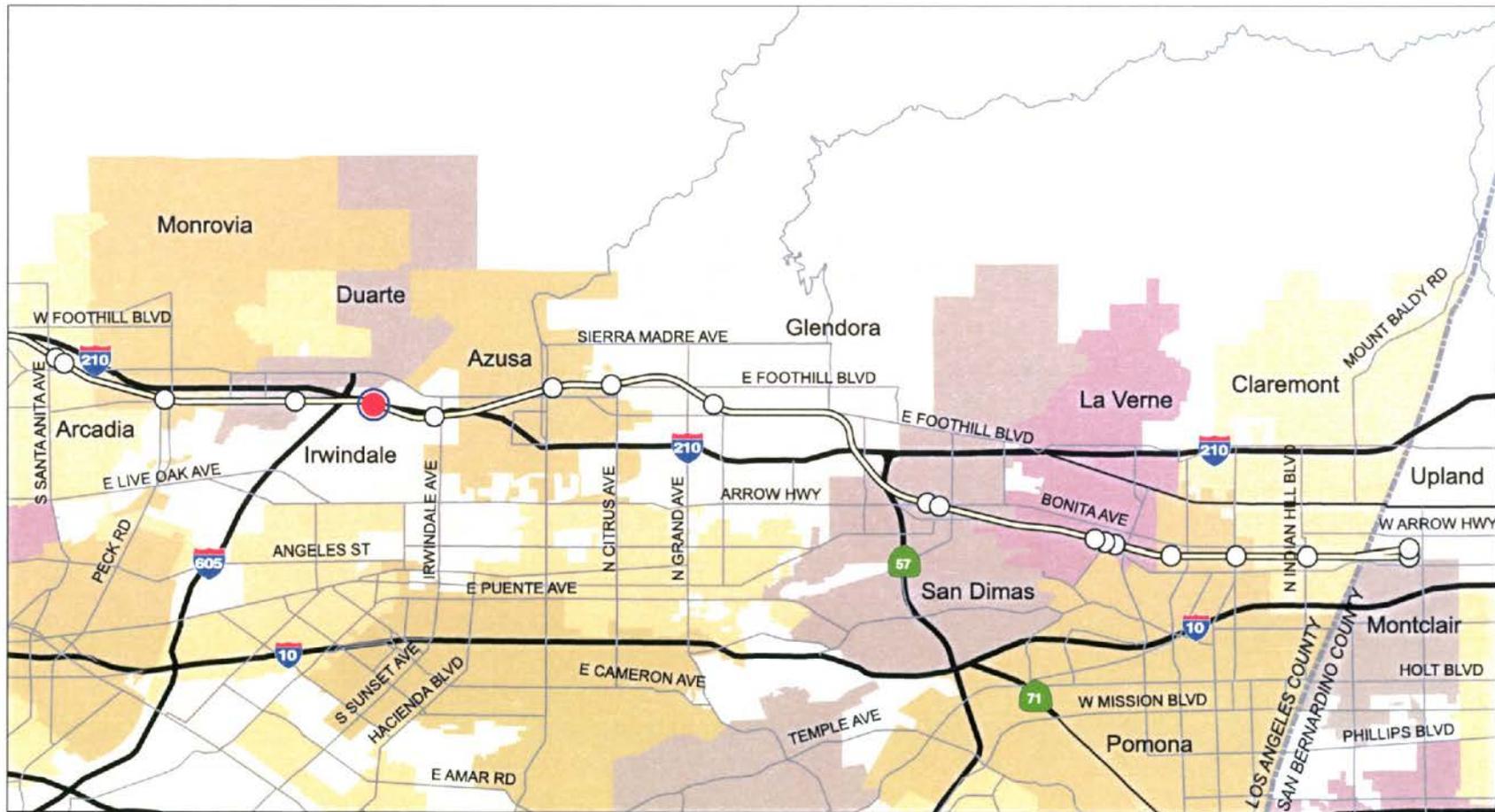
3-3.1 Existing Conditions

Existing conditions were determined using a review of the most recent records of the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI) for the quadrangles containing and surrounding the proposed project. Recent aerial photographs (July 2003) were reviewed to focus on the areas to be surveyed. Areas of current development or heavily disturbed properties were not surveyed since these would not be likely to support biological resources. After review of these records, qualified biologists conducted reconnaissance-level surveys to identify the distribution and relative abundance of general and sensitive wildlife resources in the study corridor (1,000 feet along either side of the rail alignment). A habitat assessment was also performed to determine the relative quality or potential of habitat types to support sensitive plant and wildlife species. Sensitive plant species are shown on **Figure 3-1.1** and sensitive animal species are shown on **Figure 3-1.2**.

3-3.1.1 Vegetation

a. Vegetation Communities

Vegetation communities in the project study area include disturbed areas, ornamental landscaping, alluvial fan sage scrub, and riparian scrub. Two sensitive vegetation communities, alluvial fan sage scrub and riparian scrub, occur in the City of Irwindale. These communities are described below.



Sources: U.S. Census TIGER Data, 2000; ESRI, 2003; Jones & Stokes Associates, 2004.

LEGEND (Potential of Occurrence)

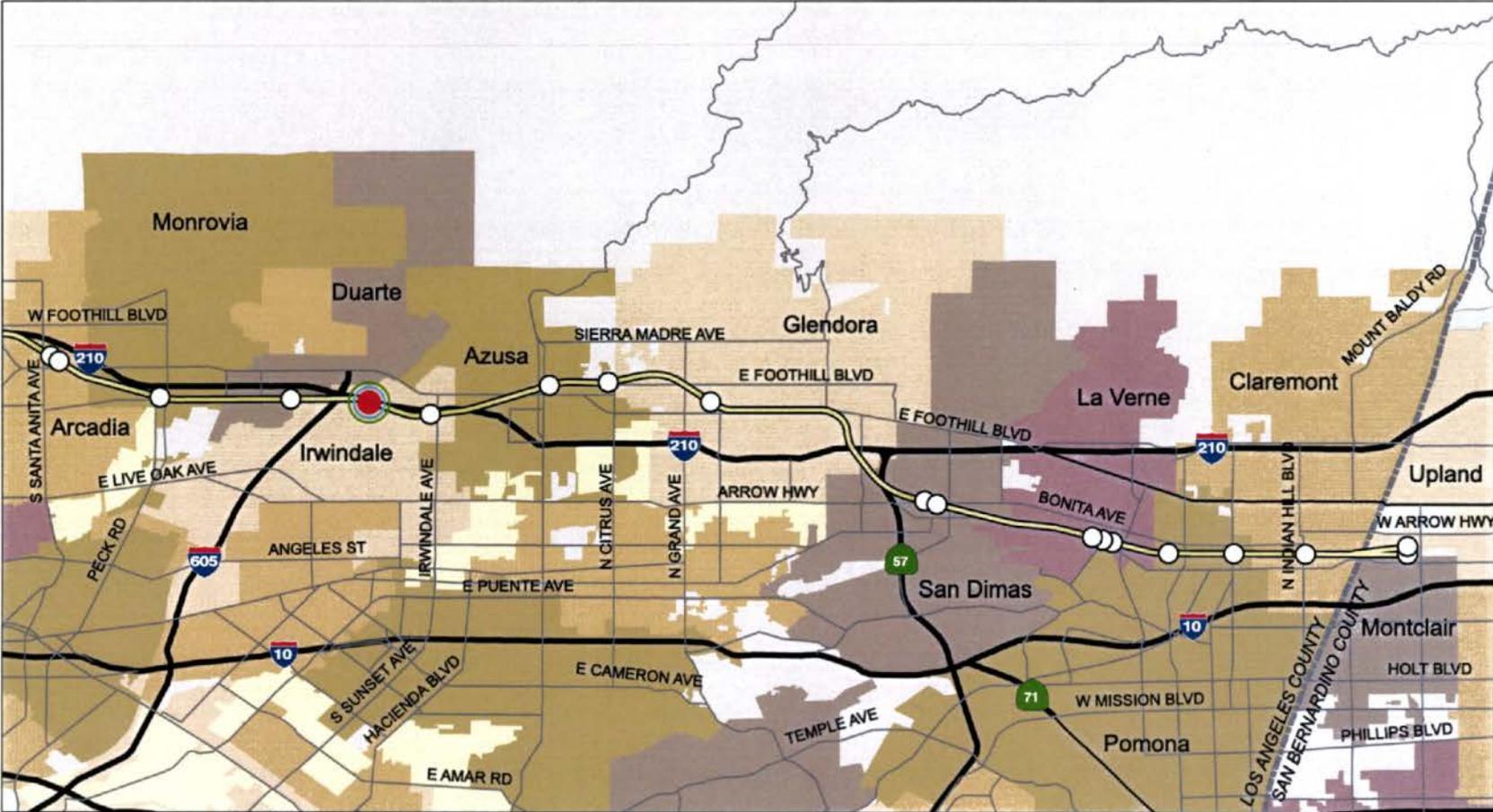
- Federally Endangered
Nevin's Barberrry (Low)
- Sensitive Plant Species
 - slender mariposa lily (Low)
 - Plummer's mariposa lily (Low)
 - San Gabriel Mountains dudleya (Low)
 - mesa horkelia (Low)
 - Robinson's peppergrass (Low)
 - Davidson's bush mallow (Low)
 - prostrate navarretia (Low)
 - Brand's phacelia (Low)
 - rayless ragwort (Low)
 - salt spring checkerbloom (Low)

- Proposed Gold Line Alignment
- Proposed Stations

0 1.25 2.5 5 Miles



Figure 3-3.1: Sensitive Plant Species in the Gold Line Phase II Project Area



Sources: U.S. Census TIGER Data, 2000; ESRI, 2003; Jones & Stokes Associates, 2004.

LEGEND (Potential of Occurrence)

- **Federally Endangered Species**
 southwestern willow flycatcher (Medium)
 least Bell's vireo (Medium)
- Federally Threatened Species**
 coastal California gnatcatcher (Medium)
- California Species of Concern**
 San Diego horned lizard (Observed)
 two-striped garter snake (Medium)
 rosy boa (High)
- Cooper's hawk (Medium)**
 coastal cactus wren (Medium)
 San Diego desert woodrat (Medium)
- Proposed Gold Line Alignment
- Proposed Stations



Figure 3-3.2: Sensitive Animal Species in the Gold Line Phase II Project Area

Coastal Sage Scrub Habitat: Alluvial Fan Sage Scrub

Alluvial fan sage scrub vegetation communities occur on alluvial outwash fans along the base of the San Gabriel, San Bernardino, and San Jacinto mountains. These communities are generally associated with infrequently scoured areas on floodplains and outwash fans in the Transverse and Peninsular ranges. Alluvial fan scrub communities are considered to be rare or threatened plant communities that are highly fragmented due to urbanization and the extensive alteration of natural stream hydrology in southern California. These plant communities are composed of a variety of evergreen woody and drought-deciduous shrubs with a significant component of larger, evergreen shrubs typically found in chaparral¹ adapted to survival in the presence of intense periodic flooding. Scalebroom (*Lepidospartum squamatum*) is considered to be an indicator species of alluvial scrubs, and is usually described as a dominant or subdominant shrub in alluvial community descriptions, including the Scalebroom Series² and the *Lepidospartum-Eriodycton-Yucca* association.³

The alluvial fan sage scrub community occurring at the Irwindale site has been disturbed by past surface mining activities and erosion resulting from the mining. This community is dominated by California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and brittlebush (*Encelia farinosa*); Prickly-pear cactus (*Opuntia* sp.), scalebroom, and sugarbush (*Rhus ovata*) are also present.

Riparian Habitat: Riparian Scrub

Riparian scrub communities generally occur along watercourses or water bodies and have soil that is flooded or saturated during at least a portion of the growing season. Vegetation consists of herbs, shrubs, and trees adapted to these wet conditions. Riparian habitat subtypes are identified by the percent cover of dominant species, with the tallest species in a multilayered canopy taking precedence. A riparian scrub habitat (possibly southern willow scrub) may occur in an inactive mining pit on the Miller property in the City of Irwindale; however, the surveyors were unable to access this portion of the site to confirm this. It should be noted that there are no proposed project elements that would affect this potential riparian scrub habitat.

Other Areas

❑ Ornamental Landscaping

Ornamental landscaping and areas of escaped ornamental plantings consist of introduced trees, shrubs, flowers, and turf grass. Ornamental landscaping occurs in green belts, parks, and horticultural plantings throughout the proposed project.

❑ Disturbed Communities

Disturbed communities occur in areas whose naturally occurring plant communities have been changed by human actions, such as farming or mining, or natural phenomena, such as floods or

¹ Kirkpatrick and Hutchinson 1977, Smith 1980

² Sawyer and Keeler-Wolf 1998

³ Kirkpatrick and Hutchinson 1977

rockfalls. Plant species occurring in disturbed areas are typically opportunistic, invasive species adapted to rapid colonization of disturbed ground. Many of these species are considered ruderal (i.e., adapted to growing in waste areas). A number of areas in the proposed project area exhibit varying degrees of past disturbance. Plant species found in these areas include telegraph weed (*Heterotheca grandiflora*), Russian thistle (*Salsola tragus*), Peruvian pepper (*Schinus molle*), puncture vine (*Tribulus terrestris*), tree tobacco (*Nicotiana glauca*), and castor bean (*Ricinus communis*).

b. Sensitive Plant Species

The potential occurrence of special status plants was evaluated through a literature review and visit to the proposed project area. The CNDDDB and CNPSEI literature were reviewed regarding the potential presence of threatened, endangered, candidate, or other sensitive species in the study area. The review resulted in a list of 58 sensitive plant species, five of which have federal- or state-protected status. Eleven of the 58 species have a low potential to occur on or within the vicinity of the proposed project. Of these 11, one is a federal- and state-listed endangered species; the other 10 species have a CNPS List status or R-E-D code. The other 47 protected sensitive plant species that were identified in the initial literature review were subsequently excluded from further consideration because the proposed project either lacks suitable conditions to support these species or the area is located well beyond their normal range. Sensitive species include all federal- and state-listed (endangered and threatened) species, federal species of concern, state rare species, and CNPS listed species.

The “potential for occurrence” ranking is based on the following criteria:

- Absent. Species was not observed during focused surveys conducted at an appropriate time for identification of the species or species is restricted to habitats that do not occur within the proposed project.
- Low. No records exist of the species occurring within the proposed project or its immediate vicinity and/or habitats needed to support the species are of poor quality.
- Moderate. Either a historical record exists of the species within the immediate vicinity of the proposed project (approximately 5 miles) or the habitat requirements associated with the species occur within the proposed project.
- High. Both a historical record exists of the species within the proposed project or its immediate vicinity (approximately 5 miles) and the habitat requirements associated with the species occur within the proposed project.
- Occurs. Species was observed within the proposed project at the time of the survey.

The plant species, their current status, and their potential to occur (absent, low, moderate, high, or occurs) within the study corridor are summarized and listed by city in **Table 3-3.1**. Only those cities that have potential for occurrence of any sensitive plant species are included in the table. A brief description of the one federal-and state-listed endangered species that has a low potential to occur follows the table. No sensitive plant species were observed during the reconnaissance surveys.

**TABLE 3-3.1
SENSITIVE PLANT SPECIES POTENTIALLY
OCCURRING WITHIN STUDY CORRIDOR**

| Scientific Name | Common Name | Status Designation | PFO ¹ | Habitat And Distribution | Flowering Period | City of Potential Occurrence |
|--|-------------------------------|--|------------------|--|------------------|------------------------------|
| Endangered and Threatened Plants | | | | | | |
| <i>Berberis nevinii</i> | Nevin's barberry | ESA: FE CESA: SE CNPS: List 1B R-E-D: 3-3-3 | L | Evergreen shrub occurring in chaparral, cismontane woodland, coastal scrub, and sandy or gravelly riparian scrub at elevations ranging from 950 to 2,700 feet msl. | March - April | Irwindale |
| Other Sensitive Plants | | | | | | |
| <i>Calochortus clavatus</i> var. <i>gracilis</i> | slender mariposa lily | ESA: None CESA: None CNPS: List 1B R-E-D: 3-2-3 | L | Bulbiferous herb occurring in chaparral and coastal scrub at elevations ranging from 1,100 to 3,300 feet msl. | March - May | Irwindale |
| <i>Calochortus plummerae</i> | Plummer's mariposa lily | ESA: None CESA: None CNPS: List 1B R-E-D: 2-2-3 | L | Bulbiferous herb occurring on rocky and sandy sites, usually alluvial or granitic material, in coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grasslands at elevations ranging from 325 to 5,500 feet msl | May - July | Irwindale |
| <i>Dudleya densiflora</i> | San Gabriel Mountains Dudleya | ESA: None CESA: None CNPS: List 1B R-E-D: 3-3-3 | L | Perennial herb occurring in chaparral, coastal scrub, lower montane coniferous forest in crevices and on decomposed granite on cliffs and canyon walls at elevations ranging from 985 to 1,700 feet msl. | March - July | Irwindale |

TABLE 3-3.1 *continued (page 2 of 4)*
**SENSITIVE PLANT SPECIES POTENTIALLY
 OCCURRING WITHIN STUDY CORRIDOR**

| Scientific Name | Common Name | Status Designation | PFO ¹ | Habitat And Distribution | Flowering Period | City of Potential Occurrence |
|--|------------------------|--|------------------|---|------------------|------------------------------|
| <i>Horkelia cuneata</i> <i>ssp. puberula</i> | mesa horkelia | ESA: None CESA: None CNPS: List 3 R-E-D: 2-2-3 | L | Perennial herb occurring in coastal scrub, chaparral, and cismontane woodland on sandy or gravelly soils at elevations ranging from 230 to 2,660 feet msl. | February – Sept | Irwindale |
| <i>Lepidium virginicum</i> var. <i>robinsonii</i> | Robinson's peppergrass | ESA: None CESA: None CNPS: List 1B R-E-D: 3-2-2 | L | Annual herb occurring in coastal scrub and chaparral on dry soils at elevations ranging from 0 to 2,800 feet msl. | January - July | Irwindale |
| <i>Malacothamnus davidsonii</i> | Davidson's bush mallow | ESA: None CESA: None CNPS: List 1B R-E-D: 2-2-3 | L | Deciduous shrub occurring in coastal scrub, cismontane woodland, riparian woodland, and chaparral, often-in sandy washes at elevations ranging from 610 to 2,805 msl. | June - January | Irwindale |
| <i>Navarretia prostrata</i> | prostrate navarretia | ESA: None CESA: None CNPS: List 1B R-E-D: 2-3-3 | L | Annual herb occurring in coastal scrub, vernal pools, and valley and foothill grasslands in mesic soils at elevations ranging from 50 to 2,300 feet msl. | April - July | Irwindale |
| <i>Phacelia stellaris</i> | Brand's phacelia | ESA: None CESA: None CNPS: List 1B R-E-D: 3-3-2 | L | Annual herb occurring in coastal dunes and scrub at elevations ranging from 15 to 4,970 feet msl. | March - June | Irwindale |
| <i>Senecio aphanactis</i> | rayless ragwort | ESA: None CESA: None CNPS: List 2 R-E-D: 3-2-1 | L | Annual herb occurring in cismontane woodland, coastal scrub, and chaparral on drying alkaline flats at elevations ranging from 50 to 2,625 feet msl. | January - April | Irwindale |

TABLE 3-3.1 *continued (page 3 of 4)*
SENSITIVE PLANT SPECIES POTENTIALLY OCCURRING WITHIN STUDY CORRIDOR

| Scientific Name | Common Name | Status Designation | PFO ¹ | Habitat And Distribution | Flowering Period | City of Potential Occurrence |
|-----------------------------|--------------------------|---|------------------|---|------------------|------------------------------|
| <i>Sidalcea neomexicana</i> | salt spring checkerbloom | ESA: None CESA: None CNPS: List 2 R-E-D: 2-2-1 | L | Perennial herb occurring in coastal scrub, chaparral, lower montane coniferous forest, brackish marshes, mohavean desert scrub, and playas on alkaline, mesic soils at elevations ranging from 0 to 5,020 feet msl. | March - June | Irwindale |

General references: CNPSEI 2003; CNDDDB 2003; Azusa, Baldwin Park, El Monte, Glendora, Los Angeles, Mt. Baldy, Mt. Wilson, Ontario, Pasadena, and San Dimas USGS 7.5-minute quadrangles.

Status Designation Codes:

Federal (Fed)

Endangered Species Act (ESA) Listing Codes:

- FE Federally-listed as Endangered
- FT Federally-listed as Threatened
- FPE Federally-proposed for listing as Endangered
- FPT Federally-proposed for listing as Threatened
- FPD Federally-proposed for delisting
- FC Federal candidate species (former Category 1 candidates)
- (FSC) Federal Species of Concern (Not an active term, and is provided for informational purposes only)

State (CA)

California Endangered Species Act (CESA) Listing Codes:

- SE State-listed as Endangered
- ST State-listed as Threatened
- SR State-listed as Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
- SCE State candidate for listing as Endangered
- SCT State candidate for listing as Threatened

California Native Plant Society (CNPS) Listing code:

- List 1A: Plants presumed extinct in California.
- List 1B: Plants rare and endangered in California and throughout their range.

CNPS R-E-D Listing Code:

Rarity

- 1: Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
- 2: Occurrence confined to several populations or one extended population.
- 3: Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

Endangerment

- 1: Not endangered.
- 2: Endangered in a portion of its range.
- 3: Endangered throughout its range.

Distribution

- 1: More or less widespread outside California.
- 2: Rare outside California.
- 3: Endemic to California (i.e., does not occur outside California)

* Note that the R-E-D Code for List 1A plants does not exist; an "*" indicates this is a placeholder.

TABLE 3-3.1 *continued (page 4 of 4)*
**SENSITIVE PLANT SPECIES POTENTIALLY
 OCCURRING WITHIN STUDY CORRIDOR**

| Scientific Name | Common Name | Status Designation | PFO ¹ | Habitat And Distribution | Flowering Period | City of Potential Occurrence |
|-----------------|--|--------------------|------------------|--------------------------|------------------|------------------------------|
| List 2: | Plants rare, threatened, or endangered in California but more common elsewhere in their range. | | | | | |
| List 3: | Plants about which we need more information; a review list. | | | | | |
| List 4: | Plants of limited distribution; a watch list. | | | | | |

1. Definitions of Occurrence Probability (PFO)

A = Absent: Species was not observed during focused surveys conducted at an appropriate time for identification of the species or species is restricted to habitats that do not occur within the proposed project.

L = Low: No records exist of the species occurring within the proposed project or its immediate vicinity and/or habitats needed to support the species are of poor quality.

M = Moderate: Either a historical record exists of the species within the immediate vicinity of the proposed project (approximately 5 miles) or the habitat requirements associated with the species occur within the proposed project.

H = High: Both a historical record exists of the species within the proposed project or its immediate vicinity (approximately 5 miles) and the habitat requirements associated with the species occur within the proposed project.

P = Occurs: Species was observed within the proposed project at the time of the survey.

3-3.1.2 Wildlife

Disturbed areas and ornamental landscaping predominantly characterize the proposed project area. Two other vegetation communities, riparian scrub and alluvial fan sage scrub, are found within the proposed project area in the City of Irwindale. Wildlife species occurring within the proposed project area are characteristic of these communities.

a. Amphibians

Amphibians were not observed within the proposed project area. Amphibians require moisture for at least a portion of their life cycle, and many require standing or flowing water for reproduction. A common amphibian species that may occur, California tree frog (*Hyla cadaverina*), would be found only in the presence of water and suitable upland habitat, which would support both breeding and foraging activities. This species would be found along the San Gabriel River within the City of Irwindale.

b. Reptiles

Two reptile species were observed during surveys of the proposed project area. These included the side-blotched lizard (*Uta stansburiana*) and San Diego horned lizard (*Phrynosoma coronatum blainvillei*). Suitable habitat, such as dry, open environments, occurs within the proposed project area. Other species of reptiles that are expected to occur on or within the proposed project area include western fence lizard (*Sceloporus occidentalis*) and southern alligator lizard (*Elgaria multicarinata*).

c. Birds

The most diverse group of animals observed during the surveys was birds. Fifteen species of birds were observed during the surveys of the proposed project area. Birds observed include the house finch (*Carpodacus mexicanus*), California towhee (*Pipilo crissalis*), Western scrub-jay (*Aphelocoma californica*), mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), and black phoebe (*Sayornis nigricans*). Raptors observed include the red-tailed hawk (*Buteo jamaicensis*) and Cooper's hawk (*Accipiter cooperii*). Both of these species, including their nests and eggs, are specifically protected under the Migratory Bird Protection Act (16 USC 703-712). Mature trees throughout the proposed project have the potential to support raptor-nesting sites.

d. Mammals

Several mammals were observed or detected during the surveys. These included the California ground squirrel (*Spermophilus beecheyi*), desert cottontail rabbit (*Sylvilagus auduboni*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), and domestic cat (*Felis catus*). Other species of mammals that are expected to occur on or within the proposed project area include raccoon (*Procyon lotor*) and opossum (*Didelphis virginiana*).

e. Sensitive Wildlife Species

The potential for the presence of listed or sensitive wildlife species within the proposed project area was determined from a literature review of the CNDDDB and other pertinent biological documentation. In addition, the wildlife biologists used their expertise to survey the proposed project area to determine if habitat within the proposed project area could support these sensitive or listed species. Based on this information, a "potential for occurrence" ranking was assigned to each listed or sensitive species that could potentially occur onsite. Sensitive wildlife species include all federal and state endangered and threatened species, Federal Species of Concern (FSC), and California Special Concern Species (CSC).

After a thorough literature review of the proposed project area and vicinity, a total of 23 species were identified to have the potential to occur within the proposed project area. Of these 23 species, it was determined that 14 sensitive wildlife species occur or have a low to high potential to occur within the proposed project area due to the presence of suitable habitat and observations. The other nine sensitive wildlife species that were identified in the initial literature review were subsequently excluded from further consideration because the proposed project area either lacks suitable habitat conditions to support these species or the area is located well beyond their normal range. Of the 14 remaining sensitive wildlife species that have the potential to occur, four are federal- or state-listed as endangered or threatened, and 10 are either federal or state species of concern or sensitive wildlife species. The presence of two sensitive wildlife species, San Diego horned lizard and Cooper's hawk, were observed within the proposed project area during surveys. **Table 3-3.2** provides a list by city of the federal- and state-listed endangered, threatened, and sensitive wildlife species and their potential to occur within the proposed

project area. Only those cities that have potential for occurrence for any sensitive wildlife species are included in the table. A brief description of the three federal- or state-listed endangered wildlife species that have a moderate potential to occur follows the table.

| TABLE 3-3.2 SENSITIVE WILDLIFE SPECIES POTENTIALLY OCCURRING WITHIN THE PROPOSED PROJECT | | | | | |
|---|------------------------------|-------------------------|------------------|---|------------------------------|
| Scientific Name | Common Name | Status | PFO ¹ | Habitat | City of Potential Occurrence |
| CLASS OSTEICHTHYES | BONY FISH | | | | |
| <i>Catostomus santaanae</i> | Santa Ana Sucker | ESA: FT CESA: CSC | L | Endemic to Los Angeles Basin south coastal streams. Habitat generalists but prefer sand-rubble-boulder bottoms, clear water, & algae. | Irwindale |
| Cyprinidae | Minnows And Carp | | | | |
| <i>Gila orcutti</i> | arroyo chub | ESA: None CESA: CSC | L | Occurs in slow water stream sections with mud or sand bottoms. Often found in intermittent streams. | Irwindale |
| <i>Rhinichthys osculus spp.</i> | Santa Ana speckled dace | ESA: None CESA: CSC | L | Found only in permanent flowing streams with summer water temperatures of 17-20 Celcius. Usually inhabits shallow cobble and gravel riffles. | Irwindale |
| CLASS REPTILIA | REPTILES | | | | |
| Emydidae | Box And Water Turtles | | | | |
| <i>Clemmys marmorata pallida</i> | southwestern pond turtle | ESA: (FSC) CESA: CSC | L | Inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams with suitable basking sites. | Irwindale |
| Phrynosomatidae | Lizards | | | | |
| <i>Phrynosoma coronatum blainvillei</i> | San Diego horned lizard | ESA: None CESA: CSC | P | Occurs in coastal sage scrub, open chaparral, riparian woodland, annual grassland habitats that support adequate prey species. | Irwindale |

TABLE 3-3.2: continued (page 2 of 4)
SENSITIVE WILDLIFE SPECIES POTENTIALLY OCCURRING WITHIN THE PROPOSED PROJECT

| Scientific Name | Common Name | Status | PFO ¹ | Habitat | City of Potential Occurrence |
|---|---|--------------------------|------------------|--|--|
| Colubridae | Colubrid Snakes | | | | |
| <i>Thamnophis hammondi</i> | two-striped garter snake | ESA: None CESA: CSC | M | Found in or near fresh water, often along streams with rocky beds and riparian growth. | Irwindale |
| Boidae | Boa And Pythons | | | | |
| <i>Charina trivirgata</i> | rosy boa | ESA: (FSC) CESA: None | H | Inhabits areas of brushy cover and rocky soil such as coastal canyons and hillsides, desert canyons, washes and mountains. | Irwindale |
| CLASS AVES | BIRDS | | | | |
| Accipitridae | Hawks, Kites, Harriers, And Eagles | | | | |
| <i>Accipiter cooperii</i> | Cooper's hawk | ESA: None CESA: CSC | M | Prefers open grasslands and woodland margins with riparian vegetation and trees for nesting. | Pasadena, Arcadia, Monrovia, Duarte, Irwindale, Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair |
| Strigidae | Owls | | | | |
| <i>Athene cunicularia hypugea</i> | burrowing owl | ESA: (FSC) CESA: CSC | L | Prefers open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Dependent on small mammal burrows (particularly ground squirrels) for its subterranean nesting. | Irwindale |
| Troglodytidae | Wrens | | | | |
| <i>Campylorhynchus brunneicapillus couesi</i> | coastal cactus wren | ESA: None CESA: CSC | M | Typically occurs in coastal sage scrub and nests within cholla or prickly pear cactus | Irwindale |

TABLE 3-3.2 *continued (page 3 of 4)*
SENSITIVE WILDLIFE SPECIES POTENTIALLY OCCURRING WITHIN THE PROPOSED PROJECT

| Scientific Name | Common Name | Status | PFO ¹ | Habitat | City of Potential Occurrence |
|--|--------------------------------|-------------------------|------------------|---|------------------------------|
| Tyrannidae | Tyrant Flycatchers | | | | |
| <i>Empidonax traillii extimus</i> | southwestern willow flycatcher | ESA: FE CESA: None | M | Prefers moist thickets of dense, structurally diverse riparian habitat. | Irwindale |
| Sylviidae | Gnatcatchers | | | | |
| <i>Poliophtila californica californica</i> | coastal California gnatcatcher | ESA: FT CESA: CSC | M | Occurs in coastal sage scrub vegetation on mesas, arid hillsides, and in washes and nests almost exclusively in California sagebrush. | Irwindale |
| Vireonidae | Vireos | | | | |
| <i>Vireo bellii pusillus</i> | least Bell's vireo | ESA: FE CESA: SE | M | Occurs in moist thickets and riparian areas that are predominately comprised of willow and mule fat. | Irwindale |
| CLASS MAMMALIA | MAMMALS | | | | |
| Cricetidae | Mice, Rats, And Voles | | | | |
| <i>Neotoma lepida intermedia</i> | San Diego desert woodrat | ESA: (FSC) CESA: CSC | M | Occurs in moderate to dense canopies, especially in rock outcrops, rocky cliffs, and slopes. Occurs in Southern California from San Diego County to San Luis Obispo County. | Irwindale |

General references: CNDDDB 2003; Azusa, Baldwin Park, El Monte, Glendora, Los Angeles, Mt. Baldy, Mt. Wilson, Ontario, Pasadena, and San Dimas USGS 7.5-minute quadrangles.

Status Designation Codes:

| | | |
|--|--|---|
| Federal (Fed) Endangered Species Act (ESA) Listing Codes: | | ¹Definitions of Occurrence Probability (PFO) A = Absent: Species is considered to be absent from the proposed project based on geographical range, absence of suitable habitat, and/or failure to detect the species during focused surveys. L = Low potential for occurrence: Historical records may exist of the species occurring within the proposed project or its immediate vicinity and/or the habitats needed to support the species within the proposed project are of poor quality. M = Moderate potential for occurrence: There is either |
| FE | Federally-listed as Endangered | |
| FT | Federally-listed as Threatened | |
| FPE | Federally-proposed for listing as Endangered | |
| FPT | Federally-proposed for listing as Threatened | |
| FPD | Federally-proposed for delisting | |
| FC | Federal candidate species (former Category 1 candidates) | |
| (FSC) | Federal Species of Concern (Not an active term, and is provided for informational purposes only) | |

| <p style="text-align: center;">TABLE 3-3.2 <i>continued (page 4 of 4)</i> SENSITIVE WILDLIFE SPECIES POTENTIALLY OCCURRING WITHIN THE PROPOSED PROJECT</p> | | | | | |
|---|---|--|------------------|---------|------------------------------|
| Scientific Name | Common Name | Status | PFO ¹ | Habitat | City of Potential Occurrence |
| <p>State (CA) California Endangered Species Act (CESA) Listing Codes:</p> | | <p>a recent or historical record of the species within the proposed project or its immediate vicinity and/or habitat requirements associated with the species occur within the proposed project or its immediate vicinity.</p> | | | |
| SE | State-listed as Endangered | <p>H = High potential for occurrence: There is either a recent or historical record or observation of the species within or in the immediate vicinity of the proposed project and/or the diagnostic habitat requirements strongly associated with the species occur within the proposed project or in the immediate vicinity.</p> <p>P = Occurs: The species was observed in the proposed project at the time of the survey.</p> | | | |
| ST | State-listed as Threatened | | | | |
| SR | State-listed as Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.) | | | | |
| SCE | State candidate for listing as Endangered | | | | |
| SCT | State candidate for listing as Threatened | | | | |

Brief descriptions of the biology of the three federal-or state-listed wildlife species for which suitable habitat was observed within the proposed project area are in the following paragraphs. However, critical habitat does not exist in the proposed project area for any of these species. Critical habitat identifies specific areas, both occupied and unoccupied, that are essential to the conservation of a listed species that may require protection and management.⁴

Coastal California Gnatcatcher

The coastal California gnatcatcher (FT and CSC) is associated with coastal sage scrub vegetation on mesas, arid hillsides, and in washes. This species nests almost exclusively in California sagebrush. Suitable habitat is present (alluvial fan sage scrub) on the Miller property in the City of Irwindale within the proposed project area; therefore, this species has a moderate potential for occurrence within the proposed project area.

Least Bell's Vireo

The least Bell's vireo (FE and SE) is a small, migratory songbird that is dependent upon riparian habitat for breeding. Least Bell's vireo has been observed breeding within the areas of the Santa Fe Dam basin adjacent to the proposed project. Additionally, there is riparian scrub present on the Miller site in the City of Irwindale that could potentially support nesting of this species; therefore, this species has a moderate potential for occurrence within the proposed project area.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (FE) prefers moist thickets of dense, structurally diverse riparian habitat. There were no CNDDDB occurrences, and this species has not been reported to nest within the

⁴ USFWS 2000

proposed project area. However, there is riparian scrub (pending field verification) present on the Miller site in the City of Irwindale that could potentially support nesting flycatchers; therefore, this species has a moderate potential to occur within the proposed project area.

3-3.1.3 Wildlife Movement Corridors

Wildlife movement corridors are of substantial importance to the viability of regional planning efforts to preserve habitat linkages. In the absence of habitat linkages that allow movement to adjoining open space areas, some wildlife species, especially the larger and more mobile mammals, will not likely persist over time because the infusion of new individuals and genetic information is prevented.⁵ A wildlife movement corridor is traditionally defined as a linear habitat whose primary wildlife function is to connect two or more significant habitat areas.⁶ More specifically, a wildlife corridor is a piece of habitat, usually longer than wide, with vegetation and topography that facilitate the movements of wild animals (and plants) from one large patch of suitable habitat to another in order to fulfill foraging, breeding, and territorial needs.

The only wildlife movement corridor and habitat linkage within the Gold Line Phase II Extension Project is the San Gabriel River and its associated wetlands and the riparian corridor within the City of Irwindale.

3-3.2 Environmental Impacts

3-3.2.1 Evaluation Methodology

a. General

Prior to performing the field surveys, existing documentation relevant to the proposed project was reviewed. Previous environmental documents and the most recent records of the CNDDDB (2003) and the CNPSEI (2003) were reviewed for the quadrangles containing and surrounding the proposed project (i.e., Azusa, Baldwin Park, El Monte, Glendora, Los Angeles, Mt. Baldy, Mt. Wilson, Ontario, Pasadena, and San Dimas USGS 7.5-minute quadrangles). These databases contain records of reported occurrences of federal- or state-listed endangered or threatened species or proposed endangered or threatened species, former FSC, CSC, or otherwise sensitive species or habitat that may occur within or in the immediate vicinity of the proposed project. In addition, lists from the U.S. Fish and Wildlife Service (USFWS) were reviewed, and lists of sensitive wildlife species potentially occurring within the vicinity of the proposed project were subsequently developed.

On October 30 and December 5, 2003, biologists conducted biological reconnaissance-level surveys to identify the distribution and relative abundance of general and sensitive wildlife resources within the proposed project area. A habitat assessment was also performed to determine the relative quality or potential of the habitat types to support sensitive plant and wildlife species. Aerial photographs of the entire proposed project taken in July 2003 were analyzed to focus on the areas to be surveyed. Areas of current development or heavily disturbed properties were not surveyed after it was determined from aerial photos that there would be little to no effect on those areas.

⁵ MacArthur and Wilson 1967, Soule 1987, Harris and Gallagher 1989, Bennett 1990

⁶ Harris and Gallagher 1989

The field surveys were conducted by walking throughout the proposed project area and recording plant and wildlife observations on standardized field data sheets. Plant communities within the proposed project area were qualitatively described. Biological resources within the proposed project area were inventoried, and the potential for the presence of sensitive plant and wildlife species and sensitive habitats was assessed, focusing on those species listed as threatened or endangered by the state and federal agencies. A list of plant and wildlife species observed was documented on standardized data sheets. Appendix A includes the list of wildlife species observed. When allowed and pertinent, digital photos were taken of each area surveyed within the proposed project area.

b. Vegetation

During the field survey, all habitat types were visited to identify dominant species and to classify each vegetation type according to Holland (1986). All plant species observed were recorded in field notes.

c. Wildlife

Reconnaissance-level field surveys were on conducted on October 30 and December 5, 2003, within the proposed project area to characterize the distribution and relative abundance of wildlife species, wildlife resources, and wildlife habitat within the proposed project area. Habitat types within the proposed project area were investigated, concentrating on sensitive habitat areas (e.g., alluvial fan sage scrub) within the proposed project area and its immediate vicinity. The surveys were conducted between the hours of 8:00 a.m. and 3:00 p.m. Wildlife and wildlife signs, including tracks, fecal material, carcasses, nests, excavations, and vocalizations, were noted and recorded on standardized data sheets.

d. Sensitive Species

Based on the literature review, database searches, and review of recent aerial photographs, sensitive species were ranked for their potential to occur in the proposed project area. The results of this assessment are summarized in **Tables 3-3.1** and **3-3.2**.

Plants

For each of the sensitive plant species identified through the CNDDDB and CNPSEI databases as occurring within the vicinity of the proposed project, the habitat was assessed for the sensitive plants' potential to occur within the proposed project area. The following guidelines were utilized to assess each sensitive species' potential to occur:

- **Absent:** Species was not observed during focused surveys conducted at an appropriate time for identification of the species or species is restricted to habitats that do not occur within the proposed project area.
- **Low:** No records exist of the species occurring within the proposed project area or its immediate vicinity, and/or habitats needed to support the species are of poor quality.
- **Moderate:** Either a historical record exists of the species within the immediate vicinity of the proposed project (approximately 5 miles) or the habitat requirements associated with the species occur within the proposed project area.

- **High:** Both a historical record exists of the species within the proposed project area or its immediate vicinity (approximately 5 miles) and the habitat requirements associated with the species occur within the proposed project area.
- **Occurs:** Species was observed within the proposed project area at the time of the survey.

Wildlife

A sensitive wildlife species was considered as a potential inhabitant of the proposed project area if its known geographical distribution encompassed part of the proposed project or if its distribution was near the proposed project and general habitat requirements of the species were present (e.g., the presence of roosting, nesting, or foraging habitat, suitable soils or vegetation communities, or a permanent water source). The “potential for occurrence” ranking is based on the following criteria:

- **Absent:** Species is considered to be absent from the proposed project area based on geographical range, absence of suitable habitat, and/or failure to detect the species during focused surveys.
- **Low potential for occurrence:** Historical records may exist of the species occurring within the proposed project area or its immediate vicinity and/or the habitats needed to support the species within the proposed project are of poor quality.
- **Moderate potential for occurrence:** There is either a recent or historical record of the species within the proposed project area or its immediate vicinity and/or habitat requirements associated with the species occur within the proposed project area or its immediate vicinity.
- **High potential for occurrence:** There is either a recent or historical record or observation of the species within proposed project area or its immediate vicinity and/or the diagnostic habitat requirements strongly associated with the species occur within the proposed project area or in the immediate vicinity.
- **Occurs:** The species was observed in the proposed project area at the time of the survey.

3-3.2.2 Impact Criteria

a. NEPA Impact Criteria

The project would have an adverse environmental impact on biological resources if it would:

- Have an adverse effect, either directly or through habitat modifications, on any species listed as endangered, threatened, or proposed or critical habitat for these species.
- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species by USFWS.
- Interfere substantially with the movement of any migratory fish or wildlife species, including actions that are prohibited by the Migratory Bird Treaty Act.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified by USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

b. CEQA Impact Criteria

The project would have a significant adverse environmental impact on biological resources if it would:

- Have an adverse effect, either directly or through habitat modifications, on any species listed as endangered, threatened, or proposed or critical habitat for these species.
- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFG or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinances.
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local, regional, or state HCP.

3-3.2.3 Construction-Period Impacts

a. No-Build Alternative

The No-Build Alternative does not include any elements that would affect biological resources in Phase I cities or in the Phase II study corridor. Due to the very limited areas of construction of elements of the alternative, effects to biological resources would be expected to be less than adverse under NEPA and less than significant under CEQA.

b. Transportation System Management (TSM) Alternative

The TSM Alternative does not include any elements that would affect biological resources in Phase I cities or in the Phase II study corridor. Due to the very limited areas of construction of elements of the alternative, effects to biological resources would be expected to be less than adverse under NEPA and less than significant under CEQA.

c. LRT, Triple Track Configuration

There are no elements of the Triple Track Configuration in cities in Phase I, so there would be no impact to biological resources. Potential biological impacts for the Triple Track Configuration are limited to the proposed site of the Maintenance and Operations Facility at Irwindale, the crossing of the San Gabriel River and adjoining parkland areas, and sites that would be acquired for stations and/or parking. Resources at the Maintenance and Operations Facility site and along the San Gabriel are discussed under

Phase II, Segment 1. The rail right-of-way is devoid of biological resources, largely as a result on railroad maintenance activities to ensure that no encroachments would compromise rail operations and to prevent the spread of fire from the track area to adjoining lands.

Each city along the study corridor has its own tree protection ordinances. The direct removal or pruning of certain trees may fall under the protection of such ordinances and may require city permits for the removal or alteration of these trees on station and parking sites. Although the Construction Authority is technically not subject to local ordinances, it would voluntarily comply with local tree protection ordinances to the extent possible. The specific tree protection ordinances for cities are listed below:

- Pasadena's Tree Protection and Street Tree Ordinance
- Arcadia's Comprehensive Tree Management Program Ordinance
- Monrovia's Oak Tree Preservation Ordinance (Title 17, Chapter 17.20)
- Duarte's Tree Ordinance (Title 13, Chapter 13.04)
- Azusa's Tree Preservation Ordinance
- Glendora's Tree Ordinance
- San Dimas' Tree Ordinance
- La Verne's Tree Preservation Ordinance
- Pomona's Tree Ordinance
- Claremont's Tree Ordinance
- Montclair's Tree Ordinance.

Mature trees within any city along the alignment may support nesting raptors that are protected by the Migratory Bird Treaty Act (MBTA). Effects would typically occur from removal of trees that are used by nesting raptors or, perhaps, from increased noise during construction within 500 feet of a nest. If tree removal or construction were to occur during the breeding season within 500 feet of an active nest, effects would be adverse under NEPA and significant under CEQA. This would be a direct impact. The Construction Authority is subject to the MBTA, so preventative mitigation measures for this issue are required.

Construction activities and increased traffic may result in increased amounts of dust being deposited on vegetation and trees adjacent to the proposed project. This would not be expected to have a long-term impact on the vegetation communities or trees; therefore, these temporary impacts would not be considered adverse under NEPA and would be less than significant under CEQA.

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3-4 COMMUNITY FACILITIES AND SERVICES

Summary of Impacts

The No Build and TSM impacts would have no impacts to community facilities and services.

For the LRT alternatives:

There would not be adverse impacts (under NEPA)/significant impacts (under CEQA) on police or fire protection services because traffic disruptions would be minimal and the project would not substantially increase demand for police or fire protection services.

There would not be adverse impacts (under NEPA)/significant impacts (under CEQA) on schools or parks after the implementation of noise mitigation measures described in Section 3-11 and construction fugitive dust mitigation measures described in Section 3-2.

There would not be adverse impacts (under NEPA)/significant impacts (under CEQA) on government centers because full access to all the facilities would be maintained during construction and because employees and patrons would not be exposed to adverse (significant) construction-related noise or air quality impacts.

There would not be adverse impacts (under NEPA)/significant impacts (under CEQA) on hospitals because emergency access would be maintained and because noise and air quality impacts would be mitigated to a less than adverse (significant) level.

3-4.1 Existing Conditions

An inventory of community services and facilities located within the study area is shown in **Table 3-4.1** and a map of those services and facilities is shown on **Figure 3-4.1**. The table identifies each public facility by type, name, address, distance from the proposed alignments, and which segment of the project that could affect the facility. The segments are defined in Section 2-2.3.1.

Figures 3-4.1 through 3-4.4 show the locations of community facilities.

**TABLE 3-4.1
COMMUNITY FACILITIES AND SERVICES WITHIN ONE-QUARTER MILE OF
THE PROPOSED ALIGNMENT**

| Facility Type | Name | Address | Distance | Segment |
|---------------|--|--|-----------------------|---------|
| Police | Arcadia Police Department | 250 W. Huntington Dr., Arcadia | 0.6 mile | 1 |
| | Monrovia Police Department | 140 Lime Av., Monrovia | 1 mile | 1 |
| | L.A. County Sheriff's Dept. Duarte Sub-station | 1042 Huntington Dr., Duarte | 0.5 mile | 1 |
| | Irwindale Police Department | 5050 Irwindale Av | 1.5 miles | 1 |
| | Azusa Police Department | 725 N. Alameda Av., Azusa | 0.1 mile | 2 |
| | Glendora Police Station | 150 S. Glendora Av., Glendora | 0.15 mile | 2 |
| | L.A. County Sheriff's Dept. San Dimas Sub-station | 122 N. San Dimas Av., San Dimas | 0.1 mile | 2 |
| | (Future) L.A. County Sheriff's Dept. San Dimas Sub-station | 270 S. Walnut Av., San Dimas (complete 2004) | Adjacent ¹ | 2 |
| | La Verne Police Department | 2061 Third St., La Verne | 0.1 mile | 2 |
| | Claremont Police Station | 570 W. Bonita Av., Claremont | 0.2 mile | 2 |
| | Montclair Police Station | 5111 Benito St., Montclair | 1.5 miles | 2 |
| Fire | Pasadena Fire Station No. 32 | 2424 E. Villa St., Pasadena | 0.25 mile | 1 |
| | Pasadena Fire Station No. 37 | 3430 E. Foothill Blvd., Pasadena | 0.15 mile | 1 |
| | Arcadia Fire Station No. 107 | 79 W. Orange Grove Av., Arcadia | 0.6 mile | 1 |
| | Arcadia Fire Station No. 105 | 710 S. Santa Anita Av., Arcadia | 0.6 mile | 1 |
| | Monrovia Fire Station No. 101 | 141 E. Lemon Av, Monrovia | 1 mile | 1 |
| | Monrovia Fire Station No. 102 | 2055 S. Myrtle Av., Monrovia | 0.3 mile | 1 |
| | L.A. County Fire Dept. No. 44 | 1105 S. Highland Av, Duarte | 0.5 mile | 1 |
| | L.A. County Fire Dept. No. 32 | 605 N. Angeleno Av., Azusa | 0.15 mile | 2 |
| | L.A. County Fire Dept. No. 151 | 231 W. Mountain View Av, Glendora | 0.25 mile | 2 |
| | L.A. County Fire Dept. No. 85 | 650 E. Gladstone St., Glendora | 1 mile | 2 |
| | L.A. County Fire Dept. No. 86 | 520 S. Amelia Av., Glendora | 1 mile | 2 |
| | L.A. County Fire Dept. No. 64 | 164 S. Walnut, San Dimas | Adjacent | 2 |
| | La Verne Fire Station No. 1 | 2061 3rd St., La Verne | 0.2 mile | 2 |
| | L.A. County Fire Dept. No. 186 | 280 E. Bonita Av., Pomona | 0.15 mile | 2 |
| | L.A. County Fire Dept. No. 101 | 606 W. Bonita Av., Claremont | 0.2 mile | 2 |
| | Montclair Fire Department | 8901 Monte Vista, Montclair | 0.2 mile | 2 |

¹ In this section adjacent is defined as adjoining the proposed alignment or being very near the alignment (i.e., separated from the alignment by a road).

TABLE 3-4.1 *continued (page 2 of 3)*
**COMMUNITY FACILITIES AND SERVICES WITHIN ONE-QUARTER MILE OF
 THE PROPOSED ALIGNMENT**

| Facility Type | Name | Address | Distance | Segment |
|---------------------------|---|--------------------------------------|-----------|---------|
| Public Elementary Schools | Andres Duarte Elementary School | 1433 Crestfield Dr., Duarte | 0.25 mile | 1 |
| | Henry Dalton Elementary School | 500 10th St., Azusa | 0.1 mile | 2 |
| | La Fetra Elementary School | 547 W. Bennett Av., Glendora | 0.2 mile | 2 |
| | Williams Elementary School | 301 S. Loraine Av., Glendora | 0.15 mile | 2 |
| | Oakmont Elementary School | 120 W. Green St., Claremont | 0.15 mile | 2 |
| Public Middle Schools | Santa Fe Middle School | 148 W. Duarte Rd., Monrovia | 0.1 mile | 1 |
| | Northview Intermediate School | 1401 Highland Av., Duarte | 0.25 mile | 1 |
| | Sandburg Middle School | 819 W. Bennett Av., Glendora | 0.1 mile | 2 |
| Public High Schools | Duarte High School | 1565 Central Av., Duarte | 0.25 mile | 1 |
| | Glendora High School | 1600 Foothill Blvd., Glendora | 0.25 mile | 2 |
| Other Schools | Rancho Learning Center | 150 S. 3rd Av., Arcadia | Adjacent | 1 |
| | Serendipity Early Education Center | 150 S. 3rd Av., Arcadia | Adjacent | 1 |
| Private Schools | First Lutheran School | 1323 S. Magnolia Av., Monrovia | 0.2 mile | 1 |
| | Saint Francis of Rome Elementary School | 734 N. Pasadena Av., Azusa | 0.1 mile | 2 |
| | Saint Dorothy Elementary School | 215 S. Valley Center Av., Glendora | 0.25 mile | 2 |
| | Holy Name of Mary School | 124 S. San Dimas Cyn. Rd., San Dimas | 0.25 mile | 2 |
| | Damien High School | 2280 Damien Av., La Verne | 0.25 mile | 2 |
| | Saint Anthony Elementary School | 2421 South C St., La Verne | 0.25 mile | 2 |
| | Life Center Christian School | 305 Arrow Hwy., Pomona | 0.25 mile | 2 |
| | Our Lady of the Assumption | 611 W. Bonita Av., Claremont | 0.25 mile | 2 |
| Colleges / Universities | Citrus College | 1000 W. Foothill Bl., Glendora | 0.1 mile | 2 |
| | University of La Verne | 1950 3rd St., La Verne | Adjacent | 2 |
| | Claremont Colleges | 747 N. Dartmouth Av., Claremont | 0.1 mile | 2 |
| Parks | Eaton Wash Park Site | Orange Grove Bl & Eaton Dr, Pasadena | 0.25 mile | 1 |
| | The Arboretum of L.A. County | 301 W. Baldwin Av., Arcadia | Adjacent | 1 |
| | Forest Park | Forest Av. & Rodeo Rd., Arcadia | Adjacent | 1 |
| | Newcastle Park | 143 W. Colorado Blvd., Arcadia | Adjacent | 1 |
| | Arcadia County Park | 405 S. Santa Anita Av., Arcadia | 0.25 mile | 1 |
| | Eisenhower Park | 500 N. 2nd St., Arcadia | 0.25 mile | 1 |

TABLE 3-4.1 *continued (page 3 of 3)*
**COMMUNITY FACILITIES AND SERVICES WITHIN ONE-QUARTER MILE OF
 THE PROPOSED ALIGNMENT**

| Facility Type | Name | Address | Distance | Segment |
|--------------------|------------------------------------|--|-----------|---------|
| | Bonita Park | 2nd Av. & Bonita St., Arcadia | Adjacent | 1 |
| | Aloysia Moore Park | Duarte Rd. & Bradbury Av., Duarte | Adjacent | 1 |
| | Duarte Sports Park | 1401 Central Av., Duarte | 0.25 mile | 1 |
| | Northview Park | Central Av. & Highland Av., Duarte | 0.25 mile | 1 |
| | Otis Gordon Sports Park | Central Av. & Crestfield Dr., Duarte | 0.25 mile | 1 |
| | Santa Fe Dam Recreation Area | 200 S. Peckham Rd., Irwindale | Adjacent | 1 |
| | Veterans Freedom Park | Foothill Blvd. & Alameda Av., Azusa | Adjacent | 2 |
| | Sandburg Middle School Park | 819 W. Bennett Av., Glendora | 0.2 mile | 2 |
| | Big Tree Park | 665 S. Santa Fe Av., Glendora | 0.25 mile | 2 |
| | South Hills Park | 723 Mona Loa Av. (S. Side), Glendora | 0.25 mile | 2 |
| | Centennial Heritage Park | 723 Mona Loa Av. (N. Side), Glendora | 0.15 mile | 2 |
| | Louie Pompei Sports Park | 400 S. Valley Center Av., Glendora | 0.1 mile | 2 |
| | Rhodes Park | 210 W. Bonita Av., San Dimas | Adjacent | 2 |
| | Pioneer Park | 225 S. Cataract Av., San Dimas | 0.1 mile | 2 |
| | Civic Center Park | Bonita Av. & Walnut Av., San Dimas | 0.15 mile | 2 |
| | Wheeler Avenue Park | Wheeler Av. & Palamares Av., La Verne | Adjacent | 2 |
| | Kuns Park | Bonita Av. & Park Av., La Verne | 0.25 mile | 2 |
| | Challenger Park | Yeager Av. & Wright Av., La Verne | 0.1 mile | 2 |
| | Palomares Park | 499 E. Arrow Hwy., Pomona | Adjacent | 2 |
| | Shelton Park | Harvard Av. & Bonita Pl., Claremont | 0.25 mile | 2 |
| | College Park | College Av. & Green St., Claremont | Adjacent | 2 |
| | El Barrio Park | 400 Claremont Bl., Claremont | 0.1 mile | 2 |
| Government Centers | Azusa City Hall | 213 Foothill Bl., Azusa | 0.15 mile | 2 |
| | Glendora Civic Center | Glendora Av. & Foothill Bl., Glendora | 0.15 mile | 2 |
| | San Dimas City Hall | 245 Bonita Av., San Dimas | 0.15 mile | 2 |
| Hospitals | City of Hope National Medical Ctr. | 1500 Duarte Rd., Duarte | Adjacent | 1 |
| | Foothill Presbyterian Hospital | 250 S. Grand Av., Glendora | 0.15 mile | 2 |
| | Huntington East Valley Hospital | 150 W. Route 66, Glendora | 0.15 mile | 2 |

Source: Myra L. Frank & Associates, Inc., 2003.

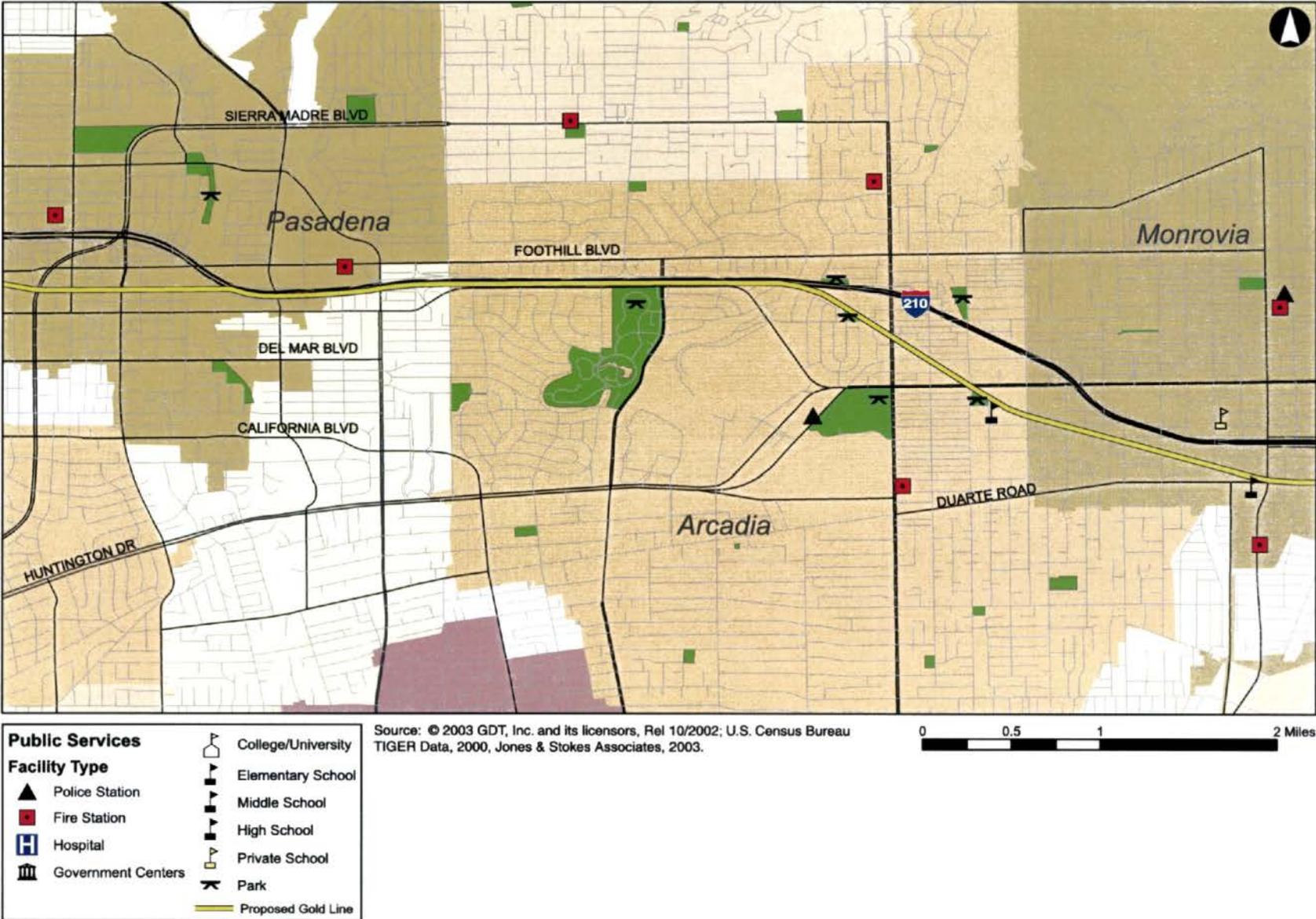


Figure 3-4.1: Community Facilities and Services (1 of 4)

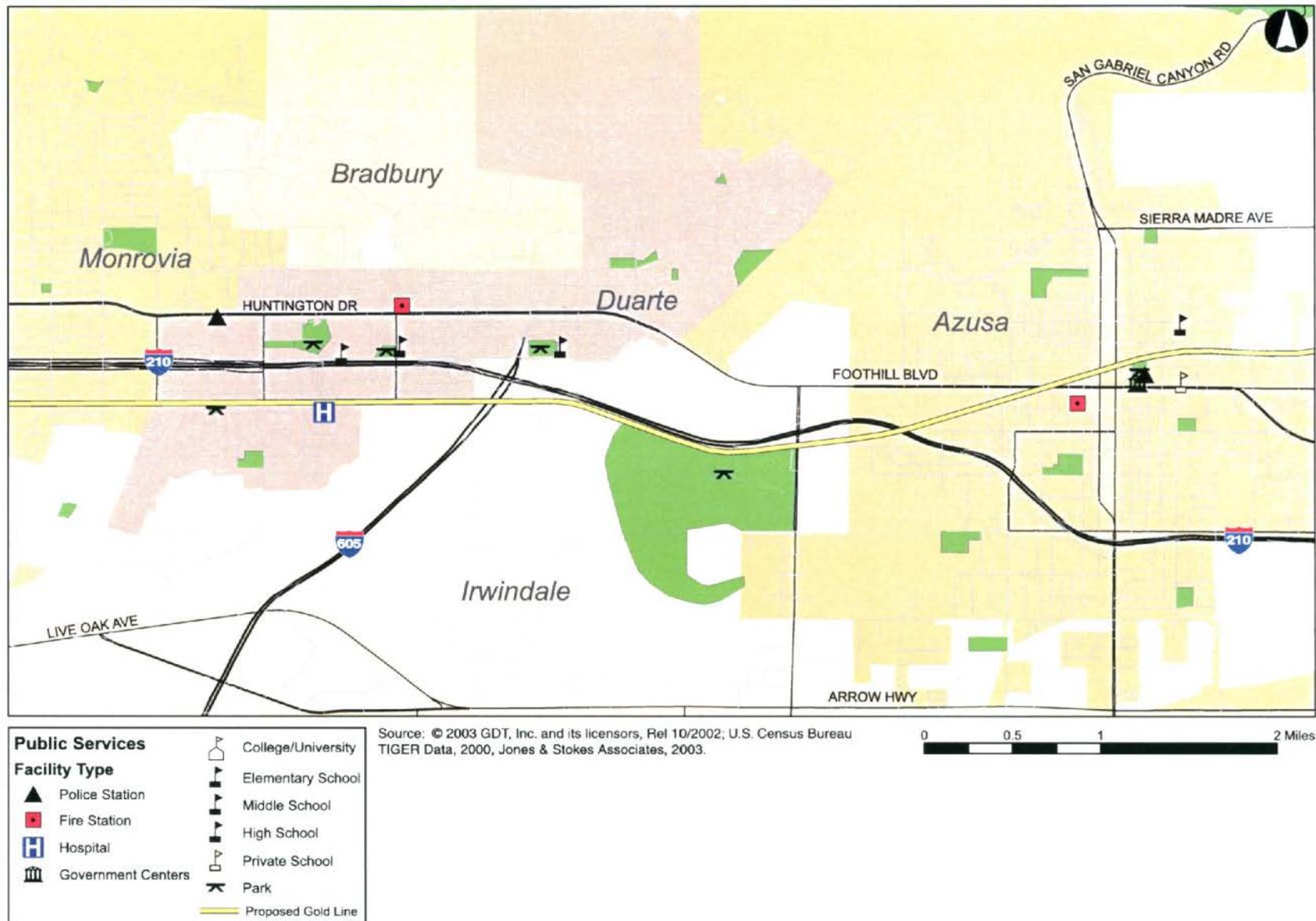


Figure 3-4.2: Community Facilities and Services (2 of 4)

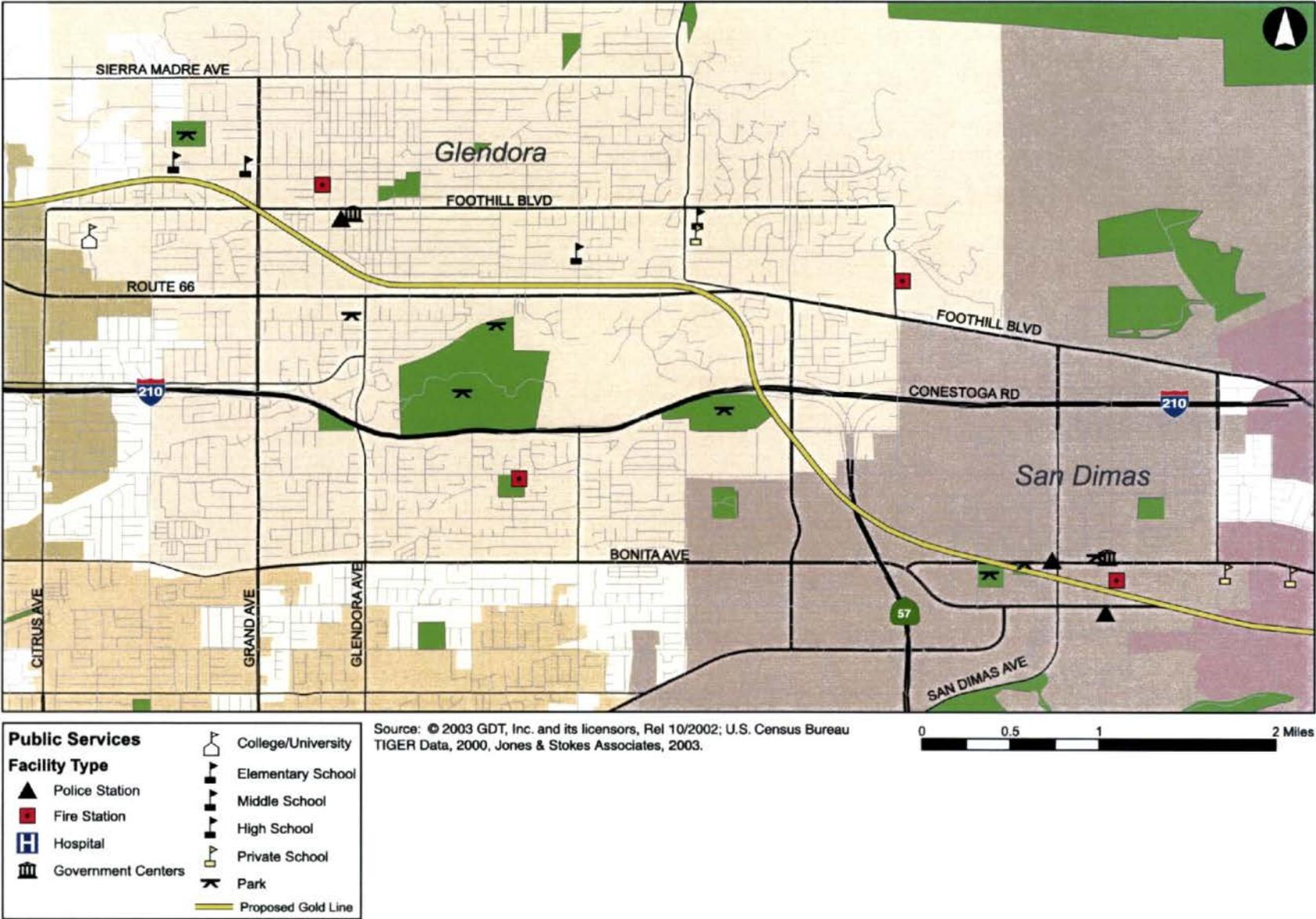


Figure 3-4.3: Community Facilities and Services (3 of 4)

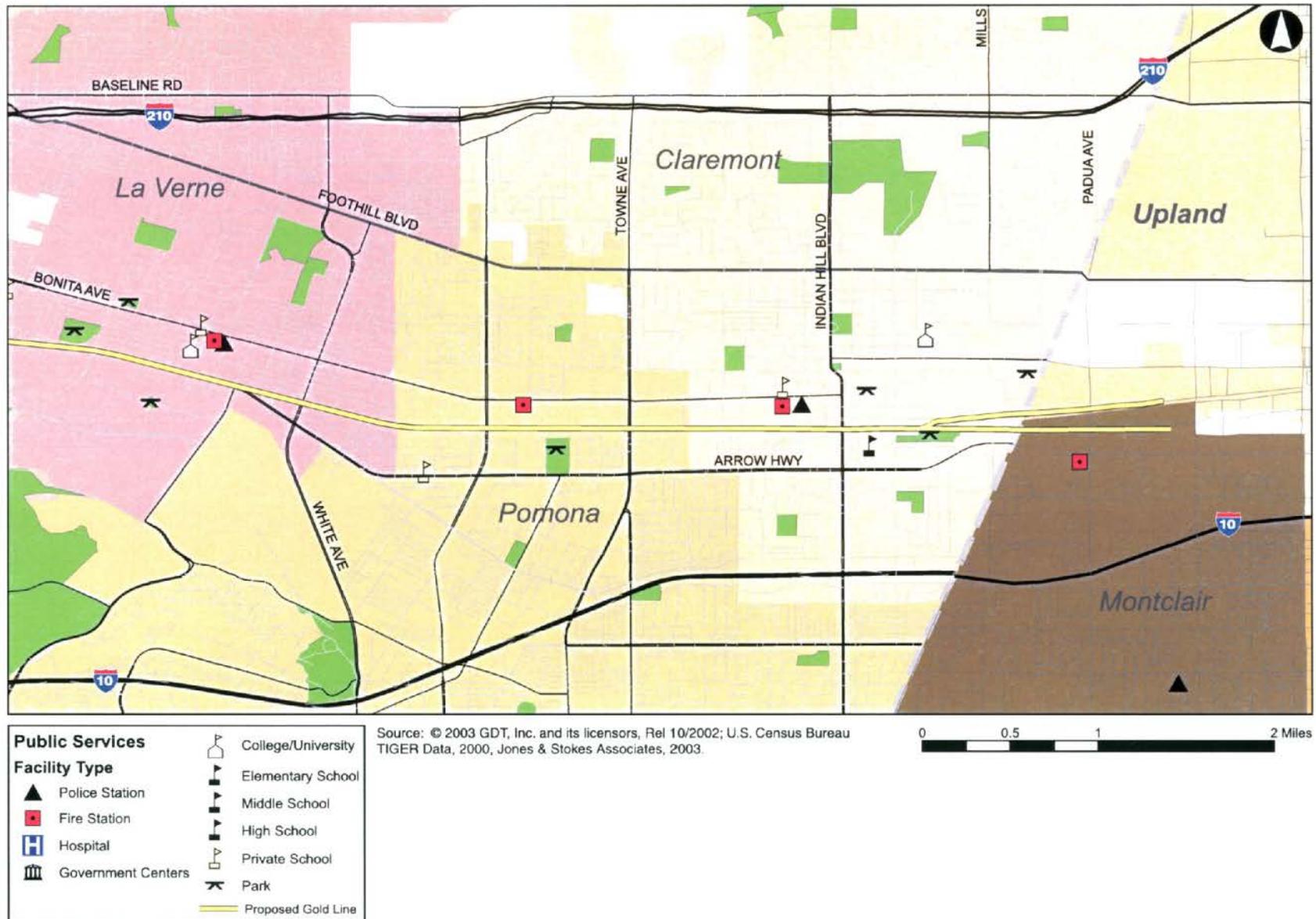


Figure 3-4.4: Community Facilities and Services (4 of 4)

3-4.1.1 Police Protection

Police protection services in the project study area are provided by a combination of individual city police departments and the Los Angeles County Sheriff's Department (LASD). The Cities of Pasadena, Arcadia, Monrovia, Irwindale, Azusa, Glendora, La Verne, Claremont, Montclair, and Upland are served by individual city police departments. The cities of Duarte, Pomona, San Dimas, and the unincorporated portions of Los Angeles County are served by the LASD. There are two LASD bureaus serving the project area, which include the Temple Bureau and the San Dimas Bureau. There are 10 county and city police stations located within one mile of the proposed alignment. **Table 3-4.2** shows the number of officers serving in all of the police departments in the study area.

| Police Station | No. of Sworn Officers | Population | No. of Residents per Officer | Response Time |
|------------------------------|-----------------------|------------|------------------------------|----------------|
| Pasadena Police Dept. | 236 | 133,936 | 568 | 3 to 5 minutes |
| Arcadia Police Dept. | 74 | 53,054 | 717 | 2.4 minutes |
| Monrovia Police Dept. | 63 | 36,929 | 586 | 2.23 minutes |
| LASD Temple Bureau | 198 | 200,000 | 1,010 | 3.9 minutes |
| LASD Duarte Sub-station | 15 | 21,486 | 1,432 | 4.2 minutes |
| Irwindale Police Dept. | 30 | 1,446 | 48 | N/A |
| Azusa Police Dept. | 60 | 44,712 | 745 | N/A |
| Glendora Police Station | 58 | 49,415 | 852 | 3.5 minutes |
| LASD San Dimas Bureau | 105 | 34,980 | 333 | N/A |
| La Verne Police Dept. | 49 | 31,638 | 646 | 2-3 minutes |
| Pomona | 174 | 149,473 | 859 | N/A |
| Claremont Police Station | 50 | 33,998 | 680 | 4.0 minutes |
| Montclair | 51 | 33,049 | 648 | N/A |
| Upland | 50 | 68,393 | 1,368 | 6.53 minutes |
| LASD Transit Services Bureau | 392 | N/A | N/A | N/A |

Source: Myra L. Frank and Associates, 2003.

The Pasadena Police Department is staffed by 236 sworn officers and 119 non-sworn personnel serving approximately 130,000 residents. The Gold Line Phase II Extension is located within the East Community Service Area, which is bounded by Altadena Drive to the west and the Pasadena city limit to the north, east, and south. The Pasadena Police Department has one central station located at 207 North Garfield Avenue in Pasadena and two satellite stations in the Northwest Community Service Area that are staffed part time.

The Arcadia Police Department staffed by 74 sworn police officers, 34 full-time non-sworn employees, 11 Reserve Officers, 1 Crime Analyst, 7 part-time Police Cadets, 1 part-time Volunteer Services

Coordinator, and over 100 Civilian Volunteers. In 2002, the Department responded to 47,123 calls for service. Of those calls, 7,250 required a written report and follow up investigation. The Department has one central station located at 250 West Huntington Drive in Arcadia and one community Services Station in the Westfield Shoppingtown Mall at Santa Anita Fashion Park that is staffed part-time.

The Monrovia Police Department is staffed by 63 sworn police officers. The Department has one central station located at 140 Lime Avenue in Monrovia. The City of Monrovia has implemented the "E-VIEWS System" at 10 major signalized intersections. The E-VIEWS System streamlines traffic flow in the presence of emergency vehicles by alerting motorists and pedestrians that emergency vehicles are approaching and by preempting traffic signals to safely clear intersections for emergency vehicles. In some instances, this system has improved emergency response time by several minutes.

The LASD Temple Station provides police services to the contract cities of Bradbury, Duarte, Rosemead, South El Monte, and Temple City, along with the unincorporated County areas of Monrovia-Arcadia-Duarte, North San Gabriel/East Pasadena, and South San Gabriel. The Station's patrol area encompasses 28 square miles and serves a population of approximately 200,000 people. The Duarte Sub-station is under the jurisdiction of the Temple Station and serves the City of Duarte. The sub-station is staffed by 15 sworn officers.

The City of Irwindale is unique because it covers a small area (9.5 square miles) and has a very small residential population and a large workforce population. The Irwindale Police Department is one of the smallest police forces in the Los Angeles area. In 2002 the Department added 6 new police department positions, bringing the total number of officers to 30. Most calls are responded to by Irwindale Police Officers, but outside officers are occasionally brought in when necessary.

The Azusa Police Department serves a population of approximately 44,000 residents. The Department is divided into three service areas. The Gold Line Phase II Extension is located Service Area I and II. The Azusa Police Department has one central station located at 725 North Alameda Avenue in Azusa, approximately 0.1 mile from the proposed project. Over the last 5 years major crime in Azusa has been reduced by 45 percent.

The Glendora Police Department serves a population of approximately 50,000 residents. The Glendora Police Department has one central station located at 150 South Glendora Avenue in Glendora. The crime rate in Glendora, as reported to the Federal Bureau of Investigations in the Uniform Crime Report, ranked the City of Glendora second lowest in the East San Gabriel Valley during 2002. There were a total of 319 major² crimes in Glendora in 2002.

The San Dimas Sheriff's Station is located in the eastern portion of Los Angeles County, adjacent to the cities of La Verne and Pomona. The station serves the City of San Dimas and the unincorporated communities of Covina, Azusa, Glendora, La Verne, and Claremont. The Station's patrol area encompasses 337 square miles and serves a population of approximately 84,000 people. A new San Dimas Station is currently being constructed at 270 South Walnut Avenue in San Dimas. The new station is adjacent to the Gold Line Phase II project and will be open in 2004, prior to project construction.

The La Verne Police Department includes 49 sworn police officers and serves a population of approximately 31,000 residents. The La Verne Police Department has one central station located at 2061 Third Street in La Verne, approximately 0.1 mile from the proposed project.

² Includes murder/homicide, manslaughter, rape, robbery, aggravated assault, burglary, larceny, motor vehicle theft.

The Pomona Police Department provides police protection services to an estimated 143,000 residents. Pomona is approximately 24 square miles and is the fourth most populous city within Los Angeles County. The Department has one central station located at 490 West Mission Boulevard in Pomona. In 2001 Pomona had a crime rate of 1,009 violent crimes per 100,000 residents, which is slightly lower than the crime rate in Los Angeles and double the crime rate in Pasadena.

The Claremont Police Department provides police protection services to an estimated 34,000 residents. The Department typically has 4 patrol officers on duty 24 hours a day. In 2001 Claremont officers responded to 18,854 calls for service. The Claremont Police Station is located at 570 West Bonita Avenue.

The Montclair Police Department includes 51 sworn officers supported by a staff of 21 civilian employees and 20 volunteers. The department serves a population of approximately 33,000 residents. The police station is located at 5111 Benito St. in Montclair.

The Upland Police Department includes 50 sworn patrol officers. The department serves a population of approximately 68,000 residents. In 2002 the patrol officers responded to 58,567 calls for service and 2,814 of those calls were major crimes. The station is located at 1499 West 13th Street in Upland.

Police protection for all Metropolitan Transportation Authority (LACMTA) buses and trains is provided by the LASD Transit Services Bureau. The bureau's duties include policing of railroad right-of-way within Los Angeles County and on-board security for the entire LACMTA system. There are 392 sworn officers in the Bureau.

3-4.1.2 Fire Protection

Fire protection services in the study area are provided by a combination of individual city fire departments and the Los Angeles County Fire Department (LACOFD). The Cities of Pasadena, Arcadia, Monrovia, La Verne, and Montclair are served by individual city fire departments. The cities of Duarte, Irwindale, Azusa, Glendora, San Dimas, Pomona, Claremont, and the unincorporated portions of Los Angeles County are served by the LACOFD. **Table 3-4.3** provides a detailed overview for each station located within 1 mile of the proposed project.

There are 16 city and county fire stations located within 1 mile of the proposed alignment. Generally the stations are evenly distributed along the alignment. There are 10 stations located north of the alignment and 6 stations located south of the alignment. Seven stations are located in Segment 1 and 9 stations in Segment 2. The stations tend to be evenly spaced at intervals of 1 to 3 miles, with stations located closer together in more densely populated areas and farther apart in less densely populated areas.

Most of the stations are staffed with 5 to 7 fire fighters; however the smaller stations may be staffed with as few as 3 firefighters and the larger stations may be staffed with as many as 17 firefighters. Typical response times range from 3 to 6 minutes.

Some of the cities along the alignment are divided by I-210 and by the railroad tracks (some of which are still active). The freeway and railroad tracks can cause detours and delays for emergency response providers trying to access the opposite side of the freeway/tracks. However, fire departments along the corridor are continually improving emergency response plans and routes to accommodate the freeway/railroad track and to maintain response times despite barriers.

**TABLE 3-4.3
INVENTORY OF FIRE STATIONS SERVING THE
GOLD LINE PHASE II EXTENSION PROJECT AREA**

| Fire Station | No. of Fire Fighters per Shift | Response Time | Equipment |
|---|--------------------------------|---------------------|---|
| Pasadena Fire Station #37 | 4 | Less than 6 minutes | 1 Paramedic Engine (2 Paramedics on staff) |
| Pasadena Fire Station #32 | 10 | 4 to 5 minutes | 1 engine, 1 truck, 1 paramedic rescue ambulance, 1 urban search & rescue special team |
| Arcadia Fire Station #105 | 17 | 4.18 minutes | Fire Department Administrative Office |
| Arcadia Fire Station #107 | 3 | 4.18 minutes | 1 engine |
| Monrovia Fire Station #101 | 9 | 3 to 5 minutes | 1 engine, 1 truck, 1 paramedic ambulance |
| Monrovia Fire Station #102 | 4 | 3 to 5 minutes | 1 paramedic engine |
| L.A. County Fire Dept. Duarte Station #44 | 7 | 4 to 6 minutes | 2 engines, 1 water tanker, 1 patrol vehicle, 1 reserve (unstaffed) engine |
| L.A. County Fire Dept. Glendora Station #151 | 5 | 3:27 minutes | 1 engine, 1 paramedic squad, 1 medical CSCHE unit |
| L.A. County Fire Dept. Glendora Station #85 | 5 | 3: 27 minutes | 1 engine, 1 emergency support team (utility vehicle) |
| L.A. County Fire Dept. Glendora Station #86 | 7 | 3 to 4 minutes | 1 engine, 1 truck, 1 patrol unit |
| La Verne Fire Station #1 | 6 | 4.5 minutes | 2 engines, 1 truck, 1 paramedic ambulance |
| L.A. County Fire Dept. Claremont Station #101 | 5 | 3 to 4 minutes | 1 engine, 1 paramedic squad |
| Montclair Fire Station #1 | 9 | 4.5 minutes | 4 engines, 1 medic squad, and 1 rescue squad |

Source: Myra L. Frank and Associates, Inc., 2003.

3-4.1.3 Schools

There are 11 public schools, 8 private schools, and three colleges/universities located within 0.25 mile of the proposed alignment. There is also one major pre-school located adjacent to the alignment. The public schools are located in the following districts: Arcadia School District, Monrovia School District, Duarte School District (3 schools), Azusa Unified School District, Glendora School District (4 schools), and Claremont Unified School District.

There are five public elementary schools that each serve approximately 400 to 700 students, and are located in residential areas away from major streets. There are three intermediate schools that each serves approximately 700 to 900 students. There are two high schools that each serves approximately 1,000 to 2,000 students. Rancho Learning Center in the City of Arcadia is an alternative learning center with several programs including alternative high school and home school. There are 83 students enrolled in the high school but additional students are present on the campus for other programs. Programs include classes from 1st through 12th grade.

None of the schools located within 0.25 mile of the proposed alignment are adjacent to the proposed alignment, except Rancho Learning Center. Playgrounds on the Rancho Learning Center site are located adjacent to the proposed alignment. Eight- to ten-foot tall chain link fences separate the school's playground from the alignment. The Rancho Learning Center is a former elementary school and part of the site is leased to Serendipity Early Care and Education Center (Serendipity School), a private childcare provider. Serendipity School has an enrollment of 105 students, ages 6 weeks to 12 years old (school aged students are enrolled in after school programs and do not attend school at the facility). Serendipity School has two playgrounds that are located adjacent to the railroad tracks. The playgrounds are separated from the railroad right-of-way by a chain link fence. Students in the playground area are constantly supervised.

Henry Dalton Elementary School in Azusa and Santa Fe Middle School in Monrovia are also located very close to the proposed alignment. Henry Dalton Elementary School is located approximately 150 feet from the proposed alignment. The school building is separated from the tracks by an apartment building and the playground is separated by a chain link fence and a landscaped area. Santa Fe Middle School is located approximately 200 feet from the proposed alignment and is separated from the tracks by Duarte Road, commercial buildings, and a parking lot.

Table 3-4.4 provides enrollment and capacity figures for each of the schools located within 0.25 mile of the proposed alignment.

Most of the schools along the alignment are near capacity with some schools slightly over or under capacity, which is typical in the rapidly growing southern California region. None of the public schools listed in the table above have been certified by the state as critically overcrowded schools.

Table 3-4.5 provides enrollment information for the colleges located within 0.25 mile of the proposed alignment.

**TABLE 3-4.4
INVENTORY OF PUBLIC SCHOOLS LOCATED IN THE
GOLD LINE PHASE II EXTENSION PROJECT AREA**

| Public Schools | Enrollment | Capacity |
|---|------------|----------|
| City of Arcadia | | |
| Rancho Learning Center | 83 | N/A |
| City of Monrovia | | |
| Santa Fe Middle School | 808 | 800 |
| City of Duarte | | |
| Andres Duarte Elementary School | 585 | 600 |
| Northview Intermediate School | 662 | 705 |
| Duarte High School | 978 | 1,035 |
| City of Azusa | | |
| Henry Dalton Elementary School | 425 | 500 |
| City of Glendora | | |
| La Fetra Elementary School | 655 | 765 |
| Williams Elementary School | 421 | 490 |
| Sandburg Middle School | 936 | 971 |
| Glendora High School | 2,624 | 2,620 |
| City of Claremont | | |
| Oakmont Elementary | 335 | 350 |
| Source: Myra L. Frank and Associates, Inc., 2003. | | |

| TABLE 3-4.5 INVENTORY OF COLLEGE/UNIVERSITY CAMPUSES LOCATED IN THE GOLD LINE PHASE II EXTENSION PROJECT AREA | |
|---|------------|
| Campus Name | Enrollment |
| Azusa Pacific | 8,000 |
| Claremont Colleges | |
| Claremont McKenna College | 1,023 |
| Harvey Mudd College | 719 |
| Pitzer College | 900 |
| Pomona College | 1,500 |
| Scripps College | 1,075 |
| Claremont Graduate University | 2,033 |
| Citrus College | 11,159 |
| University of La Verne | 6,617 |
| Source: Myra L. Frank and Associates, Inc., 2003. | |

3-4.1.4 Parks

There are 28 parks located within 0.25 mile of the proposed alignment, 10 of which are adjacent. Three of the parks are owned and maintained by Los Angeles County and the others are owned and maintained by the city in which they are located. The three County parks include: Santa Fe Dam Recreation Area (836 acres), Arcadia County Park (187 acres), and the Arboretum of Los Angeles County (127 acres). The city parks range in size from 1 to 19 acres, with the exception of South Hills Park, which is approximately 200 acres. The median park size along the alignment is 6 acres. Many of the parks feature playgrounds, picnic areas, and sports fields. **Table 3-4.6** provides descriptions for each of the parks located within 0.25 mile of the proposed alignment.

**TABLE 3-4.6
PUBLIC PARKS**

| Park | Municipality | Size | Amenities |
|-------------------------------------|--------------------------------|--------------------------------|---|
| Eaton Wash Park | Pasadena | 8 acres | walking paths, playground, picnic area, off leash dog area (to be completed fall 2004) |
| The Arboretum of Los Angeles County | Los Angeles Co. (Arcadia) | 127 acres | botanical garden with research, education, and historic areas; tram tours; concessions |
| Forest Park | Arcadia | 1 acre | playground, picnic area |
| Newcastle Park | Arcadia | 3 acres | tennis courts, playground, sand volleyball courts, handball courts, picnic area |
| Arcadia County Park | Los Angeles Co. (Arcadia) | 187 acres | tennis courts, swimming pool, ball fields, playground, picnic area |
| Eisenhower Park | Arcadia | 6 acres | ball park, multipurpose field, playground, picnic area |
| Bonita Park | Arcadia | 6 acres | ball park, skateboard park, multipurpose field, playground, picnic area |
| Aloysia Moore Park | Duarte | 1 acre | picnic areas, playground |
| Duarte Sports Park | Duarte | 12 acres | tennis courts, softball fields, basketball courts, hockey rink |
| Northview Park | Duarte | 3 acres | multipurpose field |
| Otis Gordon Sports Park | Duarte | 6 acres | picnic area, playground, softball fields |
| Santa Fe Dam Recreation Area | Los Angeles County (Irwindale) | 836 acres | lake, children's water play area, picnic areas, trails, campsites, tackle and bait shop |
| Veterans Freedom Park | Azusa | 9 acres | picnic area, playground |
| Sandburg Middle School Park | Glendora | 13 acres | tennis courts, soccer fields, baseball fields, football field with track, picnic area |
| Big Tree Park | Glendora | 1 acre | picnic area, playground |
| South Hills Park | Glendora | 250 acres | hiking and horse trails, playground |
| Centennial Heritage Park | Glendora | (included in South Hills Park) | historic citrus ranch museum |
| Louie Pompei Sports Park | Glendora | 51 acres | baseball field, multipurpose field, picnic area, playground |
| Rhoads Park | San Dimas | 2 acres | Santa Fe Station Railroad Museum, picnic areas, |
| Pioneer Park | San Dimas | 5 acres | playground, softball fields, picnic area, skateboard park |
| Civic Center Park | San Dimas | 1 acre | open space between city hall and a public senior center |
| Wheeler Avenue Park | La Verne | 6 acres | playground, soccer fields, picnic area |

TABLE 3-4.6 *continued (page 2 of 2)*
PUBLIC PARKS

| Park | Municipality | Size | Amenities |
|-----------------|---------------------|-------------|--|
| Kuns Park | La Verne | 4 acres | playground, softball and soccer fields, basketball courts, picnic area, concessions |
| Challenger Park | La Verne | 2 acres | picnic area, basketball courts |
| Palomares Park | Pomona | 18 acres | skateboard park, community center, playground, baseball and soccer fields, basketball courts, picnic area, adjoins Palomares Adobe, which includes several historic buildings serving as a museum. |
| Shelton Park | Claremont | 1 acre | pocket park with public art |
| College Park | Claremont | 8 acres | baseball fields, picnic area, playground, dog park, concessions |
| El Barrio Park | Claremont | 4 acres | softball field, basketball court, playground |

Source: Myra L. Frank and Associates, Inc., 2003.

3-4.1.5 Government Centers

There are three government centers, the Azusa Civic Center, the Glendora Civic Center, and the San Dimas Civic Center, located within one-quarter mile of the proposed alignment. The Azusa Civic Center includes the City Hall, public library, police station, and Veterans Freedom Park. The proposed Downtown Azusa Station would be located within 200 feet of the Civic Center.

The Glendora Civic Center includes the City Hall, public library, and police station in a large open park like setting. The civic center would be located less than 0.25 mile from the proposed Glendora Station.

The San Dimas Civic Center includes the City Hall, chamber of commerce, public library, and Senior Citizen/Community Center. The San Dimas City Hall houses all major city departments including planning, public works, building and safety, finance, redevelopment, the mayor, and the city council chambers. The police station, post office, and a fire station are also located within a one-block radius.

3-4.1.6 Hospitals

City of Hope National Medical Center, in Duarte, is one of 41 Comprehensive Cancer Centers in the United States. In 2001, City of Hope had over 114,000 outpatient visits, and nearly 4,300 admissions. The hospital has 165 beds and a staff of 2,500 employees.

There are three hospitals located within 0.25 mile of the proposed alignment. Huntington East Valley Hospital, in Glendora, has a 128-bed capacity, with a staff of 565 employees. Specialized services include: intensive care, women's health, senior mental health; cardiopulmonary, outpatient surgery, orthopedic services; and wound care.

Foothill Presbyterian Hospital, in Glendora, has a 107-bed capacity, with a staff of 870 employees. Hospital services include a full-range of general acute care services, including a Diabetes Care Unit, state-of-the-art maternity care, 24-hour emergency services, and medical/surgical services.

3-4.2 Environmental Impacts

3-4.2.1 Evaluation Methodology

An inventory of police stations, fire stations, and hospitals within 1 mile of the proposed alignment and schools, parks, and government centers within 0.25 mile of the proposed alignment was compiled. Each public service was then evaluated to determine how it would be affected by the proposed project.

3-4.2.2 Impact Criteria

The community services impact criteria under NEPA and CEQA would be the same. Adverse community services impacts under NEPA would also be considered significant impacts under CEQA.

a. Police and Fire Protection

For the purposes of the analyses in this EIR/EIS, the proposed Gold Line Phase II Extension Project would have an adverse environmental impact (under NEPA)/significant environmental impact (under CEQA) if it:

- creates a substantial need for additional police or fire services requiring new or altered police or fire facilities to maintain acceptable service ratios or response times, the construction of which would cause a substantial adverse physical change in the environment;
- substantially diminishes the level of police or fire protection services, thereby posing a significant hazard to public safety and security; or
- creates the potential risks of upset or emergencies (e.g. train collision or derailment).

b. Schools

For the purposes of the analyses in this EIR/EIS, the proposed Gold Line Phase II Extension Project would have an adverse environmental impact (under NEPA)/significant environmental impact (under CEQA) if either:

- the students generated by the project were to exceed existing enrollment capacities, thereby creating a substantial need for new or altered facilities, the construction of which would cause a substantial adverse physical change in the environment or
- the physical effects of the project were to substantially affect the health, safety, or education of students at local schools.

c. Recreation Facilities and Parks

For the purposes of the analyses in this EIR/EIS, the proposed Gold Line Phase II Extension Project would have an adverse environmental impact (under NEPA)/significant environmental impact (under CEQA) if it would result in any of the following:

- create a substantial need for additional recreation facilities and/or parks to keep current facilities from becoming overburdened, the construction of which would cause a substantial adverse physical change in the environment;

- increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- occupy a publicly owned park or recreation facility; or
- create proximity impacts to a park or recreation facility so great that the purposes for which the park or recreation facility exists are substantially impaired.

d. Government Centers

For the purposes of the analyses in this EIR/EIS, the proposed Gold Line Phase II Extension Project would have an adverse environmental impact (under NEPA)/significant environmental impact (under CEQA) if it would result in any of the following:

- create a substantial need for additional government facilities to keep current facilities from becoming overburdened, the construction of which would cause a substantial adverse physical change in the environment or
- create the physical effects that substantially affect the health or safety of patrons or employees of these facilities.

e. Hospitals

For the purposes of the analyses in this EIR/EIS, the proposed Gold Line Phase II Extension Project would have an adverse environmental impact (under NEPA)/significant environmental impact (under CEQA) if either:

- physical effects of the project substantially affect access to the facility or
- physical effects of the project substantially affect the health or safety of patients or employees.

3-4.2.3 Construction-Period Impacts

a. No Build Alternative

The No Build Alternative includes the extension of I-210 from I-15 to I-215; implementation of increased service on Phase I of the Gold Line LRT, completion and service on the Eastside LRT Extension, and countywide bus service improvements, including the San Gabriel Valley. These projects may cause construction-period impacts. However, construction period impacts would not be expected to generate adverse effects/significant impacts to community facilities and services. Most of the proposed improvements would occur within existing transportation rights-of-way and would not likely have significant impacts outside of the right-of-way. Any potentially significant impacts would be addressed by the environmental documents prepared for the projects.

b. Transportation System Management (TSM) Alternative

The proposed TSM Alternative would include bus service improvements and the addition of new bus routes. These improvements would operate using the service structures currently in place and would not require the construction of any new structures. The only community facilities that would be required would be those needed to accommodate the projected growth in the region, and would not be associated with this project. Therefore, there would be no need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, as a result of the TSM Alternative.

c. LRT, Triple Track Configuration

The following discussion describes typical construction period impacts common to most community facilities (i.e., police protection, fire protection, schools, parks, government centers, and hospitals) in the project study area. Most cities in the corridor can expect to experience these typical impacts. The intensity of impacts will be commensurate with the distance of the affected facility from the proposed alignment. Impacts will be more acute at facilities located closer to the proposed alignment. Site-specific impacts (i.e., those at particular community facilities) will be discussed in detail following this discussion.

Police Protection

Potential impacts to police protection services from the proposed LRT, Triple Track Configuration would be related to the effects of traffic and access disruptions on emergency response time.

Increased traffic congestion caused by construction vehicles and access disruptions, such as road closures or road construction, could affect emergency response times. Local roads crossing the proposed alignment would be partially closed during track construction. Typically, half of the road would be closed for track installation and the other half of the road would be open to traffic. Most intersections would only be affected for a few days during track construction. Traffic disruptions are expected to be temporary and intermittent and would not substantially affect police response time. Therefore, the project would not have an adverse (under NEPA)/significant (under CEQA) impact on police protection services. A traffic management plan (TMP) would be developed for the construction period. The TMP would include provisions for coordinating with the affected cities' police and fire departments to develop alternative routes, or to amend service areas as necessary to maintain emergency service coverage and response times during project construction.

Fire Protection

Potential impacts to fire protection services from the proposed LRT, Triple Track Configuration would be related to the effects of water supply interruptions on fire flow and traffic disruptions on emergency response time.

In general, the required fire-flow is closely related to land use. The quantity of water necessary for fire protection varies with the type of development, life hazard, occupancy, and the degree of fire hazard. The type of land use and required fire flow varies along the proposed alignment. During construction there may be temporary water supply disruptions; however, disruptions would be infrequent, localized, and would typically last less than an hour. All construction practices would comply with local fire codes.

Access disruptions, such as road closures or road construction, could affect emergency response times; however, these disruptions would be temporary and intermittent and would not be adverse (significant). There would be no long-term road closures or detours during project construction; some short-term closures may be required to install train tracks across roadways intersecting the proposed alignment. In general fire stations along the alignment evenly distributed with 9 stations north of the alignment, 7 stations south of the alignment, and most stations located approximately 2 miles apart. The even distribution of fire stations along the alignment ensures adequate fire service coverage. The TMP would include provisions for coordinating with local and county fire departments to develop alternative routes, or to amend service areas as necessary to maintain emergency service coverage and response times during project construction.

Schools

There are 11 public schools, 8 private schools, and three colleges/universities located within one-quarter mile of the proposed alignment. There is also one major pre-school located adjacent to the alignment. (See **Table 3-4.1** and **Figure 3-4.1**). Schools located within one-quarter mile of the proposed alignment could experience elevated noise levels and reduced air quality related to construction activity during project construction. Construction would require some grading in the alignment and the installation of new tracks. However, the types of construction activities and the location of construction equipment would change regularly as construction progresses along the alignment. Most locations along the alignment would experience temporary intermittent noise and air quality impacts during project construction. Construction at stations would occur over a longer period of time and would be at a fixed location. Therefore construction impacts near stations could be more intense than in other places along the alignment. The potential for temporary construction noise impact would be limited to locations within about 125 feet of the corridor. However, construction period noise impacts would be eliminated or reduced to less than adverse/less than significant levels by complying with the local, state, and/or federal regulatory requirements and/or permits identified in Section 3-11.2.6, and the additional measures to mitigate impacts identified in Section 3-11.3.1. Mitigation measures would be implemented to reduce fugitive dust to a level that would be not adverse (under NEPA)/not significant (under CEQA) (see Section 3-2, Air Quality). Schools located along the alignment are located in dense urban environments, and the incremental change in noise levels or air quality during construction would not be adverse (significant).

Schools located near the proposed project may also experience an increase in construction truck traffic using major roads located near the schools. This small increase in traffic would not result in an adverse (under NEPA)/significant (under CEQA) impact to schoolchildren in the project vicinity. The TMP would include provisions for reducing construction traffic in the immediate vicinity of schools.

Parks

Construction activities would result in temporary, periodic noise, vibration, air quality, and visual impacts that may indirectly affect parks and recreational facilities. Parks adjacent to the proposed alignment would experience more severe construction nuisance affects than parks located farther away from the proposed alignment. Most construction affects would be temporary and would only affect park patrons for a few days or weeks while the track was being constructed near the park. The potential for temporary construction noise impact would be limited to locations within about 125 feet of the corridor. However, construction period noise impacts would be eliminated or reduced to level that would be not adverse (under NEPA)/not significant (under CEQA) by complying with the local, state, and/or federal regulatory requirements and/or permits identified in Section 3-11.2.6, and the additional measures to mitigate impacts identified in Section 3-11.3.1. Mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (see Section 3-2., Air Quality).

No direct or indirect park use would be required for construction of the proposed alignments.

Government Centers

Potential impacts to Government Centers from the proposed project would be related to the effects of construction traffic, detours, and access disruptions. Full access to all the facilities should be maintained during construction.

Employees and patrons of the government centers may experience elevated noise levels and reduced air quality related to construction activities. Any effects would be temporary, intermittent and are not expected to be adverse (significant).

Hospitals

Potential construction impacts to hospitals from the proposed LRT, Triple Track Configuration would be related to emergency access disruptions, elevated noise levels, and reduced air quality.

Due to the availability of alternative streets in emergency rescue situations, no adverse (under NEPA)/significant (under CEQA) impacts are expected for emergency vehicle access or vehicular access to the hospitals. A TMP would be developed for the construction period, which would establish alternative routes to maintain emergency service coverage and response times during project construction.

Construction noise, vibration, and air quality impacts may potentially affect hospital operations or patients. Hospitals along the alignment are located in a dense urban environment where construction of this magnitude is not uncommon. Hospital ventilation systems are equipped to filter typical construction dust. The potential for temporary construction noise impact would be limited to locations within about 125 feet of the corridor. However, construction period noise impacts would be eliminated or reduced to a level that would not be adverse (under NEPA)/significant (under CEQA) by complying with the local, state, and/or federal regulatory requirements and/or permits identified in Section 3-11.2.6, and the additional measures to mitigate impacts identified in Section 3-11.3.1. Mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (see Section 3-2, Air Quality).

Phase I – The Cities Affected and the Effects

The cities in Phase I are Los Angeles, South Pasadena, and Pasadena. No construction would be required the Phase I cities as part of overall Triple Track configuration and thus there would be no effect to community facilities or services.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte, and Irwindale. Potential impacts to each city are described within the context of a type of community facility or service (police, fire, schools, park, etc.) as follows:

Police Protection

Table 3-4.7 lists the police departments serving Phase II, Segment I of the proposed project and indicates how they would be affected by construction of the proposed project.

The proposed project construction would not affect emergency response times in Pasadena because the project would be located within the I-210 median and would not intersect with local through streets.

**TABLE 3-4.7
CONSTRUCTION PERIOD IMPACTS TO POLICE RESPONSE TIME
FOR SEGMENT I CITIES**

| Police Station | No. of Residents per Officer | Current Response Times | Increase In Response Time |
|-------------------------|------------------------------|------------------------|-----------------------------|
| Pasadena Police Dept. | 568 | 3 to 5 minutes | Not Adverse/Not Significant |
| Arcadia Police Dept. | 717 | 2.4 minutes | Not Adverse/Not Significant |
| Monrovia Police Dept. | 586 | 2.23 minutes | Not Adverse/Not Significant |
| LASD Temple Bureau | 1,010 | 3.9 minutes | Not Adverse/Not Significant |
| LASD Duarte Sub-station | 1,432 | 4.2 minutes | Not Adverse/Not Significant |
| Irwindale Police Dept. | 48 | N/A | Not Adverse/Not Significant |

Source: Myra L. Frank and Associates, Inc., 2003.

The cities of Arcadia, Monrovia, Duarte, and Irwindale would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

Fire Protection

Table 3-4.8 lists the fire departments serving Phase II, Segment I of the proposed project and indicates how they would be affected by construction of the proposed project.

**TABLE 3-4.8
CONSTRUCTION PERIOD IMPACTS TO FIRE RESPONSE TIMES
FOR SEGMENT 1 CITIES**

| Fire Station | Distance From the Proposed Alignment | Response Time | Increased Response Time |
|---|--------------------------------------|---------------------|-----------------------------|
| Pasadena Fire Station #37 | 0.25 mile | Less than 6 minutes | Not Adverse/Not Significant |
| Pasadena Fire Station #32 | 0.15 mile | 4 to 5 minutes | Not Adverse/Not Significant |
| Arcadia Fire Station #105 | 0.6 mile | 4.18 minutes | Not Adverse/Not Significant |
| Arcadia Fire Station #107 | 0.6 mile | 4.18 minutes | Not Adverse/Not Significant |
| Monrovia Fire Station #101 | 1.0 mile | 3 to 5 minutes | Not Adverse/Not Significant |
| Monrovia Fire Station #102 | 0.3 mile | 3 to 5 minutes | Not Adverse/Not Significant |
| L.A. County Fire Dept. Duarte Station #44 | 0.5 mile | 4 to 6 minutes | Not Adverse/Not Significant |

Myra L. Frank & Associates, Inc., 2003.

Construction of the proposed project would not affect fire department response time in Pasadena because the project would be located within the I-210 median and would not intersect with local through streets.

The cities of Arcadia, Monrovia, and Duarte would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

The City of Irwindale is served by the Los Angeles County Fire Department Irwindale fire station. The fire station is located approximately 2 miles south of the proposed alignment. The City of Irwindale is also located almost entirely south of the proposed alignment. Therefore, response times would be relatively unaffected by project construction.

Schools

Table 3-4.9 lists the public schools along Phase II, Segment I of the proposed project and indicates how they would be affected by construction of the proposed project.

| TABLE 3-4.9 CONSTRUCTION PERIOD IMPACTS FOR PUBLIC SCHOOLS IN SEGMENT 1 CITIES | | |
|---|----------------------------|--------------------------------------|
| School | Sources of Impact | Potential Construction Impact |
| Arcadia | | |
| Rancho Learning Center | Air quality, noise, safety | Not Adverse/Not Significant |
| Monrovia | | |
| Santa Fe Middle School | Air quality, noise | Not Adverse/Not Significant |
| Duarte | | |
| Andres Duarte Elementary School | Air quality, noise | Not Adverse/Not Significant |
| Northview Intermediate School | Air quality, noise | Not Adverse/Not Significant |
| Duarte High School | Air quality, noise | Not Adverse/Not Significant |
| Source: Myra L. Frank & Associates, Inc., 2003. | | |

There are no schools in Irwindale and Pasadena located within 0.25 mile of the proposed alignment.

There are three schools in Duarte (Duarte High School, Andres Duarte Elementary School, and Northview Intermediate School) that would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

The playground areas at the Rancho Learning Center and Serendipity School in Arcadia are located adjacent to the proposed right-of-way. However, four to eight foot tall chain link fences separate the playgrounds from the proposed alignment. New sound walls would be built along the alignment that would protect school children from noise and prevent access to the alignment. There is also a 20-30 foot berm that separates the school from the tracks (see **Figure 3-4.5**). In addition, all Serendipity School

students are constantly supervised while they are playing outdoors, which would minimize any potentially unsafe conditions during the construction process.

A greater concern is the potential air quality and noise impacts that construction would have on students attending the schools. Grading and installation of tracks would result in temporary elevated noise levels and reduced air quality. However, construction period noise impacts would be reduced to a level that would not be adverse (under NEPA)/significant (under CEQA) by complying with the measures to mitigate impacts identified in Section 3-11.3.1, which includes the construction of a noise barrier between the schools and the alignment. Mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (see Section 3-2, Air Quality).

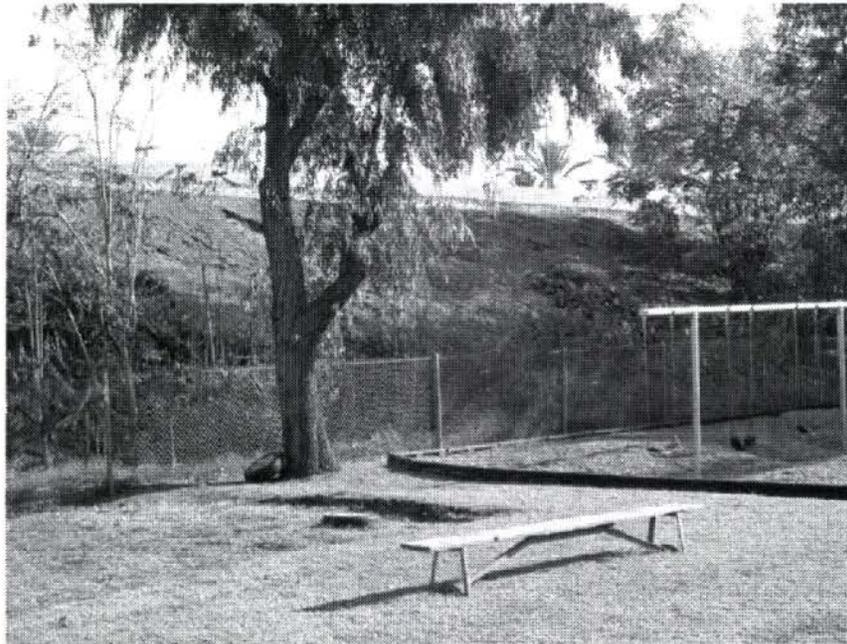


FIGURE 3-4.5: VIEW OF SERENDIPITY SCHOOL PLAYGROUND FENCE, RAILROAD RIGHT-OF-WAY, AND RAISED BERM

Santa Fe Middle School in Monrovia is located approximately 200 feet from the proposed alignment. However, Duarte Road, some commercial buildings, and a parking lot separate the school from the tracks. The school is also located near the proposed Monrovia Station, which would be constructed just west of Myrtle Avenue. Construction activity in the vicinity of the school would last approximately 6 months as a result of station building. However, Duarte Road is a very busy thoroughfare and should act as a sufficient buffer between the school and most of the construction activity. Therefore, impacts would not be adverse (under NEPA)/significant (under CEQA).

Parks

Table 3-4.10 lists the parks along Phase II, Segment I of the proposed project and indicates how they would be affected by construction of the proposed project.

| Parks | Distance | Sources of Impact ¹ | Potential Construction Impact |
|--|-----------|--------------------------------|-------------------------------|
| Eaton Wash Park | 0.25 mile | Noise, air quality | Not Adverse/Not Significant |
| The Arboretum of Los Angeles County | Adjacent | Noise, air quality, visual | Not Adverse/Not Significant |
| Forest Park | Adjacent | Noise, air quality, visual | Not Adverse/Not Significant |
| Newcastle Park | Adjacent | Noise, air quality, visual | Not Adverse/Not Significant |
| Arcadia County Park | 0.25 mile | Noise, air quality | Not Adverse/Not Significant |
| Eisenhower Park | 0.25 mile | Noise, air quality | Not Adverse/Not Significant |
| Bonita Park | Adjacent | Noise, air quality, visual | Not Adverse/Not Significant |
| Aloysia Moore Park | Adjacent | Noise, air quality, visual | Not Adverse/Not Significant |
| Duarte Sports Park | 0.25 mile | Noise, air quality | Not Adverse/Not Significant |
| Northview Park | 0.25 mile | Noise, air quality | Not Adverse/Not Significant |
| Otis Gordon Sports Park | 0.25 mile | Noise, air quality | Not Adverse/Not Significant |
| Santa Fe Dam Recreation Area | Adjacent | Noise, air quality, visual | Not Adverse/Not Significant |
| <p>Note:</p> <p>1. Noise is listed as an impact because it could be perceived as an impact by park users. These parks are not subject to calculated noise impacts as discussed in Section 3-11.</p> <p>Source: Myra L. Frank & Associates, Inc., 2003.</p> | | | |

Pasadena

The Eaton Wash Park is the only park in Pasadena located within 0.25 mile of the proposed alignment. Park patrons would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

Arcadia

There are six parks in Arcadia located within 0.25 mile of the proposed alignment. Arcadia County Park and Eisenhower Park patrons would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

The Arboretum of Los Angeles County is separated from the alignment by the eastbound lanes of I-210 and Colorado Street. The northern boundary of the arboretum is approximately 200 feet from the proposed alignment. Therefore, patrons would not experience significant noise or air quality impacts while visiting the arboretum. Views of the alignment would mostly be blocked by tall dense vegetation on the northern boundary of the arboretum. Therefore, construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

Forest Park is located just north of I-210 and the alignment is located just south of I-210. The park is separated from the proposed alignment by the eastbound and westbound lanes of I-210, the freeway median, and a construction yard. Therefore, patrons would not experience significant noise or air quality impacts while visiting Forest Park. Views of the alignment would be blocked by I-210. Therefore, construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

Newcastle Park is located directly adjacent to the proposed alignment. The existing railroad tracks are located less than 50 feet from active park uses. A row of dense, tall vegetation along the northeastern

boundary of the park separates the park from the existing railroad tracks. The vegetation would mostly block views of the alignment. Noise barriers would mitigate noise impacts at the park to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1). Construction dust may affect sensitive park patrons; however air quality mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-2).

Bonita Park is located directly adjacent to the proposed alignment. The existing railroad tracks are located less than 50 feet from active park uses. A fence along the northeastern boundary of the park separates the park from the existing railroad tracks. The tracks would be located on top of a berm that is 20-30 feet taller than the park. Tall trees mostly screen views of the alignment; however, catenaries would still be visible from the park. The presence of catenaries would not substantially detract from the visual setting of the park. Noise barriers would mitigate noise impacts at the park to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1). Construction dust may affect sensitive park patrons; however air quality mitigation measures would be implemented to fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-2).

Monrovia

There are no parks in Monrovia located within 0.25 mile of the proposed alignment.

Duarte

There are four parks in Duarte located within 0.25 mile of the proposed alignment. Duarte Sports Park, Northview Park, and Otis Gordon Park patrons would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

Aloysia Moore Park is more than 125 feet from the proposed alignment and is separated from the alignment by Duarte Road. Duarte Road, located north of the park, is a major 4-lane road. Therefore, any potential air quality or noise impacts resulting from project construction would not significantly affect park patrons. Construction dust may affect sensitive park patrons; however air quality mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be not be adverse (under NEPA)/significant (under CEQA) (See Section 3-2).

Irwindale

Santa Fe Dam Recreation Area is owned by the US Army Corps of Engineers and operated as a park by Los Angeles County under a long-term lease. The park directly adjoins the proposed alignment. A fence along the northeastern boundary of the park separates the park from the existing railroad tracks. The closest park facilities are the hike and bike trail along the San Gabriel River, which passes under the railroad bridge over the river. However, the majority of active park uses occur near the lake southeast of the proposed alignment. No significant noise impacts are anticipated at the recreation area (See Section 3-11). Construction dust may affect sensitive park patrons; however air quality mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-2).

Government Centers

There are no Government Centers located within 0.25 mile of the proposed alignment in Segment 1.

Hospitals

The only Hospital located within 0.25 mile of the proposed alignment in Segment 1 is The City of Hope National Medical Center, in Duarte. Construction noise, vibration, and air quality impacts may potentially affect hospital operations or patients. However, hospital ventilation systems are equipped to filter typical construction dust and mitigation measures would be implemented to reduce fugitive dust impacts during construction (see Section 3-2). Because hospital facilities are located more than 125 feet from the corridor, no significant noise or vibration impacts are anticipated. The hospital does not have an emergency room; therefore, emergency access would not be an issue. However, access to the hospital would be maintained at all times throughout the construction process.

Phase II, Segment 2 Cities

The cities in Segment 2 are Azusa, Glendora, San Dimas, Pomona, Claremont, Montclair, and Upland. Potential impacts to each city are described within the context of a type of community facility or service (police, fire, schools, park etc) as follows:

Police Protection

Table 3-4.11 lists the police departments serving Phase II, Segment 2 of the proposed project and indicates how they would be affected by construction of the proposed project.

| TABLE 3-4.11 CONSTRUCTION IMPACT ASSESSMENT OF POLICE STATIONS SERVING SEGMENT 2 CITIES | | | |
|---|-------------------------|----------------|-----------------------------|
| Police Station | # Residents per Officer | Response Time | Increased Response Time |
| Azusa Police Dept. | 745 | N/A | Not Adverse/Not Significant |
| Glendora Police Station | 852 | 3.5 minutes | Not Adverse/Not Significant |
| LASD San Dimas Bureau | 333 | N/A | Not Adverse/Not Significant |
| La Verne Police Dept. | 646 | 2 to 3 minutes | Not Adverse/Not Significant |
| Pomona | 859 | N/A | Not Adverse/Not Significant |
| Claremont Police Station | 680 | 4 minutes | Not Adverse/Not Significant |
| Montclair | 648 | N/A | Not Adverse/Not Significant |
| Upland | 1,368 | 6.53 minutes | Not Adverse/Not Significant |

Source: Myra L. Frank and Associates, Inc., 2003.

The cities of Azusa, Glendora, San Dimas, La Verne, Pomona, and Claremont would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

The cities of Montclair and Upland would be relatively unaffected by project construction because the proposed alignment is located along the city boundaries. Any minor construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

Fire Protection

Table 3-4.12 lists the fire stations serving Phase II, Segment 2 of the proposed project and indicates how they would be affected by construction of the proposed project.

| TABLE 3-4.12 INVENTORY OF FIRE STATIONS SERVING THE GOLD LINE PHASE II EXTENSION PROJECT AREA | | | |
|---|--------------------------------------|----------------|-----------------------------|
| Fire Station | Distance From the Proposed Alignment | Response Time | Increased Response Time |
| L.A. County Fire Dept. Azusa Station #32 | 0.15 miles | | Not Adverse/Not Significant |
| L.A. County Fire Dept. Glendora Station #151 | 0.25 mile | 3:27 minutes | Not Adverse/Not Significant |
| L.A. County Fire Dept. Glendora Station #85 | 1 mile | 3:27 minutes | Not Adverse/Not Significant |
| L.A. County Fire Dept. Glendora Station #86 | 1 mile | 3 to 4 minutes | Not Adverse/Not Significant |
| L.A. County Fire Dept. San Dimas Station #64 | Adjacent | | Not Adverse/Not Significant |
| La Verne Fire Station #1 | 0.2 miles | 4:30 minutes | Not Adverse/Not Significant |
| L.A. County Fire Dept. Pomona Fire Station #186 | 0.15 miles | 5:08 minutes | Not Adverse/Not Significant |
| L.A. County Fire Dept. Claremont Station #101 | 0.2 miles | 3 to 4 minutes | Not Adverse/Not Significant |
| Montclair Fire Station #1 | 0.2 miles | 4:30 minutes | Not Adverse/Not Significant |
| Source: Myra L. Frank and Associates, Inc., 2003. | | | |

The cities of Azusa, Glendora, San Dimas, La Verne, Pomona, and Claremont would experience typical construction impacts (described in Section 3-4.4.3 c above). Construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

The cities of Montclair and Upland would be relatively unaffected by project construction because the proposed alignment is located along the city boundaries. Any minor construction impacts would be not adverse (under NEPA)/not significant (under CEQA).

Schools

Table 3-4.13 lists the public schools serving Phase II, Segment 2 of the proposed project and indicates how they would be affected by construction of the proposed project.

| TABLE 3-4.13 CONSTRUCTION IMPACT ASSESSMENT OF PUBLIC SCHOOLS SERVING SEGMENT 2 PROJECT AREA | | |
|--|-------------------------------|-------------------------------|
| School | Source of Impact ¹ | Potential Construction Impact |
| Azusa | | |
| Henry Dalton Elementary | Air quality, noise, safety | Not Adverse/Not Significant |
| Glendora | | |
| La Fetra Elementary | Air quality, noise, safety | Not Adverse/Not Significant |
| Williams Elementary | Air quality, noise, safety | Not Adverse/Not Significant |
| Sandburg Middle | Air quality, noise, safety | Not Adverse/Not Significant |
| Glendora High | Air quality, noise, safety | Not Adverse/Not Significant |
| Claremont | | |
| Oakmont Elementary | Air quality, noise, safety | Not Adverse/Not Significant |
| Note 1. Noise is listed as an impact because it could be perceived as an impact by school users. These schools are not subject to calculated noise impacts as discussed in Section 3-11. Source: Myra L. Frank & Associates, Inc., 2003. | | |

There are no schools in San Dimas, Pomona, Montclair, or Upland located within 0.25 mile of the proposed alignment.

Azusa

Henry Dalton Elementary School in Azusa is located approximately 150 feet from the proposed alignment, but the school separated from the tracks by an apartment building, and the playground is separated from the tracks by a chain link fence and some gardens. The proposed Azusa platform and station would be constructed near the school, and therefore, construction activity would be more intense in the project vicinity than in other places along the line. Because the school is located more than 125 feet from the proposed alignment, no significant noise impacts would occur. Construction dust may affect students; however air quality mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-2).

One building on the Azusa Pacific University campus would be exposed to potentially significant noise impacts; however, noise mitigation measures would be implemented to reduce noise impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1).

Saint Francis of Rome Elementary School, a private school in Azusa, would be exposed to potentially significant noise impacts; however, noise mitigation measures would be implemented to reduce noise

impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1).

Glendora

All four public schools within 0.25 mile of the proposed right-of-way in Glendora are situated at enough of a distance from the proposed alignment that impacts from construction are expected to be minimal. Each school has streets and buildings that buffer them from the proposed right-of-way.

La Verne

University of La Verne would be exposed to potentially significant noise impacts; however, noise mitigation measures would be implemented to reduce noise impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1).

Claremont

Oakmont Elementary School in Claremont is located 0.15 mile from the right-of-way, but some industrial buildings and a parking lot separate the school property from the proposed alignment. Construction related impacts from construction activity are expected to be less than significant (under CEQA)/not adverse (under NEPA).

□ Parks

Table 3-4.14 lists the parks serving Phase II, Segment 2 of the proposed project and indicates how they would be affected by construction of the proposed project.

Azusa

Veterans Freedom Park is located directly adjacent to the proposed alignment. Buildings (including the Azusa Historical Museum) and parking lots are located at the northern end of the park and provide a barrier between the play area and the proposed alignment. The existing railroad tracks are located approximately 100 feet from active park uses. The northern boundary of the park is not entirely fenced between the park and the tracks. However, a new fence would be installed along the alignment as part of the proposed project. The park would experience noise impacts due to its proximity to the rail lines, the speed of the LRT vehicles and the exposure to audible warning signals (bells and whistles) at the Dalton Avenue grade crossing. However, the implementation of noise mitigation measures would reduce impacts to level that would not be adverse (under NEPA)/ significant (under CEQA). Construction dust may affect park patrons; however air quality mitigation measures would be implemented to reduce fugitive dust impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-2). The presence of catenaries along the alignment would not significantly detract from the visual setting of the park.

Glendora

There are 6 parks in Glendora located within 0.25 mile of the proposed alignment, including Sandburg Middle School Park, Big Tree Park, South Hills Park, Centennial Heritage Park, and Louie Pompei Sports Park. Park patrons would experience typical construction impacts (described in Section 3-4.4.3 c above).

| Police Station | Types of Impacts | Level of Impact |
|---|---|-----------------------------|
| Pasadena Police Dept. | Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Arcadia Police Dept. | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Monrovia Police Dept. | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| LASD Temple Bureau | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| LASD Duarte Sub-station | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Irwindale Police Dept. | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Pasadena Fire Station #37 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Pasadena Fire Station #32 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Arcadia Fire Station #105 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Arcadia Fire Station #107 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Monrovia Fire Station #101 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Monrovia Fire Station #102 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. Duarte Station #44 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |

Myra L. Frank & Associates, Inc., 2003.

The Arcadia, Monrovia, Duarte, and Irwindale Police and Fire Departments would experience the typical impacts described above. The proposed project would not substantially increase the demand for police or fire protection services in the project area. The LASD Transit Services Bureau would handle most emergency calls generated by the proposed project. The proposed project would not result in the need for additional police officers or fire fighters in the corridor cities.

The proposed project would not substantially increase traffic congestion in the corridor cities, which could affect police response times. All traffic impacts would be reduced to a level that would be not adverse (under NEPA)/not significant (under CEQA) (see Section 3-15.3.1). Access disruptions, such as at grade light rail crossings, would not substantially affect police or fire response times because train crossings would be brief and there are multiple alternative north-south streets crossing the proposed alignment. Access disruptions would be minimized through development of alternative routes, or amending service areas as necessary to maintain emergency service coverage and response times following project completion.

Schools

Table 3-4.16 lists the public schools serving Phase II, Segment 1 of the proposed project and indicates how they would be affected by operation of the proposed project.

| TABLE 3-4.16 OPERATIONAL IMPACTS FOR PUBLIC SCHOOLS IN SEGMENT I CITIES | | |
|--|------------------------------------|--------------------------------------|
| School | Sources of Impact | Potential Construction Impact |
| Arcadia | | |
| Rancho Learning Center | Noise, Vibration, Safety, Capacity | Not Adverse/Not Significant |
| Serendipity Early Education Center | Noise, Vibration, Safety, Capacity | Not Adverse/Not Significant |
| Monrovia | | |
| Santa Fe Middle | Safety, Capacity | Not Adverse/Not Significant |
| Duarte | | |
| Andres Duarte Elementary | Safety, Capacity | Not Adverse/Not Significant |
| Northview Intermediate | Safety, Capacity | Not Adverse/Not Significant |
| Duarte High | Safety, Capacity | Not Adverse/Not Significant |
| Source: Myra L. Frank & Associates, Inc., 2003 | | |

There are no schools in Pasadena or Irwindale located within 0.25 mile of the proposed alignment.

Ranch Learning Center and Serendipity Early Education Center would experience typical operational impacts described above. The proposed LRT Triple Track Alternative would not result in a substantial increase in student enrollment at either school, since its implementation would not result in an increased residential population.

There may be safety concerns for young students walking to and from school in the vicinity of the proposed alignment. However, the majority of students attending Rancho Learning Center and Serendipity Early Education Center do not walk to school. Most of the children attending Serendipity Early Education Center are too young to walk alone to day care. Most of the students attending Rancho

Learning Center are not from the immediate area surrounding the school because the school is an alternative education center. Therefore the proposed project would not result in a safety risk to students walking to school.

Both schools could be subject to substantial increases in noise and vibration. However, the implementation of noise mitigation measures discussed in section 3-11.3.1 would reduce noise and vibration to a level that would not be adverse (under NEPA)/significant (under CEQA).

□ Monrovia

Santa Fe Middle School would experience typical operational impacts described above. The proposed LRT Triple Track Alternative would not result in a substantial increase in student enrollment at Santa Fe Middle School, since its implementation would not result in an increased residential population.

Santa Fe Middle School is located at the intersection of two major roads (Duarte Road and Myrtle Avenue), so students are used to watching for traffic, and the addition of a train crossing would not pose an unusual safety hazard. In addition, middle school students are old enough to understand and avoid the hazards of train crossings. Due to the close proximity of the Monrovia Station, the proposed project may help increase student accessibility to Santa Fe Middle School.

The school is located far enough from the proposed alignment that it would not be significantly affected by noise or vibration.

□ Duarte

Andres Duarte Elementary School, Northview Intermediate School, and Duarte High School would experience typical operational impacts described above. The proposed LRT Triple Track Alternative would not result in a substantial increase in student enrollment at any of the schools, since its implementation would not result in an increased residential population.

Students attending Northview Intermediate School and Duarte High School are old enough to understand and avoid the hazards of train crossings; therefore student safety would not be substantially affected by the proposed project. Andres Duarte Elementary School is separated from the proposed alignment by 0.25 mile of undeveloped land and I-210. Therefore, it is very unlikely that students would have to cross the alignment.

The school is located far enough from the proposed alignment that it would not be significantly affected by noise or vibration.

Parks

Table 3-4.17 lists the parks serving Phase II, Segment 1 of the proposed project and indicates how they would be affected by operation of the proposed project.

**TABLE 3-4.17
OPERATIONAL IMPACTS FOR PARKS IN SEGMENT 1 CITIES**

| Parks | Distance | Sources of Impact | Potential Construction Impact |
|-------------------------------------|-----------|----------------------|-------------------------------|
| Eaton Wash Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| The Arboretum of Los Angeles County | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Forest Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Newcastle Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Arcadia County Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Eisenhower Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Bonita Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Aloysia Moore Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Duarte Sports Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Northview Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Otis Gordon Sports Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Santa Fe Dam Recreation Area | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |

Myra L. Frank & Associates, Inc., 2003

The parks in the Cities of Pasadena, Arcadia, Duarte, and Irwindale are not located in the immediate vicinity of a proposed light-rail station and would not be directly accessible to Gold Line riders. Therefore, the parks would not experience an increase in use that would cause acceleration in the deterioration of the park as a result of the proposed project. The proposed project would not substantially induce population growth in the project area that would increase use of the parks.

No portion of any park would be acquired under the proposed LRT, Triple Track Alternative. All of the parks (except those discussed below) are located too far from the proposed alignment to experience adverse direct or indirect impacts under NEPA (significant indirect impacts under CEQA) with respect to noise or vibration.

Patrons at Newcastle Park, Bonita Park, and Aloysia Moore Park would not experience any adverse/significant noise impacts due to the implementation of noise mitigation measures discussed in Section 3-11.3.1. No adverse/significant noise impacts are anticipated at Santa Fe Dam Recreation Area (See Section 3-11).

There are no parks in the City of Monrovia located within 0.25 mile of the proposed alignment.

Government Centers

No government centers are located within 0.25 mile of the proposed alignment in Segment 1.

Hospitals

The only hospital located within 0.25 mile of the proposed alignment in Segment 1 is The City of Hope National Medical Center, in Duarte. Because hospital facilities are located more than 125 feet from the corridor, no significant noise or vibration impacts are anticipated. The hospital does not have an emergency room; therefore, emergency access would not be an issue. However, access to the hospital would be maintained at all times.

The Duarte Station would be located less than 0.25 mile from the hospital, which would result in an increase in accessibility to the City of Hope National Medical Center. Increased accessibility would be beneficial to patients and employees.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland.

Police and Fire Services

Table 3-4.18 lists the police stations and fire departments serving Phase II, Segment 2 of the proposed project and indicates how they would be affected by operation of the proposed project.

The Azusa, Glendora, La Verne, Pomona, and Claremont Police and Fire Departments would experience the typical impacts described in Table 3-4.18. The proposed project would not substantially increase the demand for police or fire protection services in the project area. The LASD Transit Services Bureau would handle most emergency calls generated by the proposed project. The proposed project would not result in the need for additional police officers or fire fighters in the corridor cities.

The proposed project would not substantially increase traffic congestion along the alignment, which could affect police response times. All traffic impacts would be reduced to a level that would be not adverse (under NEPA)/not significant (under CEQA) (see Section 3-15.3.1). Access disruptions, such as at grade light rail crossings, would not substantially affect police or fire response times because train crossings would be brief and there are multiple alternative north-south streets crossing the proposed alignment. Access disruptions would be minimized through development of alternative routes, or amending service areas as necessary to maintain emergency service coverage and response times following project completion.

**TABLE 3-4.18
OPERATIONAL IMPACTS TO POLICE AND FIRE PROTECTION FOR SEGMENT 2 CITIES**

| Station | Types of Impacts | Level of Impact |
|--|---|-----------------------------|
| Azusa Police Department | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Glendora Police Station | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Sheriff's Dept. San Dimas Sub-station | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| (Future) L.A. County Sheriff's Dept. San Dimas Sub-station | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| La Verne Police Department | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Claremont Police Station | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Montclair Police Station | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. No. 32 (Azusa) | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. No. 151 (Glendora) | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. No. 85 (Glendora) | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. No. 86 (Glendora) | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. No. 64 (San Dimas) | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| La Verne Fire Station No. 1 | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. No. 186 (Pomona) | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| L.A. County Fire Dept. No. 101 (Claremont) | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |
| Montclair Fire Department | Increased Response Time, Increased Service Demands, Increased Safety Risk | Not Adverse/Not Significant |

Source: Myra L. Frank & Associates, Inc., 2003

The San Dimas Police and Fire Departments would experience the typical impacts described above. The San Dimas Police and Fire Departments may also experience site-specific impacts. The San Dimas Police and Fire Stations would be located on Walnut Street just north of the proposed alignment (currently the police station is being built). Walnut Street would be subject to an at-grade rail crossing; therefore, response times south of the proposed alignment may be slightly reduced. However, it is not anticipated that this would be an adverse/significant impact because train crossings would be brief (less than one minute) and there are multiple alternative north-south streets crossing the proposed alignment. Police

response times would remain relatively unaffected because the majority of police officers are in the field and are not stationed at the police department. Access disruptions would be minimized through development of alternative routes, or amending service areas as necessary to maintain emergency service coverage and response times following project completion.

The proposed alignment is located on the boundary of Montclair and Upland. Therefore, response times would be relatively unaffected by project construction, because firefighters and police officers would rarely have to cross the proposed alignment.

Schools

Table 3-4.19 lists the public schools serving Phase II, Segment 2 of the proposed project and indicates how they would be affected by operation of the proposed project.

| TABLE 3-4.19 OPERATIONAL IMPACT ASSESSMENT OF PUBLIC SCHOOLS SERVING THE GOLD LINE PHASE II SEGMENT 2 PROJECT AREA | | |
|---|--------------------|-------------------------------|
| School | Sources of Impacts | Potential Construction Impact |
| Azusa | | |
| Henry Dalton Elementary | Safety, Capacity | Not Adverse/Not Significant |
| Glendora | | |
| La Fetra Elementary | Safety, Capacity | Not Adverse/Not Significant |
| Williams Elementary | Safety, Capacity | Not Adverse/Not Significant |
| Sandburg Middle | Safety, Capacity | Not Adverse/Not Significant |
| Glendora High | Safety, Capacity | Not Adverse/Not Significant |
| Claremont | | |
| Oakmont Elementary | Safety, Capacity | Not Adverse/Not Significant |
| Myra L. Frank & Associates, Inc., 2003 | | |

Henry Dalton Elementary School would experience typical operational impacts described above. The proposed LRT Triple Track Alternative would not result in a substantial increase in student enrollment at Henry Dalton Elementary School, since its implementation would not result in an increased residential population.

There may be safety concerns for young students walking to and from school in the vicinity of the proposed alignment. However, elementary schools generally set up their catchment areas so that children do not have to cross major streets. Therefore, effects on elementary school students would be minimal. In addition, gates, bells, and lights would be installed at the intersection to alert students of oncoming trains.

The school is located far enough (150 feet) from the proposed alignment that it would not be significantly affected by noise or vibration.

One building on the Azusa Pacific University campus would be exposed to potentially significant noise impacts; however, noise mitigation measures would be implemented to reduce noise impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1).

Saint Francis of Rome Elementary School, a private school in Azusa, would be exposed to potentially significant noise impacts; however, noise mitigation measures would be implemented to reduce noise impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1). Private school students are more likely to commute to school by vehicle because students do not generally live in the immediate vicinity of the school. Therefore, safety concerns would be minimal.

There are four public schools in the City of Glendora located within 0.25 mile of the proposed alignment, which would experience typical operational impacts described above. The proposed LRT Triple Track Alternative would not result in a substantial increase in student enrollment at any of the schools, since its implementation would not result in an increased residential population.

Students attending Sandburg Middle School and Glendora High School are old enough to understand and avoid the hazards of train crossings; therefore, safety concerns would be minimal. Additionally, the schools are located along major roads; therefore, students walking to school are used to watching for traffic.

La Fetra and Williams Elementary Schools are located on smaller streets that are not as accessible to the proposed alignment. Elementary schools generally set up their catchment areas so that children do not have to cross major streets. Therefore, effects on elementary school students would be minimal. In addition, gates, bells, and lights would be installed at the intersection to alert students of oncoming trains.

All four public schools are located far enough from the proposed alignment that they would not be significantly affected by noise or vibration.

University of La Verne would be exposed to potentially significant noise impacts; however, noise mitigation measures would be implemented to reduce noise impacts to a level that would not be adverse (under NEPA)/significant (under CEQA) (See Section 3-11.3.1).

Oakmont Elementary School would experience typical operational impacts described above. The proposed LRT Triple Track Alternative would not result in a substantial increase in student enrollment at Oakmont Elementary School, since its implementation would not result in an increased residential population.

The school is separated from the proposed alignment by multiple neighborhood streets, and is not directly accessible to the proposed alignment; therefore, safety concerns would be minimal. Elementary schools generally set up their catchment areas so that children do not have to cross major streets. In addition, gates, bells, and lights would be installed at the intersection to alert students of oncoming trains.

The school is located far enough from the proposed alignment that it would not be significantly affected by noise or vibration.

There are no schools in San Dimas, Pomona, Montclair, or Upland located within 0.25 mile of the proposed alignment.

Parks

Table 3-4.20 lists the parks serving Phase II, Segment 2 of the proposed project and indicates how they would be affected by operation of the proposed project.

Veterans Freedom Park is located in the immediate vicinity of a proposed light-rail station and would be directly accessible to Gold Line riders. However, the park is not a typical neighborhood park, but is open space associated with Azusa's City Hall. Therefore, it is unlikely that the proposed project would result in an increase in use that would cause acceleration in the deterioration of the park. The proposed project would not substantially induce population growth in the project area that would increase use of the park.

No portion of Veterans Freedom Park would be acquired under the proposed LRT, Triple Track Alternative. Patrons at the park would not experience any significant/adverse noise impacts due to the implementation of noise mitigation measures discussed in Section 3-11.3.1.

The parks in the Cities of Glendora, La Verne, Pomona, and Claremont are not located in the immediate vicinity of a proposed light-rail station and would not be directly accessible to Gold Line riders. Therefore, the parks would not experience an increase in use that would cause acceleration in the deterioration of the park as a result of the proposed project. The proposed project would not substantially induce population growth in the project area that would increase use of the parks.

No portion of any park would be acquired under the proposed LRT, Triple Track Alternative. None of the parks are expected to experience adverse direct or indirect impacts under NEPA (significant indirect impacts under CEQA) with respect to noise or vibration after the implementation of noise mitigation measures.

**TABLE 3-4.20
OPERATIONAL IMPACTS FOR PARKS IN SEGMENT 2 CITIES**

| Parks | Distance | Sources of Impact | Potential Operational Impact |
|-----------------------------|-----------------|--------------------------|-------------------------------------|
| Veterans Freedom Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Sandburg Middle School Park | 0.2 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Big Tree Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| South Hills Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Centennial Heritage Park | 0.15 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Louie Pompei Sports Park | 0.1 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Rhoads Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Pioneer Park | 0.1 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Civic Center Park | 0.15 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Wheeler Avenue Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Kuns Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Challenger Park | 0.1 mile | Noise, Increased Use | Not Adverse/Not Significant |
| Palomares Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| Shelton Park | 0.25 mile | Noise, Increased Use | Not Adverse/Not Significant |
| College Park | Adjacent | Noise, Increased Use | Not Adverse/Not Significant |
| El Barrio Park | 0.1 mile | Noise, Increased Use | Not Adverse/Not Significant |

Myra L. Frank & Associates, Inc., 2003.

There are three parks located within 0.25 mile of the proposed alignment in the City of San Dimas. Rhodes Park is located in the immediate vicinity of a proposed light-rail station and would be accessible to Gold Line riders. Rhodes Park is a small park that is home to the Pacific Railroad Museum. The operation of a light rail train would be consistent with the park's primary use as a railroad museum. Additional patrons at the museum would be encouraged, as it is currently underutilized. Pioneer Park is a small neighborhood park approximately 1/2 block from the proposed alignment. It is unlikely that the park would be the destination of very many Gold Line riders, even if the park were more accessible. Civic Center Park is located approximately 0.25 mile from the proposed alignment and is not a typical neighborhood park, but is open space associated with the San Dimas City Hall. Therefore, it is unlikely that the proposed project would result in an increase in use that would cause acceleration in the deterioration of the park. The proposed project would not substantially induce population growth in the project area that would increase use of parks in San Dimas.

No portion of any park in San Dimas would be acquired under the proposed LRT, Triple Track Alternative. All of the parks are located too far from the proposed alignment to experience adverse direct or indirect impacts under NEPA (significant indirect impacts under CEQA) with respect to noise or vibration.

There are no parks in Montclair or Upland located within 0.25 mile of the proposed alignment.

Government Centers

There are three Government Centers located within 0.25 mile of the proposed alignment including the Azusa City Hall, the Glendora Civic Center, and the San Dimas City Hall. The proposed LRT Triple Track Alternative would have a beneficial impact on employees and patrons of the Government Centers located along the proposed alignment due to the increase in facility accessibility.

Hospitals

There are two hospitals located within 0.25 mile of the proposed alignment, Foothill Presbyterian Hospital and Huntington East Valley Hospital. Both hospitals would experience typical impacts described above, including minor emergency access disruptions and elevated noise levels. However, none of these impacts are expected to be significant. Emergency access to the hospitals would be maintained at all times. Because the proposed project would not result in any long-term street closures or increases in local traffic congestion, no adverse impacts (under NEPA)/significant impacts (under CEQA) are expected for emergency vehicle access or vehicular access to hospitals.

The Glendora Station would be located approximately 0.25 mile from both hospitals, which would result in increased accessibility. Increased accessibility would be beneficial to patients and employees.

Noise mitigation measures would be implemented at several medical buildings in the vicinity of Foothill Presbyterian Hospital, which would reduce noise impacts to a level that would not be adverse (under NEPA)/significant (under CEQA). Huntington East Valley Hospital would not be adversely/significantly affected by noise from the proposed project.

Summary of Triple Track Impacts for Full Build LRT Alternative

Operation of the triple track alternative would not have a significant/adverse impact on any of the public services analyzed including police, fire, schools, parks, government centers, or hospitals. Several public services facilities (schools and parks adjacent to the alignment) would experience significant noise impacts; however, the proposed project would include the implementation of noise mitigation measures that would reduce all noise impacts to a level that would be less than significant (see Section 3-1)

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

Operation of the triple track alternative to the maintenance facility would not have a significant/adverse impact on any of the public services analyzed including police, fire, schools, parks, government centers, or hospitals. Several public services facilities (schools and parks adjacent to the alignment) would experience significant noise impacts; however, the proposed project would include the implementation of noise mitigation measures that would reduce all noise impacts to a level that would be less than significant (see Section 3-11)

d. LRT, Double Track Alternatives

The public service impacts for the LRT, Double Track Alternatives would be identical to the impacts for the LRT, Triple Track Alternative.

3-4.2.5 Cumulative Impacts

The No Build and TSM Alternatives would not affect community facilities or services and therefore would not contribute to any significant cumulative impacts.

The LRT Double Track and Triple Track alternatives would potentially contribute to cumulative public service impacts, and are discussed together below.

The study area for the public services cumulative impacts analysis consists of the service areas for the police and fire stations that serve areas surrounding the proposed alignment. The study area also includes schools, parks, hospitals, and government centers located within 0.25 mile of the proposed alignment that could experience increases in population due to project construction and cumulative development.

a. Police Protection

LASD would patrol Gold Line Facilities. The respective city police departments would provide additional services when needed and requested by LASD. Proposed Related Projects include construction of residential units, commercial, office, public, medical, and retail space. New construction would likely increase the residential and employee populations in the project study area, which would place additional demand on local police departments. Because LACMTA maintains its own security, the Gold Line Project is not expected to contribute to cumulative impacts to police services or cumulative increases in demand for police services. Therefore, the proposed project would not have an adverse (under NEPA)/significant (under CEQA) cumulative impact on police services.

b. Fire Protection

As discussed earlier, the proposed Gold Line Project is not expected to increase demand for fire protection services because such demand is primarily attributable to increased commercial and residential development rather than transit projects. Increases in the residential and employee populations in the area are expected as a result of the development component of the related projects, and as a consequence, demand for fire protection services in the area would increase. However, because the proposed Gold Line Project would not by itself increase fire protection demands, it would not contribute to cumulative impacts to fire protection services or cumulative increases in demand for fire protection services. Therefore, the proposed project would not contribute to potentially adverse (under NEPA)/significant (under CEQA) cumulative impacts.

c. Schools

Related projects in the project vicinity would include an increase in residential units, and multiple commercial/industrial/office developments. New residential development would directly increase enrollment in local schools. Student enrollment could also be indirectly affected by increases in employment due to new non-residential development. The amount of residential and commercial/industrial development proposed in the area could be substantial, and it is possible that schools that are currently overcrowded could be adversely affected by increased enrollment and new or

expanded facilities would be required. Several schools have been proposed in the project vicinity, which would help accommodate some of the demand. Because the Gold Line Project is a transit project that would not increase the amount of residential units in the project area, it would not increase local school enrollment and therefore would not contribute to adverse (under NEPA)/significant (under CEQA) cumulative impacts to schools.

d. Parks

Increases in residential and employee populations due to the proposed project and related projects could place additional demands on park services in the area. If additional park facilities were required to maintain existing service levels, significant cumulative impacts could occur. However, because the proposed project would not affect demand for parks it would not result in or substantially contribute to an adverse (under NEPA)/significant (under CEQA) cumulative impact on parks.

e. Government Centers

Increases in residential and employee populations due to the proposed project and related projects would not place additional demands on government facilities in the project vicinity because the demand for service at government centers (i.e. city hall) is not derived from the population immediately surrounding the facilities. Each of the facilities is designed to accommodate the needs of the City as a whole. Therefore, the proposed project and related projects are not expected to result in adverse (under NEPA)/significant (under CEQA) cumulative impacts on government facilities.

f. Hospitals

Increases in residential and employee populations due to the related projects could place additional demands on hospital services in the area. City of Hope National Medical Center is a specialty hospital that selects its patients, and would not be affected by increased population. If additional hospital facilities were required to maintain existing service levels at the other two hospitals, significant cumulative impacts could occur. However, because the proposed project would not affect demand for hospitals it would not result in or substantially contribute to an adverse (under NEPA)/significant (under CEQA) cumulative impact on hospitals.

3-4.2.6 Impacts Addressed by Regulatory Compliance

a. Construction Period Impacts

There are no regulations that govern impacts to public services during the construction period.

b. Long-Term Impacts

There are no regulations that govern impacts to public services.

3-4.3 Potential Mitigation

3-4.3.1 Construction Period Mitigation Measures

All public service impacts would be not adverse (under NEPA)/ less than significant (under CEQA), and no mitigation measures would be required for any of the alternatives.

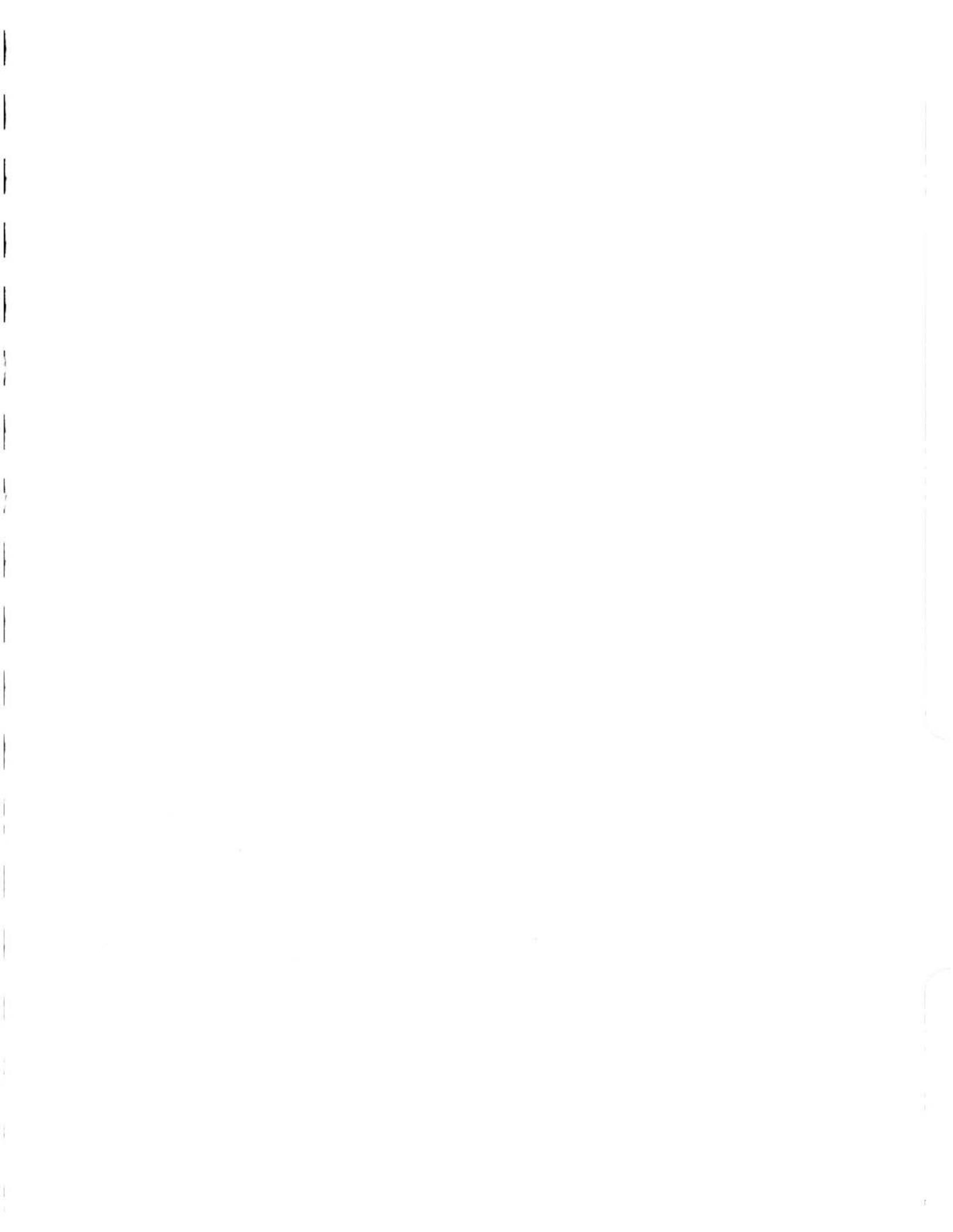
3-4.3.2 Long Term Mitigation

All public service impacts would be not adverse (under NEPA)/ less than significant (under CEQA), and no mitigation measures would be required for any of the alternatives.

3-4.4 Impact Results with Mitigation

All public service impacts would be not adverse (under NEPA)/ less than significant (under CEQA), and no mitigation measures would be required for any of the alternatives.

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3-5 CULTURAL RESOURCES

Summary of Impacts

The No Build and TSM Alternatives would have no impact on cultural resources.

For the LRT alternative, impacts would be not adverse/less than significant. The historic depots Monrovia, Azusa, San Dimas and Claremont would be retained. New parking structures near the historic depots can be designed to avoid adverse impacts to the depots' settings. Two bridges and one pedestrian tunnel appear to have historical or architectural significance and it is assumed that modifications can be made in accordance with the Secretary of Interior's Standards such the impacts would be not adverse/less than significant.

3-5.1 Existing Conditions

3-5.1.1 Regulatory Framework

a. Section 106 of the National Historic Preservation Act

The National Environmental Policy Act (NEPA) requires that federal agencies integrate the NEPA process with other environmental laws. Section 106 of the National Historic Preservation Act as amended (Section 106, 16 U.S.C. 470f) requires that impacts on significant cultural resources, hereafter called historic properties, be taken into consideration in any federal undertaking. "Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (National Register) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria" [36 CFR §800.16(1)].

Cultural resources studies for the proposed Metro Gold Line Phase II Pasadena to Montclair are subject to the procedures of and review of the Federal Transit Administration (FTA) in consultation with the California State Historic Preservation Officer (SHPO). These studies are shaped by the Advisory Council on Historic Preservation (ACHP) regulations (36 CFR Part 800) for implementing Section 106. Section 106 studies provide the information necessary to satisfy legal requirements for environmental documents under NEPA.

b. California Environmental Quality Act

According to the California Environmental Quality Act (Public Resources Code, Section 21084.1), historical resources include any resource listed, or determined to be eligible for listing, in the California Register of Historical Resources (California Register). Properties listed in or determined eligible for listing in the National Register, such as those identified in the Section 106 process, are automatically listed in the California Register. Therefore, all "historic properties" under federal preservation law are automatically "historical resources" under state preservation law. Historical resources are also presumed to be significant if they are included in a local register of historical resources or identified as significant in a qualified historical resource survey. Section 15064.5 of the CEQA Guidelines sets forth the criteria and

procedures for determining significant historical resources, and the potential effects of a project on such resources.

CEQA also categorizes paleontological resources as cultural resources and requires an impact evaluation to such resources. Impacts to paleontological resources fall under CEQA only and are not considered historic properties to be evaluated under NEPA or the Section 106 process.

3-5.1.2 Compliance Methodology

The following cultural resources sections summarize the Section 106 and CEQA process and determinations, to date, and are subject to change following SHPO review and concurrence. Details may be found in the Section 106 technical documents that have been submitted to the SHPO and other consulting parties, and are also available for public review with other technical reports prepared for this EIR/EIS. The cultural resources technical documents include the Historic Property Survey and Effects Report (HPSER) and Archaeological Survey Report (ASR).

Section 106 regulations prescribe the following steps, which are described in this and subsequent sections:

- determine and document the area of potential effects
- identify consulting parties
- identify potential historic properties
- evaluate significance of potential historic properties by applying National Register eligibility criteria in consultation with SHPO or Indian tribes, as appropriate
- assess effects on historic properties by applying ACHP criteria of adverse effect
- develop avoidance and mitigation measures if necessary
- document the process.

These steps are adequate to comply with Section 15064.5 of the CEQA guidelines, because the Section 106 guidelines have more rigorous review requirements. For example, CEQA does not require careful delineation of a study area such as the area of potential effects, and does not require consultation with the SHPO.

For the proposed project, only two properties were identified that meet California Register criteria but do not meet National Register criteria. Therefore, unless otherwise stated, there is no difference between the compliance methodology for “historic properties” under federal law and “historical resources” under state law. For the purposes of this environmental document, the term “historic properties” will hereafter be used to represent both the federal term “historic properties” and state term “historical resources,” unless otherwise appropriate.

a. The Area of Potential Effects

As defined in the Section 106 regulations, the Area of Potential Effects (APE), Figures 3-5.1 to 3-5.18, means “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects cause by the undertaking” [36 CFR §800.16(d)]. While the CEQA Guidelines do not require delineation

of an analogous study area, the APE does take into account all properties with historical resources that may be significantly affected by the project.

b. Definition

On September 16, 2003, FTA consulted with the SHPO to determine and document and define the APE. In a letter dated November 5, 2003, SHPO concurred with the APE definition for the proposed project as follows:

The Federal Transit Administration (FTA) has identified sixteen (18) Areas of Potential Effects (APEs) that are located along the proposed project corridor. These project APEs would be delineated to :

- Include all parcels directly affected by or adjacent to proposed station areas, construction staging areas, and acquisition areas that are not part of the existing railroad right-of-way.
- Include all bridges that require alterations other than track work for the proposed project.
- Those areas of ground that would be disturbed during project construction, excluding railroad tracks, ballast, ties, and equipment less than 50 years of age.

The APE boundaries, shown on Figures 3-5.1 to 3-5.18 (Area of Potential Effects Maps), were based on an application of the above definition to the detailed conceptual-preliminary information available. The APE boundary depicts a worst-case affected area. The APE boundary is subject to change, pending final FTA and SHPO consultation.

Figures 3-5.1 through 3-5.18 show the Areas of Potential Effect for proposed stations and potential parking locations.



Sources: C&C Aerial Mapping Corp., July 15, 2003, Jones & Stokes Associates, 2004.

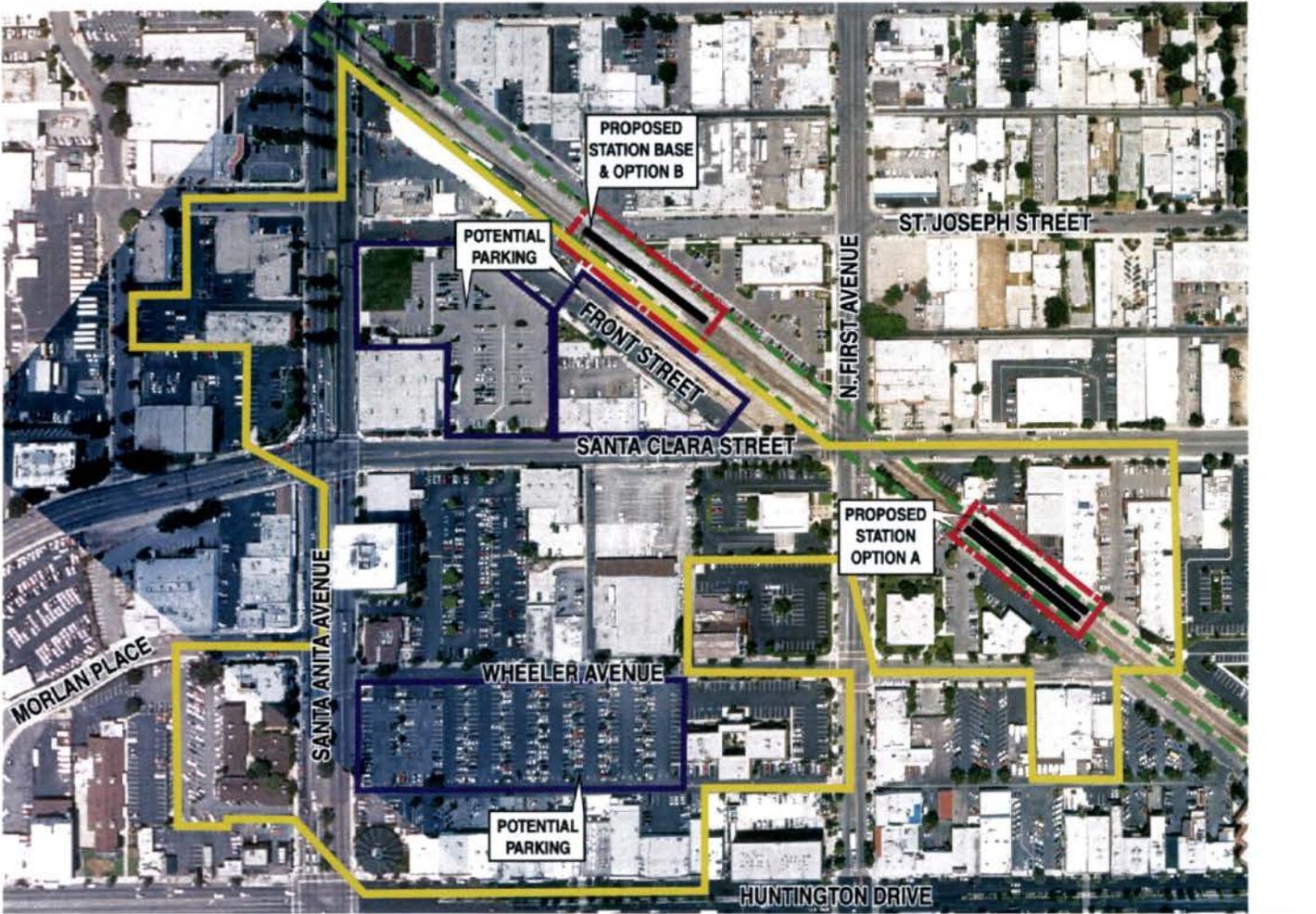


**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- APE Boundary
 - - - Railroad Right of Way



Figure 3-5.1: APE Map for the Colorado Blvd. Overcrossing in Arcadia



**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- Station Boundary
 - APE Boundary
 - Railroad Right of Way
 - Potential Parking



Figure 3-5.2: APE Map for the Arcadia Station Options



Sources: C&C Aerial Mapping Corp., July 15, 2003; Jones & Stokes Associates, 2004.

**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- APE Boundary
 - - - Railroad Right of Way

0 50 100 Feet



Figure 3-5.3: APE Map for the Fifth Street Pedestrian Undercrossing in Monrovia

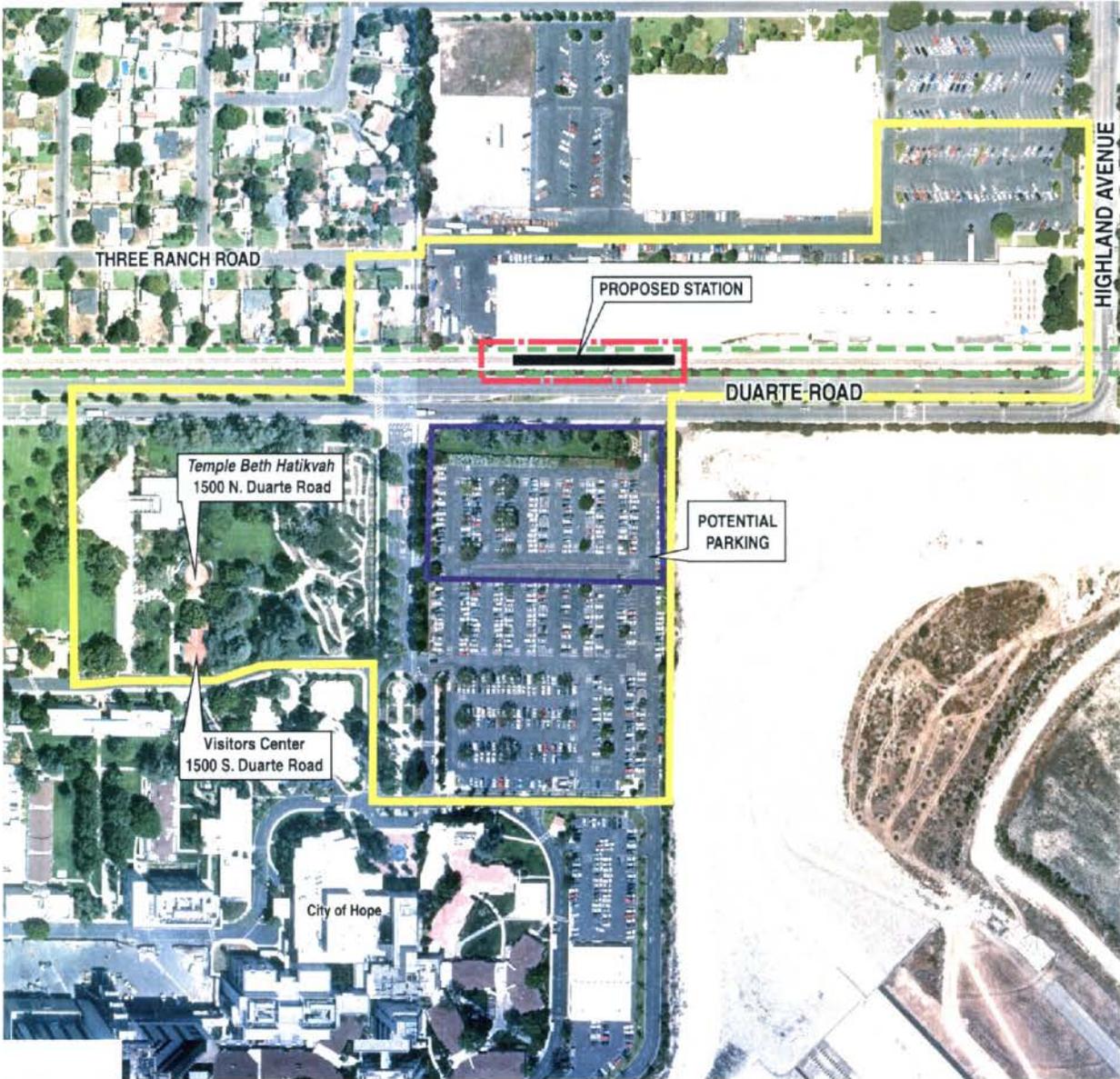


**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- Station Boundary
 - APE Boundary
 - Railroad Right of Way
 - Potential Parking



Figure 3-5.4: APE Map for Monrovia Station



Sources: C&C Aerial Mapping Corp., July 15, 2003; Jones & Stokes Associates, 2004.

**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- - - Station Boundary
 - APE Boundary
 - - - Railroad Right of Way
 - Potential Parking

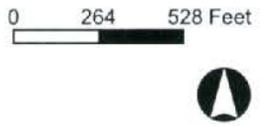


Figure 3-5.5: APE Map for Duarte Station



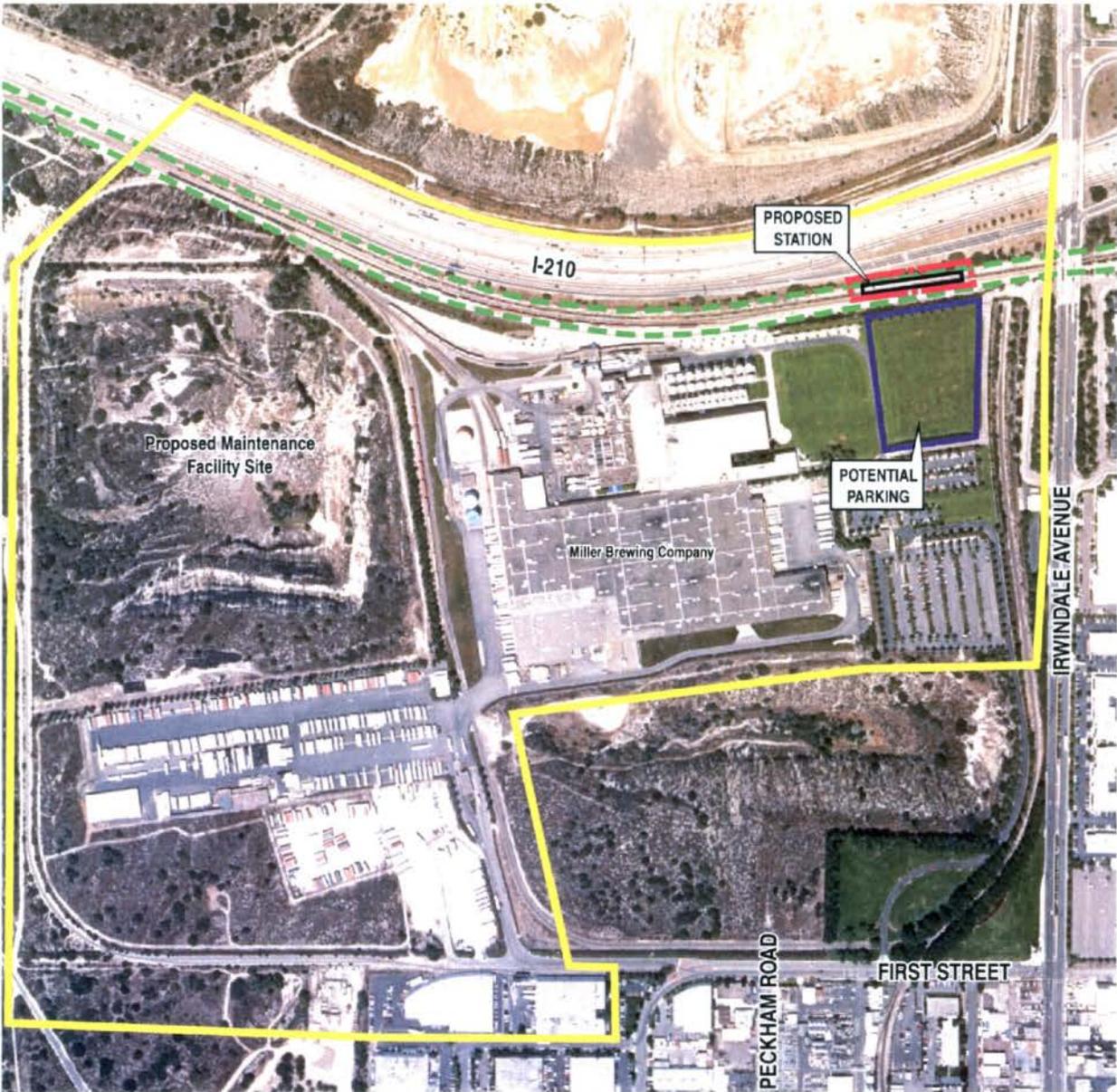
**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- Proposed Maintenance Facility Boundary
 - APE Boundary
 - Potential Parking Structure Site
 - Railroad Right of Way

0 0.1 0.2 Miles



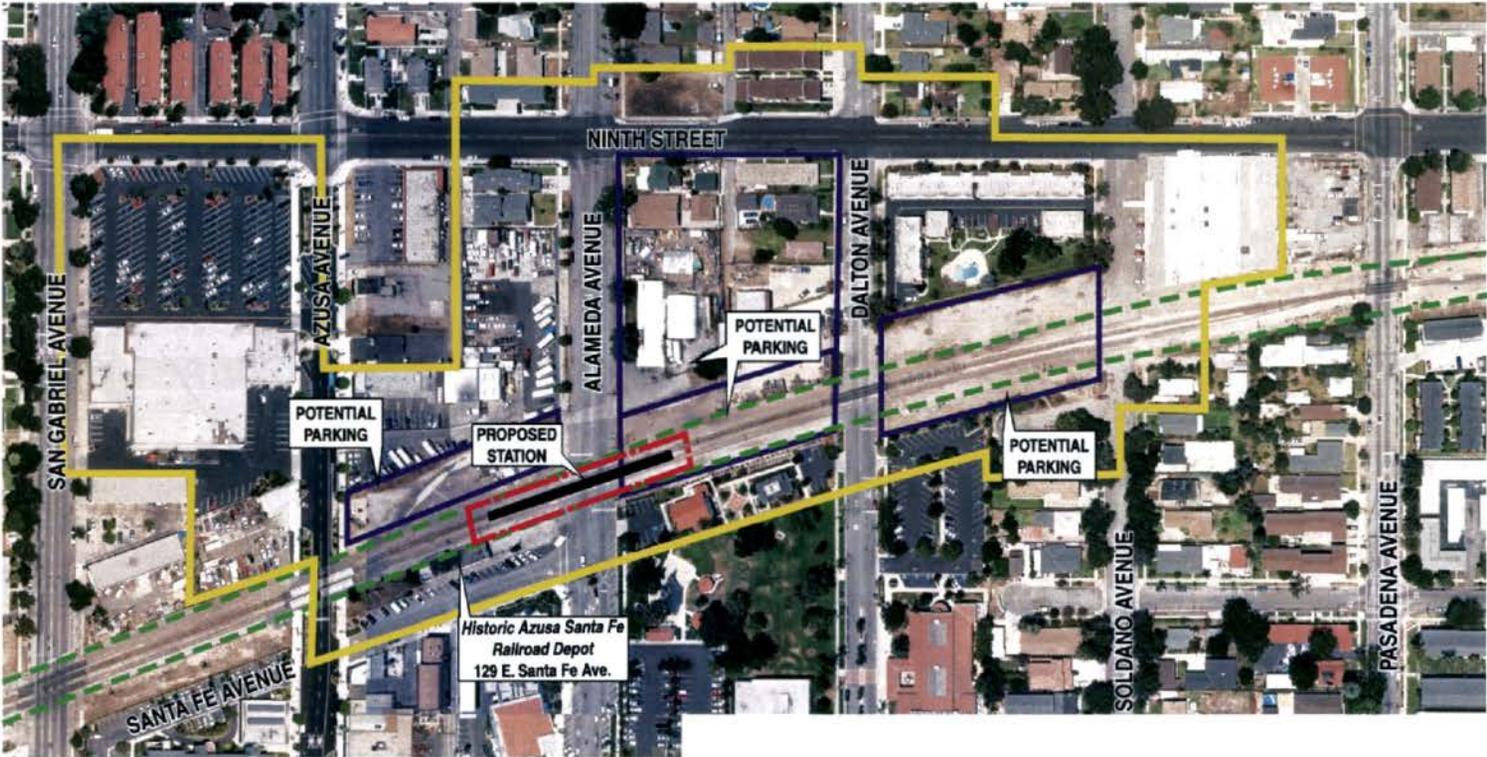
Figure 3-5.6: APE Map for the Irwindale Maintenance Facility



**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- - - Station Boundary
 - APE Boundary
 - Potential Parking
 - - - Railroad Right of Way

Figure 3-5.7: APE Map for Irwindale Station



**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- - - Station Boundary
 - APE Boundary
 - - - Railroad Right of Way
 - Potential Parking

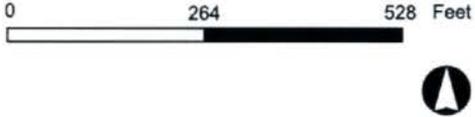


Figure 3-5.8: APE Map for Azusa - Alameda Avenue Station



**Gold Line Phase II Extension
Area of Potential Effects Map**

LEGEND

- - - Station Boundary
- APE Boundary
- - - Railroad Right of Way

0 264 528 Feet



Figure 3-5.9: APE Map for Azusa - Citrus Avenue Station



**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- Station Boundary
 - APE Boundary
 - Railroad Right of Way
 - Potential Parking

0 264 528 Feet



Figure 3-5.10: APE Map for Glendora Station

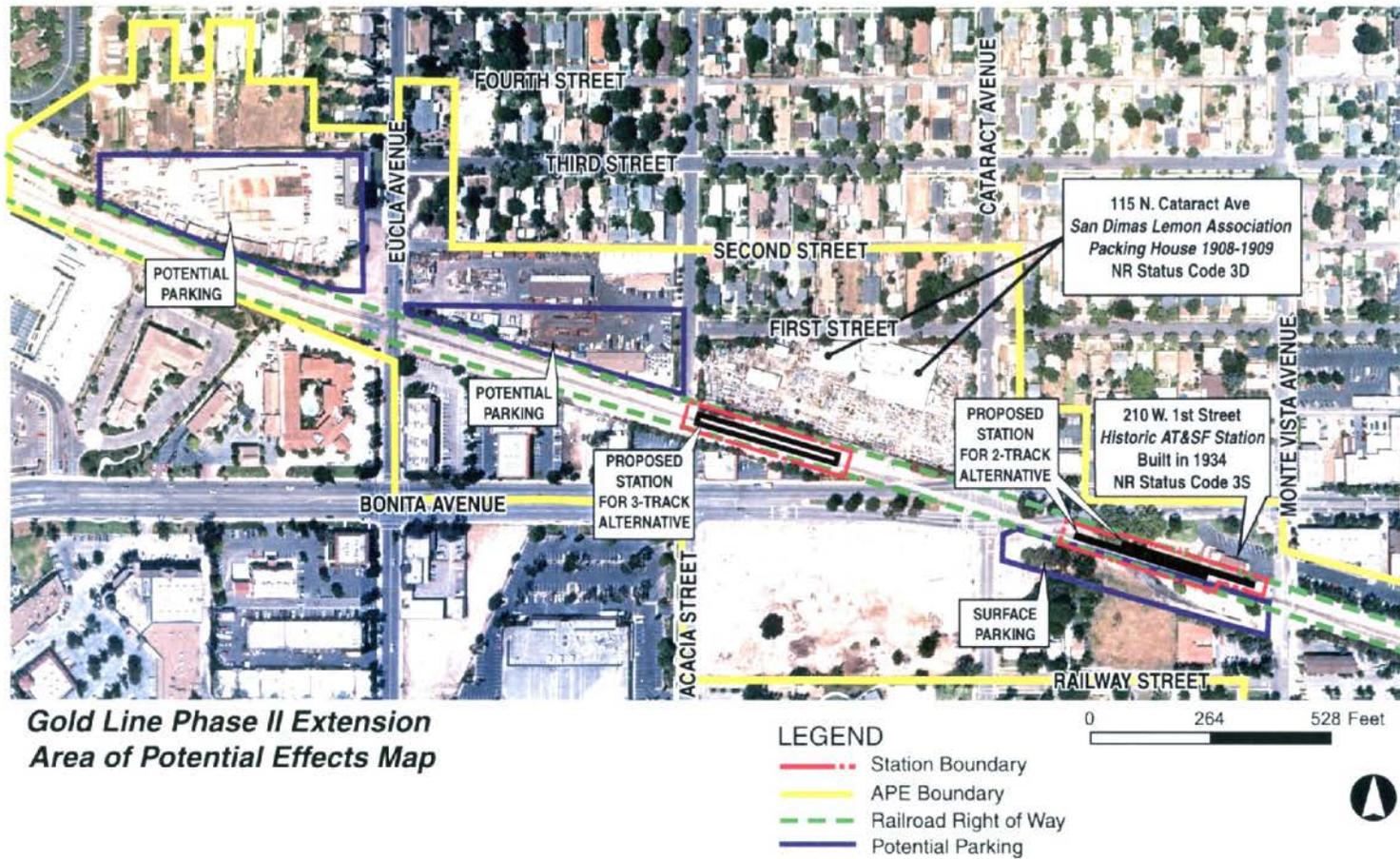


Figure 3-5.11: APE Map for the San Dimas Station Options



**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
- APE Boundary
 - - - Railroad Right of Way
 - Potential Parking

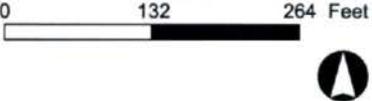


Figure 3-5.12: APE Map for San Dimas Station Parking



**Gold Line Phase II Extension
Area of Potential Effects Map**

LEGEND
 - - - Proposed Station Boundary
 — APE Boundary
 - - - Railroad Right of Way

0 132 264 Feet



Figure 3-5.13: APE Map for the La Verne Station Options



**Gold Line Phase II Extension
Area of Potential Effects Map**

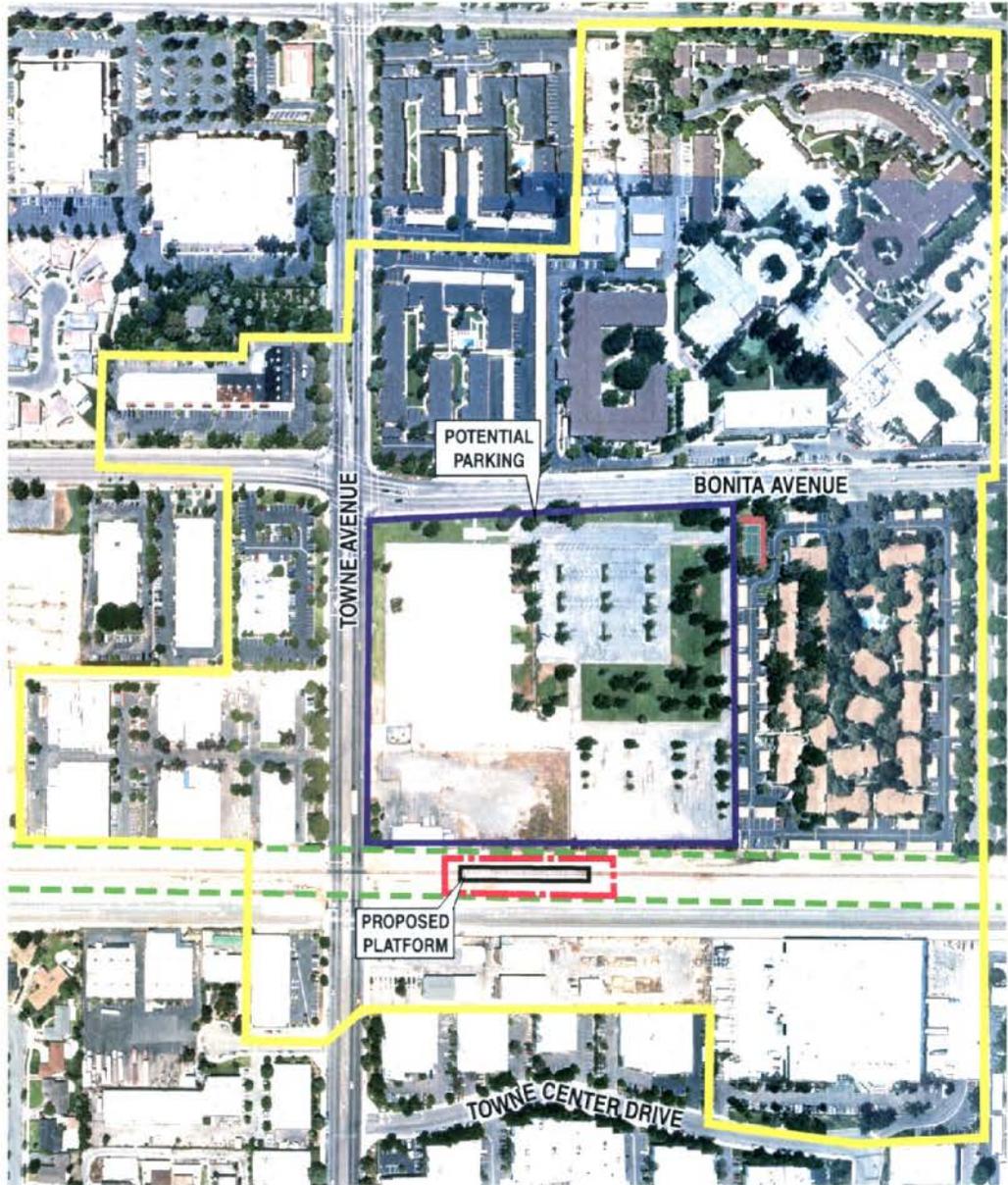
LEGEND

- Proposed Station Boundary
- APE Boundary
- Railroad Right of Way
- Potential Parking

0 264 528 Feet



Figure 3-5.14: APE Map for the Pomona - Garey Avenue Station Option



**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
-  Proposed Station Boundary
 -  APE Boundary
 -  Railroad Right of Way
 -  Potential Parking

0 264 528 Feet



Figure 3-5.15: APE Map for the Pomona - Towne Avenue Station Option



**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
-  Station Boundary
 -  APE Boundary
 -  Railroad Right of Way
 -  Potential Parking

0 264 528 Feet



Figure 3-5.16: APE Map for Claremont Station



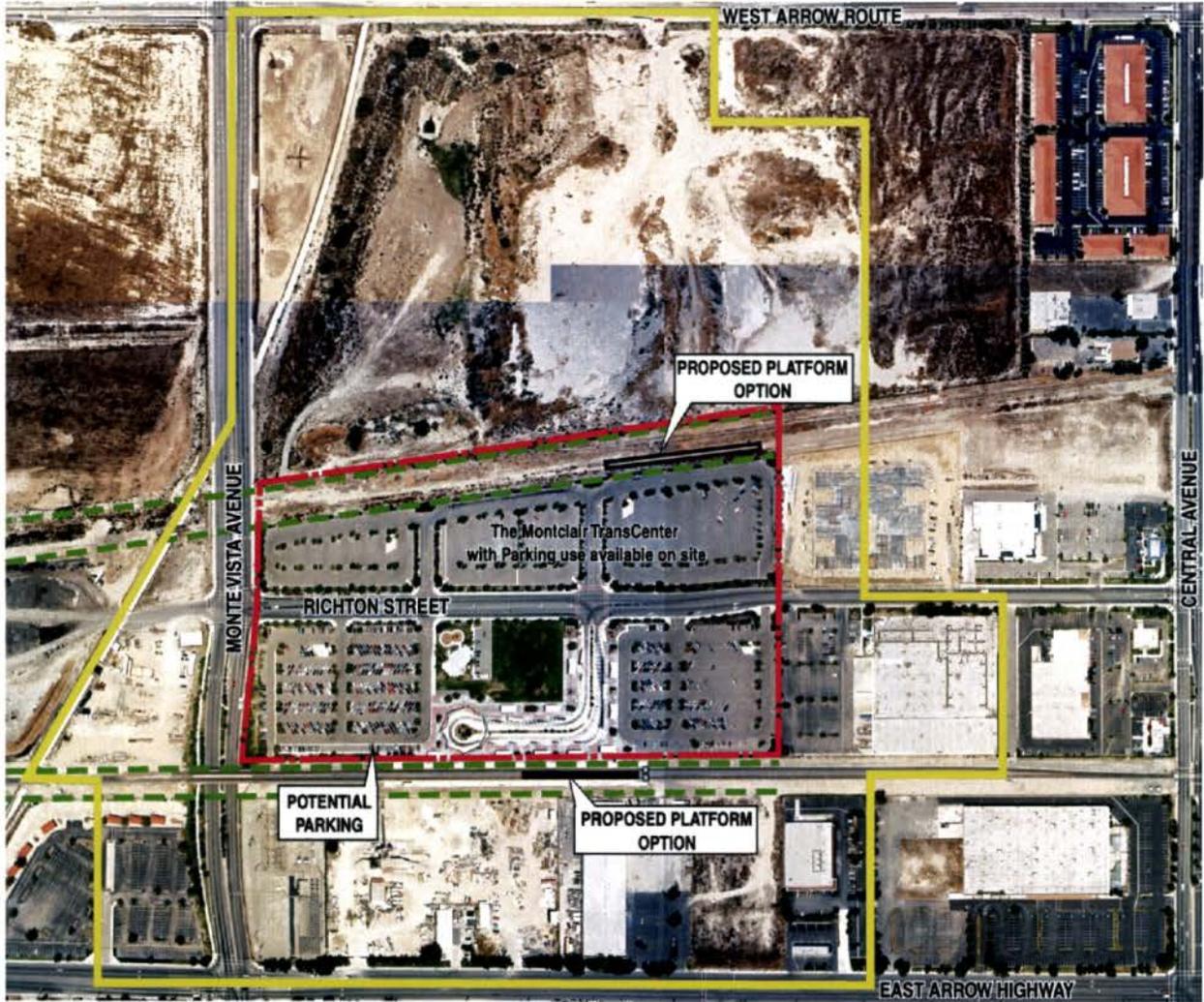
**Gold Line Phase II Extension
Area of Potential Effects Map**

- LEGEND**
-  APE Boundary
 -  Railroad Right of Way
 -  Potential Parking

0 132 264 Feet



Figure 3-5.17: APE Map for Claremont Station Parking



**Gold Line Phase II Extension
Area of Potential Effects Map**

LEGEND

-  Station Boundary
-  APE Boundary
-  Railroad Right of Way

0 264 528 Feet



Figure 3-5.18: APE Map for the Montclair Station Options

c. Identify Consulting and Interested Parties

The Section 106 regulations require that a federal agency evaluate all properties within the APE and identify historic properties by gathering information from consulting parties, applying the National Register Criteria, and seeking concurrence from the SHPO or Indian tribe, as appropriate. During the preparation of this EIS, FTA identified the following consulting parties for historic properties within the APE:

- California SHPO - Dr. Knox Mellon
- Gabrielino Cahuilla Luiseno - Samuel H. Dunlap
- Beverly Salazar Folkes
- Ti'At Society - Cindi Alvitre
- Island Gabrielino Group – John Jeffredo
- John Valenzuela
- Gabrieleno/Tongva Indians of California – Robert F. Dorame, Chairperson
- Gabrieleno/Tongva Tribal Council – Anthony Morales, Chairperson
- Gabrielino/Tongva - Craig Torres
- Coastal Gabrieleno Diegueno - Jim Velasques
- Alfred L. Valenzuela.

FTA sent a letter to the California SHPO on September 16, 2003, initiating Section 106 consultation. Notice of Preparation (NOP) letters were sent to the listed Native American groups and individuals on July 30, 2003.

In addition, five Scoping meetings (four for the general public and one for agencies) were held in an open house format with information stations and illustrated display boards. The meetings were staffed by members representing the Authority and the project consultant team, all of whom were well versed about the proposed project and potential environmental impacts. In addition to answering questions at the meeting, staff invited attendees to submit their comments in writing. Comment forms were provided at each Scoping meeting. Chinese and Spanish interpreters were present at the meeting for non-English speaking members of the public. Public Scoping Meetings were held in the cities of San Dimas, Claremont, South Pasadena, and Arcadia during the weeks of July 14 and 21, 2003. A meeting for public agencies was held on July 22, 2003 at the Authority Offices in South Pasadena. Letters were sent to other potentially interested parties on November 7, 2003, including the following:

- AIA Los Angeles
- Arcadia Historical Society
- Azusa Historical Society
- California Historical Society
- California Preservation Foundation
- California State Railroad Museum
- Chinese Historical Society

- Claremont Heritage, Inc.
- City of Arcadia Development Services Department
- City of Azusa Community Development Department
- City of Claremont Planning Department
- City of Duarte Community Development Department
- City of Glendora Planning Department
- City of Irwindale Planning Department
- City of La Verne
- City of Los Angeles Community Redevelopment Agency
- City of Los Angeles Cultural Heritage Commission
- City of Los Angeles Planning Department
- City of Monrovia Community Development Department
- City of Montclair Community Development Department
- City of Pomona Planning Department
- City of San Dimas
- Cooper Museum/Chaffey Communities Cultural Center
- Duarte Historical Society, Museum & Friends of the Duarte Library
- Glendora Community Conservancy
- Glendora Historical Society
- Historical Society of Pomona Valley
- Historical Society of Southern California
- La Verne Heritage Foundation
- Lomita Railroad Museum
- Los Angeles City Historical Society
- Los Angeles Conservancy
- Los Angeles County Historic Landmarks and Records Commission
- Los Angeles Forum for Architecture and Urban Design
- Los Angeles Railroad Heritage Foundation
- Monrovia Historical Society
- Monrovia Old House Preservation Group
- Pacific Railroad Society
- Pasadena Heritage
- Pomona Heritage

- Rivers and Mountains Conservancy
- San Bernardino Railroad Historical Society
- San Dimas Historical Society
- San Dimas Pacific Railroad Museum
- Sierra Club, Los Angeles Chapter
- Sierra Madre Historical Society
- Society of Architectural Historians, Southern California Chapter
- Southern Pacific Historical & Technical Society
- Train Riders Association of Southern California
- Train Web, Inc.
- The Transit Coalition
- The Transportation and Land Use Collaborative of Southern California
- Travel Town Transportation Museum
- Wheel Clicks.

d. National Register Criteria for Evaluation

In order for a property to be considered for inclusion in the National Register it must meet the criteria for evaluation set forth in 36 CFR Part 60.4, as follows:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of design, setting, materials, workmanship, feeling, and association and

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history.

Among other criteria considerations, a property that has achieved significance within the last 50 years is not considered eligible for inclusion in the National Register unless certain exceptional conditions are met. The 50-year age criterion for the proposed project has been set at 1954.

e. California Register Criteria for Evaluation

All properties listed in or determined eligible for the National Register are automatically listed in the California Register, and are therefore historical resources for the purposes of CEQA. In addition, Section 15064.5 of the CEQA Guidelines states that the term “historical resources” shall include the following:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4850 et seq.).
2. A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852), including the following:
 - (a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
 - (b) Is associated with the lives of persons important in our past;
 - (c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
 - (d) Has yielded, or may be likely to yield, information important in prehistory or history.
4. The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.

As with the National Register, a property that has achieved significance within the last 50 years is not considered eligible for the California Register unless it is of exceptional importance.

f. Identifying Historic Properties

For the proposed project, surveys have been undertaken and documentation prepared in accordance with the Secretary of Interior's Standards and Guidelines for Identification of Historic Properties (48 FR 44716), using personnel who meet the Secretary of Interior's Professional Standards (48 FR 22716) in the fields of ethnography, pre-historic archaeology, historic archaeology, architectural history, and history. For the purposes of this document, the broad pool of cultural resources within the APE that require evaluation for National Register eligibility may be categorized into two major types, as follows:

1. Archaeological Resources, which include resources that represent important evidence of past human behavior, including portable artifacts such as arrowheads or tin cans; non-portable "features" such as cooking hearths, foundations, and privies; or residues such as food remains and charcoal. Archaeological remains can be virtually any age, from yesterday's trash to prehistoric deposits thousands of years old.

2. Historic and Architectural Resources, which include man-made features that comprise the recognizable built environment. This category typically includes extant, above-ground buildings and structures that date from the earliest territorial settlements until the present day.

3-5.1.3 Archaeological Resources

a. Identification Methodology

Archival Research

A records and literature search was undertaken for both Los Angeles County and San Bernardino County. On October 7, 2003, archival research was done by the Archaeological Information Center for Montclair in San Bernardino. On October 15, 2003, archival research was done by the South Central Coastal Information Center for cities within Los Angeles County to determine the proximity of previously documented prehistoric and historical archaeological resources to the APE and to help establish a context for resource significance. The records of the Archaeological Information Center, South Central Coastal Information Center, California Historical Resources Inventory System, were consulted and appropriate site records obtained. Numerous previous studies of archaeological resources in and adjacent to the APE were also reviewed. These resources were examined by Mark Robinson of Applied Earthworks in order to identify previously recorded prehistoric or historical archaeological sites, and to assess the general potential of the area to contain archaeological deposits. The following inventories and sources were consulted:

- The National Register of Historic Places, National Register Information System
- California Register of Historical Resources
- California Office of Historic Preservation Historical Resources Inventory System
- California Historical Landmarks
- California Points of Historical Interest
- South Central Coastal Information Center.

Research was also conducted using topographic maps, geologic information. In addition, available local, regional, and railroad histories were consulted.

b. Prehistoric and Historical Archaeological Resources Identified

The records search, field reconnaissance, and subsequent research identified one prehistoric archaeological site within the Project APE. Site CA-LAN-75, the Mud Springs site, extends for about 500 meters (1640 feet) on both sides of the ATSF right-of-way at the intersection of San Dimas Canyon Road and the Arrow Highway, in San Dimas. Recorded in 1951, with site record updates in 1965, 1980, and 1986, the Mud Springs site is reported to be a large, open air occupation site. Artifacts reported within the site included scrapers, hammer stones, cores, knives, drills, graters, and waste flakes, as well as milling slabs, metates, pestles, cogstones and stone discs. Possible fire hearth features were also reported. The site also appears to have a historical and possibly proto-historic component, with glass, historical ceramics, coins, metal objects and marbles also reported. Site records for CA-LAN-75 indicate that large portions of the site have been destroyed by development. However, the extent and nature of this reported damage is not clear.

The extent of the site and the range of the assemblage, as well as its location near a large spring, which is known to have been utilized both prehistorically and in the early Euro-American Period, indicate that the Mud Springs site is an important and significant cultural resource. The presence of cogstones and discoidals suggests that the site could date to the Early Archaic Period (8,000-4,000 Years Before Present), while obsidian hydration rinds measured in 1986 suggest the site also has a much more recent component. Although poorly understood at this time, the Mud Springs site has a high potential to contain deeply buried stratified deposits, and perhaps even human remains.

3-5.1.4 Historic and Architectural Resources

a. Identification Methodology

Records Search

A background research survey was undertaken to identify previously documented historic and architectural resources within and near the APE and to help establish a context for resource significance. National, state and local inventories of architectural/historic resources were examined in order to identify significant local historical events and personages, development patterns, and unique interpretations of architectural styles. The following inventories and sources were consulted:

- The National Register of Historic Places, National Register Information System
- California Register of Historical Resources
- California Office of Historic Preservation Historical Resources Inventory System
- California Historical Landmarks
- California Points of Historical Interest
- City of San Dimas Community History *web site: www.colapublib.org/history/sandimas*
- City of Claremont Historic-Cultural Monuments.

Field Survey

A field survey of all properties within the APE was undertaken according to standard Section 106 regulations and related procedures. Jessica Feldman, Carrie Chasteen, Alma Carlisle, and David Greenwood, who are qualified architectural historians, conducted field investigations on multiple occasions in 2003. During the field investigations, the boundaries of the APE were confirmed, and an assessment was made of all extant buildings and structures within the APE to determine if their age and integrity warranted application of National Register criteria.

The field survey of historic and architectural resources included the following steps:

- A field survey consisting of a visual onsite examination of every parcel within the APE, including an assessment of integrity.
- Identification of the age of all major buildings, structures, objects, and potentially coherent districts located within the APE.
- Photography of each potential district feature, major structure, building, or object within the APE.

- Review in the field of previous survey data, comments from interested parties, and lists of significant historic properties.
- Following the field survey, site-specific research was conducted from the following sources:
- Los Angeles County Assessor's Archives and
- City Directories of Los Angeles County, California.

In addition, information was requested from John Signor, Railroad Historian.

b. Significant Historic and Architectural Resources Identified

The results of the records search, background research and field survey by qualified architectural historians was recorded on California Historic Resource Inventory forms (Series DPR 523), and submitted to the California SHPO in February 2004 and is reproduced as a technical document to this EIS entitled: Historic Property Survey and Effects Report. The records search; field surveys, and subsequent research identified the following, which are described in further detail in subsequent subsections:

- Two individual properties within the boundary of the project were previously listed in the National Register of Historic Places with a National Register status code of 1S. (Stuart Company Plant and Office Building, in Pasadena, and Atchison Topeka & Santa Fe Railroad Station, in Claremont).
- Seven properties previously determined eligible for the National Register from a previous survey.
- Four properties determined eligible for the National Register as a result of the Metro Gold Line Phase II Pasadena to Montclair Section 106 identification effort.
- Two properties determined eligible for the California Register as a result of the Metro Gold Line Phase II Pasadena to Montclair Section 106 identification effort.
- One hundred-eleven properties with buildings or structures constructed in or before 1954 that do not meet National Register criteria because either they do not retain integrity from their period of significance, or are not associated with an important historic context.
- The remaining properties in the APE are improved with buildings constructed in or after 1955. Such properties are not eligible for the National Register because they possess no known association with an important historic context that would override the National Register's 50-year age criterion consideration.

Properties listed in the National Register or determined eligible for listing in the National Register are automatically listed in the California Register. For the proposed project, only two properties were identified that meet California Register criteria but do not meet National Register criteria. The final determination of historic properties listed below is subject to change as a result of Section 106 consultation with the SHPO regarding National Register eligibility, which is pending submission of the Historic Property Survey and Effects Report.

Table 3-5.1 identifies all properties which are listed in or determined eligible for listing in the National Register and, therefore, are automatically listed in the California Register.

**TABLE 3-5.1
PROPERTIES THAT ARE LISTED IN, DETERMINED ELIGIBLE FOR LISTING IN, OR APPEAR TO MEET THE
CRITERIA FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES AND THE
CALIFORNIA REGISTER OF HISTORICAL RESOURCES**

| Address APE Map and Assessor's Parcel Number | Resource Name and Significance | Description | Year Built – Alterations |
|---|--|--|--|
| PASADENA | | | |
| 3360 E. Foothill Blvd. Pasadena, Ca. Parcel No. 5752-024-028 | Historic Name: Stuart Company Plant and Office Building. Common Name: Johnson & Johnson/Merck Consumer Pharmaceutical Building. Listed on the National Register: National Register status code 1S. (Listed in the National Register of Historic Places) | Modern Movement | Year Built: 1958 Alterations: Components of the plant have been demolished |
| ARCADIA | | | |
| Bridge No. 53C-0596 Figure 3-5.1 | Historic Name: Unknown Common Name: Colorado Boulevard Overcrossing Pending SHPO concurrence, this property is eligible for the National Register under Criterion C. | Riveted Plate Girder Bridge with Art Deco style abutments located over Colorado Blvd. approximately 0.1 miles west of Santa Anita Ave. | Year Built: 1951* Alterations: Components of the plant have been demolished *This date may be in error. Estimated year built is circa 1930s. |
| Bridge No. 53C-1733 Figure 3-5.3 | Historic Name: Unknown Common Name: 5th Street Pedestrian Undercrossing Pending SHPO concurrence, this property is eligible for the National Register under Criteria A and C at the local level of significance. | Reinforced Concrete Box Pedestrian Underpass located at 5th St., approximately 0.2 mile east of State Route 11. | Year Built: 1942 Alterations: |

TABLE 3-5.1 *continued (page 2 of 6)*

PROPERTIES THAT ARE LISTED IN, DETERMINED ELIGIBLE FOR LISTING IN, OR APPEAR TO MEET THE CRITERIA FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES AND THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES

| Address APE Map and Assessor's Parcel Number | Resource Name and Significance | Description | Year Built – Alterations |
|---|--|---|--|
| MONROVIA STATION | | | |
| 1709 Myrtle Avenue, Monrovia, Ca; Figure 3-5.4, Parcel No. 8507-003-910 | Historic Name: Monrovia Santa Fe Depot . Previously evaluated to appear eligible for the National Register: National Register status code 3S. Pending SHPO concurrence, this property is eligible for the National Register under Criteria A and C at the state level of significance. | Spanish Colonial Revival, 1 & 2-Story Railroad Depot | Year Built: 1925 Alterations: Windows, iron grills, and balconettes have been removed |
| DUARTE STATION | | | |
| 1500 (north) Duarte Road, Duarte, Ca; Figure 3-5.5, Parcel No. 8533-005-010b | Common Name: Temple Beth Hatikvah Pending SHPO concurrence, this property is eligible for the National Register under Criterion C at the local level of significance | Spanish Colonial Revival, 1-Story Round Temple | Year Built: 1930s -- Alterations: No major alterations |
| 1500 (south) Duarte Road, Duarte, Ca; Figure 3-5.5, Parcel No. 8533-005-010 | Common Name: Visitor's Center Pending SHPO concurrence, this property is eligible for the National Register under Criterion C at the local level of significance | Spanish Colonial Revival, 1-Story community center | Year Built: 1930's -- Alterations: Casement windows may have been replaced |

TABLE 3-5.1 continued (page 3 of 6)

PROPERTIES THAT ARE LISTED IN, DETERMINED ELIGIBLE FOR LISTING IN, OR APPEAR TO MEET THE CRITERIA FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES AND THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES

| Address APE Map and Assessor's Parcel Number | Resource Name and Significance | Description | Year Built – Alterations |
|---|--|--|--|
| AZUSA STATION | | | |
| 129 E. Santa Fe Avenue. Azusa, Ca; Figure 3-5.8, Parcel No. 8608-025-801 | Historic Name: Azusa Santa Fe Railroad Depot. <i>Previously determined eligible for the National Register: National Register status code 2S2</i> | Moderne 1-Story Railroad Depot | Year Built: 1887 - 1940 – Alterations: No major alterations to 1940 structure |
| SAN DIMAS STATION | | | |
| 210 W. 1 st Street. San Dimas, Ca; Figure 3-5.11, Parcel No. 8390-022-900 | Historic Name: Atchison Topeka & Santa Fe Railroad Depot. Common Name: San Dimas Train Station. Previously evaluated to appear eligible for the National Register: National Register status code 3S. Pending SHPO concurrence, this property is eligible for the National Register under Criteria A and C at the state level of significance. | Spanish Colonial Revival, 1-Story Railroad Depot. | Year Built: 1934 -- Alterations: appears to be unaltered |

TABLE 3-5.1 *continued (page 4 of 6)*
**PROPERTIES THAT ARE LISTED IN, DETERMINED ELIGIBLE FOR LISTING IN, OR APPEAR TO MEET THE
 CRITERIA FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES AND THE
 CALIFORNIA REGISTER OF HISTORICAL RESOURCES**

| Address APE Map and Assessor's Parcel Number | Resource Name and Significance | Description | Year Built – Alterations |
|--|---|--|---|
| 115 N. Cataract Avenue. San Dimas, Ca; Figure 3-5.11, Parcel No. 8386-016-002 | Historic Name: San Dimas Lemon Association Packing House. Previously evaluated to appear eligible as contributor to a fully documented district: National Register status code 3D. Pending SHPO concurrence, this property is eligible for the National Register under Criteria A and C at the local level of significance. | Industrial Warehouse, 1-Story | Year Built: 1908-1909 -- Alterations: Loading dock enclosure. |
| LA VERNE STATION | | | |
| Heritage Buildings within the Lordsburg Historic District | | | |
| 2234 1 st Street. La Verne, Ca; Figure 3-5.13, Parcel No. 8377-026-003 | Common Name: University of La Verne Central Service Office. Pending SHPO concurrence, this property is eligible for only the California Register under Criteria 1 and 3 at the local level of significance | Industrial Large 1-Story Industrial | Year Built: 1920 -- Alterations: Office addition located to west side of the building, metal awning |

TABLE 3-5.1 *continued (page 5 of 6)*
**PROPERTIES THAT ARE LISTED IN, DETERMINED ELIGIBLE FOR LISTING IN, OR APPEAR TO MEET THE
 CRITERIA FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES AND THE
 CALIFORNIA REGISTER OF HISTORICAL RESOURCES**

| Address APE Map and Assessor's Parcel Number | Resource Name and Significance | Description | Year Built – Alterations |
|---|---|--|--|
| 2016 D Street. La Verne, Ca; Figure 3-5.13, Parcel No. 8377-025-002 | Historic Name: La Verne Lemon Association Building. Common Name: University of La Verne Packing House . Pending SHPO concurrence, this property is eligible for only the California Register under Criteria 1 and 3 at the local level of significance | Industrial, 1-Story Industrial | Year Built: 1931 -- Alterations: porch enclosed, windows changed |
| POMONA STATION | | | |
| 101 W. First Street. Pomona, Ca; Figure 3-5.14, Parcel No. 8371-012-809 | Historic Name: Southern Pacific Station . Previously evaluated to may become eligible for the National Register: National Register status code 4S. Pending SHPO concurrence, this property is eligible for the National Register under Criteria A and C at the state level of significance. | Spanish Mission Style, 1 Story Railroad Depot | YearBuilt: 1940---Alterations: addition located to east side of railroad depot |
| CLAREMONT STATION | | | |
| 105 N. College Avenue. Claremont, Ca; Figure 3-5.17, Parcel No. 8313-018-017 | Historic Name: Sumner House . Previously evaluated to appear eligible for the National Register: National Register status code 3S. Pending SHPO concurrence, this property is eligible for the National Register under Criteria B and C at the local level of significance. | Queen Anne/Eastlake, 2-Story Residential | Year Built: 1887 -- Alterations: No major alterations |

TABLE 3-5.1 *continued (page 6 of 6)*
**PROPERTIES THAT ARE LISTED IN, DETERMINED ELIGIBLE FOR LISTING IN, OR APPEAR TO MEET THE
 CRITERIA FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES AND THE
 CALIFORNIA REGISTER OF HISTORICAL RESOURCES**

| Address APE Map and Assessor's Parcel Number | Resource Name and Significance | Description | Year Built – Alterations |
|---|--|--|---|
| 510-532 W. 1 st Street, Claremont, Ca; Figure 3-5.16, Parcel No. 8313-009-904 | Historic Name: The Packing House (Corona College Heights Lemon Packing House) <i>Previously determined eligible for the National Register:</i> National Register status code 2S | Industrial, 2-Story Commercial | Year Built: 1916-1934 -- Alterations: No major alterations |
| 110 W. 1 st Street, Claremont, Ca; Figure 3-5.16, Parcel No. 8313-021-908 | Historic Name: Atchison Topeka & Santa Fe Railroad Station. Common Name: Claremont Depot. <i>Listed on the National Register:</i> National Register status code 1S. (Listed in the National Register of Historic Places) | Mission Revival, 1&2 Story Railroad Depot | Year Built: 1927 -- Alterations: No major alterations. |



3-5.1.5 Paleontological Resources

In order to identify the potential for encountering paleontological resources for CEQA compliance, the Division of Geological Sciences of the San Bernardino County Museum (SBCM) completed a literature review and record search for the PGL project. Previous geological mapping of the Gold Line Extension between Sierra Madre Villa in Pasadena and Central Avenue in Montclair indicates that geology along the alignment consists primarily of Quaternary alluvial sediments, either as fan deposits or alluvium from drainages derived from the San Gabriel Mountains to the north. Marine deposits of the Miocene Topanga Formation occur around the South Hills and the Project area abuts an outcrop of Glendora Volcanics near these hills. Younger deposits extend from San Dimas Wash eastward to the 210 Freeway, then older deposits extend to San Dimas Canyon Road, and younger again extending to west of North Garey Avenue in Pomona. The uppermost younger layers of these alluvial and fan sediments are unlikely to contain vertebrate fossils. Older sediments, which may underlie the younger deposits, are known as the San Dimas Formation and have been known to yield Late Pleistocene vertebrate fossil material in other locations such as the Rancho La Brea asphalt deposits in Los Angeles. Excavations in these areas may expose fossil material. Excavations near the Topanga Formation, known to yield a variety of fossils such as shark, bony fishes, sea turtle, marine birds and marine mammals may encounter similar remains. There is a high potential that monitoring will discover fossils in locations where deeper excavation will take place and expose the older Quaternary sediments between Pasadena and Duarte and between Glendora and La Verne where these sediments occur, and near South Hills where marine Middle Miocene Topanga Formation occurs. No fossil remains will be encountered in the volcanic outcrop.

3-5.2 Environmental Impacts

3-5.2.1 Evaluation Methodology

The cultural resources analysis is focused on a comparison of potential impacts to cultural resources along segments of corridors, with special attention to station areas where no facilities (LRT stations and parking) would be added to the settings.

3-5.2.2 Impact Criteria

Potential impacts were determined by comparing the effects of the proposed Gold Line Phase II Project to historic properties against NEPA/Section 106 and CEQA criteria. These criteria are defined in the following subsections.

a. NEPA Impact Criteria

In order to comply with Section 106 of the National Historic Preservation Act, any effects of the proposed undertaking on properties listed in or determined eligible for inclusion in the National Register must be analyzed by applying the Criteria of Adverse Effect [36 CFR Part 800.5(a)], as follows:

(1) Criteria of adverse effect. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's

eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) *Examples of adverse effects.* Adverse effects on historic properties include, but are not limited to:

- (i) *Physical destruction of or damage to all or part of the property;*
- (ii) *Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;*
- (iii) *Removal of the property from its historic location;*
- (iv) *Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;*
- (v) *Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;*
- (vi) *Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and*
- (vii) *Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.*

The above criteria apply to archaeological, historic and architectural resources.

b. CEQA Impact Criteria

According to relevant part of the *State CEQA Guidelines, California Code of Regulations Title 14, Chapter 3, Part 15064.5*:

(b) a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

(1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. [§15064.5 (b)(1)].

(2) The significance of an historical resource is materially impaired when a project:

(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the California Register of Historical Resources; or

(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

(C) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources determined by a lead agency for purposes of CEQA.

3-5.2.3 Construction-Period Impacts

a. No Build Alternative

The only element of the No Build Alternative that would affect historic properties in Phase I is construction of the Eastside LRT Extension, which includes changes to the National Register-listed Union Station. The impacts of the Eastside LRT Extension are addressed in the *Draft Supplemental Environmental Impact Statement /Draft Subsequent Environmental Impact Report* (FTA and LACMTA 2001). The other elements of the No Build Alternative provide for the increase of LRT and bus service and would adversely affect historic resources in Phase I. There are no elements of the No Build Alternative that would affect historic properties in any of the cities in Phase II, Segment 1 or Phase II, Segment 2.

b. Transportation System Management (TSM) Alternative

The TSM Alternative includes changes to existing bus routes to provide or improve connecting service to the Gold Line Phase I station at Sierra Madre Villa, and increasing peak period and off-peak period services frequencies to downtown Pasadena (the study corridor's largest employment center) and among the cities and major activity centers within the study area. Areas to the west of Duarte would have service increases from 11 buses per hour in each direction to 20 buses per hour. Areas to the east of Duarte would increase from 8 buses per hour in each direction to 15 buses per hour. Implementation of these proposed bus route changes is not expected to include major construction or acquisition of property. The planned service improvements would be likely to include upgraded or additional bus stops. There are no construction elements of the TSM alternative that would produce an effect on historic resources in any of the cities in Phase I, Phase II Segment 1 or Phase II Segment 2.

c. LRT, Triple Track Configuration

Phase I – The Cities Affected and the Effects

The cities in Phase I are Los Angeles, South Pasadena and Pasadena. There are no physical elements of the LRT Triple Track configuration which affect these cities. Since no new construction would take place in the Phase I segment of the Gold Line, no cultural or paleontological resources would be affected in association with the LRT, Triple Track Alternative.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. Potential construction period impacts could occur to archeological and paleontological resource along the ROW and at stations.

Archeological and Paleontological Resources-General

The area of the proposed LRT tracks in Pasadena was already disturbed by construction of I-210. In other cities, construction of the railroad in the ROW and other rail facilities resulted in ground-disturbing activities. Typically, previous ground disturbances reduce the potential for encountering important archeological resources. However, subsurface structural remains or prehistoric sites are potentially present within the Project APE (all cities). Grading for construction may expose buried, unrecorded cultural resources. The physical removal and destruction of significant structural remains, artifacts and features at this location, if found in settings retaining integrity, would result in an adverse effect finding under Section 106 and a significant effect under CEQA.

Although no paleontological resources have been recorded in the segment, paleontological resources may also be encountered during deep excavations.

Historic Bridges

Sixteen trackway bridges and guideway structures were identified within the proposed rail corridor. The Metrolink Bridge Inspection Report (SCRRA Bridge Book) was used to determine the ages, conditions, and overall design of the existing bridges and guideway structures.

The bridges along the former AT&SF railroad alignment between the cities of Pasadena and Montclair were built as early as 1903 and as late as 1990. They were constructed to span washes, concrete-lined channels and topographic gaps in the landscape, as well as roads and freeways. In most cases, the original material of the bridges was altered during routine maintenance, which generally required the periodic replacement of timber piles, the expansion of bents, and the replacement of ties and rails.

Nine bridges, including one pedestrian tunnel, were constructed previous to 1959. Of these nine pre-1959 bridges, two appear to have historical or architectural significance. The Colorado Boulevard overcrossing in Arcadia, constructed in 1951 according to the SCRRA bridge inventory, retains its original board-poured concrete abutments with Art Deco detail. This would indicate that the overcrossing was constructed in the 1930s and that the build date in the SCRRA inventory is incorrect. The 5th Street Pedestrian Undercrossing in Arcadia, constructed in 1942, may be significant on a local level, as well as architecturally significant. In order to comply with Section 106 of the National Historic Preservation Act, these two structures have been evaluated to determine if they are eligible for the California Register of Historical Resources and the National Register of Historic Places.

The remaining seven bridges appear to have been built to the specifications of standard plans published by the railroad. There are many examples still extant, these seven do not appear to have exceptional architectural character and they are not examples of important engineering achievements. Therefore, they are not likely to be eligible for the National Register of Historic Places under Criterion C, nor the California Register of Historical Resources under Criterion 3. Furthermore, these bridges have no known associations with important people or events; therefore, they are not likely to be eligible for the National Register of Historic Places under Criteria A or B or the California Register under Criteria 1 or 2.

The remaining five bridges were constructed in 1959 or later and do not appear to have achieved significance within the last fifty years, and are therefore unlikely to meet the requirements for Criterion G of the National Register of Historical Places. No information regarding the construction of two bridges, Rosemead Boulevard and Alta Vista Wash, was obtained.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. The potential construction period impacts are the same as described for Phase II Segment 1 cities.

At the Pomona-Garey Station, the 1928 USGS 7.5' Claremont Quadrangle indicates potential for three historic structures with archaeological remains within the Project APE. In addition, the Pacific Electric rail line ran on the south side of the Project APE at this location. Subsurface structural remains or features may potentially be present at these locations.

3-5.2.4 Long-Term Impacts

a. No Build Alternative

□ The Cities Affected and the Effects

The only element of the No Build Alternative that would effect historic properties in Phase I is construction of the Eastside LRT Extension, which includes changes to the National Register Listed Union Station. The impacts of the Eastside LRT Extension are addressed in the *Draft Supplemental Environmental Impact Statement /Draft Subsequent Environmental Impact Report* (FTA and LACMTA 2001). The other elements of the No Build Alternative provide for the increase of LRT and bus service and would adversely affect historic resources in Phase I. There are no elements of the No Build Alternative that would affect historic properties in any of the cities in Phase II, Segment 1 or Phase II, Segment 2.

b. Transportation System Management (TSM) Alternative

There are no elements of the TSM Alternative that would introduce long-term changes to historic resources.

c. LRT, Triple Track Configuration

Phase I – The Cities Affected and the Effects

There are no elements of the Triple Track configuration in the cities of Los Angeles, South Pasadena, or to the east of the Sierra Madre Villa Station in Pasadena .

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. No long term impacts would result, as described below.

Pasadena:

Stuart Company Plant and Office Building

The Stuart Company Plant and Office Building (Johnson & Johnson/Merck Consumer Pharmaceutical Building), 3360 E. Foothill Blvd., Pasadena) is a Modern Movement structure built in 1958. It was listed on the National Register of Historic Places in 1998.

The proposed LRT tracks would be located approximately 200 feet to the south within the existing median of I-210. Therefore there would be no change to this historic property or its setting. Under Section 106, application of the Criteria for Adverse Effect to the proposed project's effects on the Stuart Company Plant and Office Building would result in a finding of "no effect" on this historic property. Under CEQA, there would be "no effect" on this historical resource.

Arcadia:

No historic properties were identified in the APE for the Arcadia Station (APE Figure 3-5.1) and thus there would be no effect under NEPA or CEQA. Subsurface structural remains or prehistoric sites are potentially present within the Project APE. Grading for parking lots or construction in this location may expose buried, unrecorded cultural resources. Two potentially historic structures identified on the 1900 USGS 15' Pomona Quadrangle map are within the Project APE for the proposed parking facilities, but neither is listed in or eligible for the National Register (pending SHPO concurrence). No other cultural resources are presently recorded within the Project APE at this station and proposed parking location.

Monrovia:

Monrovia Santa Fe Depot

The Monrovia Santa Fe Depot, (1709 Myrtle Avenue, Monrovia APE Figure 3-5.2) is a Spanish Colonial Revival structure built in 1925. It was identified in the 1985 City of Monrovia Historic Resources Survey and determined to be National Register status code "3S" or "Appears eligible for listing in the National Register as a separate property." Pending SHPO concurrence, this property is considered as determined eligible for the National Register (under Criterion C) and would be automatically listed in the California Register (under Criterion 3).

Under Section 106, only Criteria of Adverse Effect example *v-Introduction of visual, atmospheric, or audible elements* warrants discussion with regard to the application of the Criteria for Adverse Effect to the Monrovia Santa Fe Depot, as follows:

For the Triple Track configuration, the proposed LRT station platform would be located approximately 20 feet to the southwest of the historic station. Although a new structural element, it would be compatible with the historic use and railroad setting of the depot. A proposed four level parking structure would be approximately 60 feet to the southwest on the opposite side of the rail ROW and would not change the present use or otherwise alter the Monrovia Santa Fe Depot. The Monrovia Santa Fe Depot is currently being restored for incorporation into a transit center project by the City of Monrovia.

Atmospheric and audible elements would continue to be generated by train traffic and vehicular traffic near the Monrovia Santa Fe Depot, with no substantial change from current conditions. The proposed parking structure would result in the introduction of a new visual element in the setting, but this would not be adverse if it is properly designed and landscaped. The historic depot's southern trackside façade

features the most elaborate decorative elements on the building. The proposed parking structure would be located across the railroad tracks and would not obscure views of the station's primary elevations. To avoid potential adverse impacts, the proposed parking structure's design, scale, and landscape would be constructed as to not diminish the integrity of the Monrovia Santa Fe Depot's setting, feeling, and association.

Under Section 106, application of the Criteria for Adverse Effect to the proposed project's effects on the Monrovia Santa Fe Depot would result in a finding of "no adverse effect" on this historic property. Under CEQA, there would be "no significant effect" on this historical resource.

Duarte:

Temple Beth Hatikvah

Temple Beth Hatikvah or "House of Hope" (1500 (north) Duarte Road, Duarte) was built in the 1930's, and is located within the City of Hope Campus in Duarte, (APE Figure 3-5.3). The temple is a good example of restrained Greek Revival design as interpreted into a semi modern building. Pending SHPO concurrence, this property would be determined eligible for the National Register (under Criterion C) and would be automatically listed in the California Register (under Criterion 3). The proposed LRT station platform would be located approximately 725 feet to the northeast, and a proposed parking structure would be approximately 430 feet to the east. Because of these distances, the proposed structures would not change the present use or otherwise alter the significant historic features of the Temple Beth Hatikvah or its setting in any way.

Under Section 106, application of the Criteria for Adverse Effect to the proposed project's effects on Temple Beth Hatikvah would result in a finding of "no effect" on this historic property. Under CEQA, there would be "no effect" on this historical resource.

Visitor's Center

The Visitors Center (1500 (south) Duarte Road, Duarte) was built in the 1930's and is located within the City of Hope Campus in Duarte, (APE Figure 3-5.3). The center is a good example of restrained Spanish Colonial Revival design. Pending SHPO concurrence, this property would be determined eligible for the National Register (under Criterion C) and would be automatically listed in the California Register (under Criterion 3). The proposed LRT station platform would be located approximately 750 feet to the northeast, and a proposed parking structure would be approximately 440 feet to the east. Because of these distances, the proposed structures would not change the present use or otherwise alter the significant historic features of the Visitor's Center or its setting in any way.

Under Section 106, application of the Criteria for Adverse Effect to the Proposed project's effects on the Visitors Center would result in a finding of "no effect" on this historic property. Under CEQA, there would be "no significant effect" on this historical resource.

Irwindale:

No historic properties and no other cultural resources are recorded within the Project APE (Figure 3-5.4, Figure 3-5.5) for the proposed station or Maintenance and Operating Facility. There would be no effect on historic properties under NEPA or on historical resources under CEQA.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Phase II, Segment II are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. The potential for impacts to archeological and paleontological resource along the ROW and at stations is discussed for the overall corridor, followed by the impact assessment for historic and archeological resources in each city.

Archeological and Paleontological Resources-General

Construction of the railroad in the ROW and other rail facilities resulted in ground-disturbing activities. Typically, previous ground disturbances reduce the potential for encountering important archeological resources. However, subsurface structural remains or prehistoric sites are potentially present within the Project APE (all cities). Grading for construction may expose buried, unrecorded cultural resources. The physical removal and destruction of significant structural remains, artifacts and features at this location, if found in settings retaining integrity, would result in an adverse effect finding under Section 106 and a significant effect under CEQA.

Although no paleontological resources have been recorded in the segment, paleontological resources may also be encountered during deep excavations.

Azusa:

Atchison Topeka & Santa Fe Railroad Station (Azusa Santa Fe Railroad Depot)

The Azusa Santa Fe Railroad Depot, located in Azusa, (129 E. Santa Fe Avenue, Azusa APE Figure 3-5.6) was originally built in 1887, but was later reconstructed in 1946. The Azusa Santa Fe Railroad Depot was evaluated in 1998 and determined to be National Register status code “2S2” or “Determined eligible for separate listing in the National Register by a consensus determination.” Properties determined eligible for the National Register are automatically listed in the California Register. The proposed LRT station platform would be located approximately 70 feet to the north, and a proposed 2-level parking structure would be approximately 300 feet to the northeast. Both proposed structures would not change the present use or otherwise diminish the integrity of the significant historic features of the Azusa Santa Fe Railroad Depot or its setting in any way.

Under Section 106, application of the Criteria for Adverse Effect to the proposed project’s effects on the Azusa Santa Fe Railroad Depot would result in a finding of “no effect” on this historic property. Under CEQA, there would be “no significant effect” on this historical resource.

Glendora:

The 1900 USGS 15' series Pomona Quadrangle map indicates a grid of roads and four structures present within the Project APE at that date. No historic properties or other cultural resources are presently recorded within the Project APE (Figure 3-5.8). There would be no effect on historic properties under NEPA or on historical resources under CEQA.

San Dimas:

Atchison, Topeka & Santa Fe Depot (San Dimas Train Station Depot)

The Atchison Topeka & Santa Fe Depot, (210 W. 1st Street, San Dimas, APE Figure 3-5.9) is a Spanish Colonial Revival structure built in 1934. Pending SHPO concurrence, the San Dimas Train Depot property would be considered as determined eligible for the National Register (under Criterion C) and would be automatically listed in the California Register (under Criterion 3). For the proposed Triple Track configuration, the LRT platform would be approximately 900 feet to the northwest (across Bonita Avenue) in the ROW and possible surface parking would be located approximately 50 feet to the southwest across the ROW. Parking would also be located at the existing Park and Ride lot, which is approximately 270 feet to the southeast. The proposed elements would not change the present use or diminish the integrity of the significant historic features of the San Dimas Train Station Depot or its setting in any way.

Under Section 106, application of the Criteria for Adverse Effect to the Proposed project's effects on the San Dimas Train Depot would result in a finding of "no adverse effect" on this historic property. Under CEQA, there would be "no significant effect" on this historical resource.

San Dimas Lemon Association Packing House (Machinery and Equipment Company, Inc.)

The San Dimas Lemon Association Packing House, (115 N. Cataract Avenue, San Dimas, APE Figure 3-5.9) comprise two packinghouses built in 1909 and 1940. Both buildings were surveyed in 1991 and determined to be National Register status code "3D" or "Contributor to a district that has been fully documented according to OHP instructions and appears eligible" under criterion A. Pending SHPO concurrence, both buildings would be determined eligible for the National Register and would be automatically listed in the California Register. The proposed LRT station platform for the Triple Track configuration would be located approximately 130 feet to the southwest in the rail ROW. The proposed elements would not change the present use or diminish the integrity of the significant historic features of the San Dimas Lemon Association Packing House or its setting in any way.

Under Section 106, application of the Criteria for Adverse Effect to the proposed project's effects on the San Dimas Lemon Association Packing House would result in a finding of "no effect" on this historic property. Under CEQA, there would be "no significant effect" on this historical resource.

La Verne:

University of La Verne Central Service Office

The University of La Verne Central Service Office (2234 1st Street, La Verne, APE Figure 3-5.11) was built in 1920. It is a contributor to the Heritage Buildings within the Lordsburg Historic District. This warehouse building appears to be eligible for the California Register under Criteria 1 and 3 as part of a historic district. The buildings have been altered and do not retain integrity. However, the buildings are significant to the development of La Verne. Therefore, the buildings are eligible for listing as locally significant on the California Register but are not eligible for listing on the National Register. There are three locations for the proposed LRT platforms in the La Verne area. The E Street station option platform would be located approximately 25 feet to the south in the ROW. The D Street station option would be located approximately 1,000 feet to the west. The LRT platforms in the potential multi-modal station would be located approximately 660 feet to the east. None of the proposed station platforms would change the present use or otherwise alter the industrial warehouse building in any way.

Because the University of La Verne Central Service Office is not eligible for the National Register of Historic Places, Section 106 does not apply. Under CEQA, there would be “no significant effect” on this historical resource.

La Verne Lemon Association Building

The La Verne Lemon Association Building (2016 D Street, La Verne APE Figure 3-5.11) was built in 1931. It is a contributor to the Heritage Buildings within the Lordsburg Historic District. The industrial warehouse building appears to be eligible for the California Register under Criteria 1 and 3 as part of a historic district. There are three locations for the proposed platforms in the La Verne area. The E Street station option platform would be located approximately 650 feet to the east. The D Street station option would be located approximately 250 feet to the west. The LRT platforms in the potential multimodal station are located approximately 1,675 feet to the east. None of the proposed station platforms would change the present use or otherwise alter the industrial warehouse building in any way.

Because the La Verne Lemon Association Building is not eligible for the National Register of Historic Places, Section 106 does not apply. Under CEQA, there would be “no significant effect” on this historical resource.

Pomona:

Southern Pacific Station

The Southern Pacific Station, (101 West First Street, Pomona APE Figure 3-5.12) is a Spanish Mission style structure built in 1940. It was identified in a Historic Resources Survey and determined to be “4S” status code or “May become eligible for listing in the National Register as a separate property. Pending SHPO concurrence, this property would be determined eligible for the National Register (under Criterion C) and would be automatically listed in the California Register (under Criterion 3). The proposed LRT platforms would be approximately 850 feet to the west, in the ROW, and a proposed 3-level parking structure would be located approximately 600 feet to the northwest. Because of their distance, both proposed structures would not change the present use or diminish the integrity of the significant historic features of the Southern Pacific Station or its setting in any way.

Under Section 106, application of the Criteria for Adverse Effect to the proposed project’s effects on the Southern Pacific Station would result in a finding of “no effect” on this historic property. Under CEQA, there would be “no significant effect” on this historical resource.

Archeological Resources

At Pomona–Garey Station location, the 1928 USGS 7.5' Claremont Quadrangle indicates potential for three historic structures with archaeological remains within the Project APE. In addition, the Pacific Electric rail line ran on the south side of the Project APE at this location. Subsurface structural remains or features may potentially be present at these locations.

Claremont:

Sumner House

The Sumner House was built in 1887 (105 N. College Avenue, Claremont APE Figure 3-5.15). It is a good example of a Queen Anne/Eastlake and was previously evaluated in 1978 with a California Historical Resource Code of "3S" meaning it was previously found to meet National Register criteria. Pending SHPO concurrence, this property would be determined eligible for the National Register (under Criterion C) and would be automatically listed in the California Register (under Criterion 3). A proposed parking structure would be located approximately 140 feet to the southeast on the existing Metrolink parking lot and would not change the present use or diminish the integrity of the significant historic features of the Sumner House or its setting in any way.

Under Section 106, application of the Criteria for Adverse Effect to the Proposed project's effects on The Sumner House would result in a finding of "no effect" on this historic property. Under CEQA, there would be "no significant effect" on this historical resource.

Packing House (Corona College Heights Lemon Packing House)

The Packing House (510-532 W. 1st Street, Claremont, APE Figure 3-5.14) was built from 1916-1934. This structure is the last visible link to Claremont's pioneering history in the citrus industry. The property has a California Historical Resource status code of "2S3," therefore it was previously determined eligible for the National Register of Historic Places and is automatically listed on the California Register of Historical Resources. A proposed 4-level parking structure would be located approximately 35 feet to the east and would not change the present use or otherwise alter the Corona College Heights Lemon Packing House in any way.

Under Section 106, only Criteria of Adverse Effect *example v-Introduction of visual, atmospheric, or audible elements* warrants discussion with regard to the application of the Criteria for Adverse Effect to the Packing House, as follows:

Atmospheric and audible elements would continue to be generated by train traffic and vehicular traffic near the Corona College Heights Lemon Packing House, with no substantial change from current conditions. The proposed parking structure would be located 35 feet east of the historic warehouse, and would result in the introduction of a new visual element but this would not be adverse if it is properly designed and landscaped. The historic warehouse's east façade features no distinctive architectural details. The proposed nearby parking structure would not obscure views of the warehouse's primary elevations. The proposed 4-level parking structure's design, scale, and landscape would be constructed as to not diminish the integrity of the Corona College Heights Lemon Packing House setting, feeling, and association.

Under Section 106, application of the Criteria for Adverse Effect to the Proposed project's effects on the Corona College Heights Lemon Packing House would result in a finding of "no adverse effect" on this historic property. Under CEQA, there would be "no significant effect" on this historical resource.

Atchison Topeka & Santa Fe Railroad Station (Claremont Depot)

Atchison Topeka & Santa Fe Railroad Station, (Claremont Depot, 110 W. 1st Street, Claremont APE Figure 3-5.14) is a classic Mission Revival structure built in 1927. The Claremont Depot is listed on the National Register of Historic Places and, therefore, is automatically listed on the California Register of Historical Resources. The proposed Metro Gold Line Phase II project's platform station would be located approximately 275 feet to the west and would not change the present use or diminish the integrity of the significant historic features of the Claremont Depot or its setting in any way. A two level parking

properties is not well-defined and the likelihood of such properties being subject to either negative impacts, or positive restorative efforts, cannot be made. The proposed LRT alternatives would be likely to provide positive incentives for the preservation of historic resources by their utilization of existing historic depots for LRT stations. This utilization would be likely to demonstrate the desirability of re-use and perhaps inspire other preservation efforts in station areas.

3-5.2.6 Impacts Addressed by Regulatory Compliance

a. Construction-Period Impacts

Impacts that would arise from construction of any of the alternatives were identified in Section 3-5.2.3, above. Elimination or reduction of these construction period impacts would occur through two steps, as follows: (1) compliance with local, state or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies, as described below; (2) implementation of the proposed alternatives with additional construction period mitigation measures. Section 3-5.2.3 identified construction period impacts for which compliance with local, state, and federal regulations, permits, or similar types of requirements would eliminate or reduce such impacts. Grading and construction activities may expose prehistoric or historical archaeological sites or paleontological resources. The proposed project would be implemented with the following accidental find provisions as part of any construction documents.

Regarding archeological resources (NEPA and CEQA):

If buried cultural resources are uncovered during construction, all work shall be halted in the vicinity of the archaeological discovery until a qualified archaeologist can visit the site of discovery and assess the significance of the archaeological resource.

In the event of an accidental discovery of any human remains in a location other than a dedicated cemetery, the steps and procedures specified in Health and Safety Code 7050.5, CEQA 15064.5(e), and the Public Resources Code 5097.98 shall be implemented.

If buried cultural resources appear to be eligible for the National Register of Historic Places, Section 106 consultation shall be initiated with the State Historic Preservation Officer. If required, a Memorandum of Agreement will be developed.

Provisions for the disposition of recovered prehistoric artifacts shall be made in consultation with culturally affiliated Native Americans.

Regarding paleontological resources (CEQA Only):

If paleontological materials are encountered, a qualified paleontologist will monitor all remaining excavation work that would extend 10 feet in depth, or more into the ground. The monitor shall be empowered to temporarily halt or divert excavation equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially fossiliferous units, previously described, are not found to be present or, if present, are determined by qualified paleontologic personnel to have a low potential to contain fossil resources.

Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.

Recovered specimens shall be curated into a professional, accredited scientific institution with permanent retrievable storage.

A report of findings, with an appended itemized inventory of specimens, shall be prepared. The report and inventory would signify completion of the program to mitigate impacts to paleontologic resources.

Physical destruction of an archaeological resource which is eligible for the National Register would result in an adverse effect under Section 106 regulations. However, this adverse effect can be mitigated and minimized through Section 106 compliance and the mechanism of a Memorandum of Agreement (MOA) that specifies implementation of mitigation measures, therefore after mitigation, construction period impacts would be not adverse under NEPA and not significant under CEQA.

If paleontological discoveries are treated as required under CEQA, this regulatory compliance will reduce the impacts to a less than significant level.

Summary of Construction Period Impacts for Full Build Alternative, Triple Track Configuration, Addressed by Regulatory Compliance

Potential impacts from grading and construction activities associated with the Triple Track configuration may expose prehistoric or historical archaeological sites or paleontological resources. The project would be implemented with the accidental discovery provisions described above. Physical destruction of an archaeological resource which is eligible for the National Register would result in an adverse effect under Section 106 regulations. However, this adverse effect can be mitigated and minimized through Section 106 compliance and, if necessary, the mechanism of a Memorandum of Agreement that specifies implementation of mitigation measures, therefore after mitigation, construction period impacts would be not adverse under NEPA and not significant under CEQA.

If paleontological discoveries are treated as required under CEQA, this regulatory compliance will reduce the impacts to a less than significant level.

Summary of Construction Period Impacts for Build LRT Alternative to Maintenance Facility, Triple Track Configuration Addressed by Regulatory Compliance

Potential construction period impacts in Phase II, Segment 1 cities would be same as described as above and would be reduced by compliance with the accidental discovery provisions described above.

LRT, Double Track configurations

Potential construction period impacts for LRT Double Track configurations would be same as described for the Triple Track configuration.

Summary of Construction Period Impacts for Full Build Alternative, Double Track Configurations, Addressed by Regulatory Compliance

Potential construction period impacts for LRT Double Track configurations in Phase II Segment 1 and 2 cities would be same as described for the Triple Track configuration and would be reduced by compliance with the accidental discovery provisions described above.

Summary of Construction Period Impacts for Build LRT Alternative to Maintenance Facility, Double Track Configurations, Addressed by Regulatory Compliance

Potential construction period impacts for LRT Double Track configurations in Phase II Segment 1 cities would be same as described for the Triple Track configuration and would be reduced by compliance with the accidental discovery provisions described above.

b. Long Term Impacts

There are no long-term impacts to cultural resources associated with the No Build, TSM, or LRT Alternatives.

3-5.3 Potential Mitigation

3-5.3.1 Construction Period Mitigation

Construction period impacts to cultural and paleontological resources during construction of the Build LRT Triple Track Alternative, Phase I and Phase II, Segment 1, would be eliminated or reduced by complying with the local, state and/or federal regulatory requirements and/or permits, so no additional measures to mitigate impacts are required.

3-5.3.2 Long Term Mitigations

Section 3-5.2.4 identified no long-term impacts to cultural or paleontological resources due to the proposed project, and no additional measures to mitigate impacts are required.

3-5.4 Impact Results with Mitigation

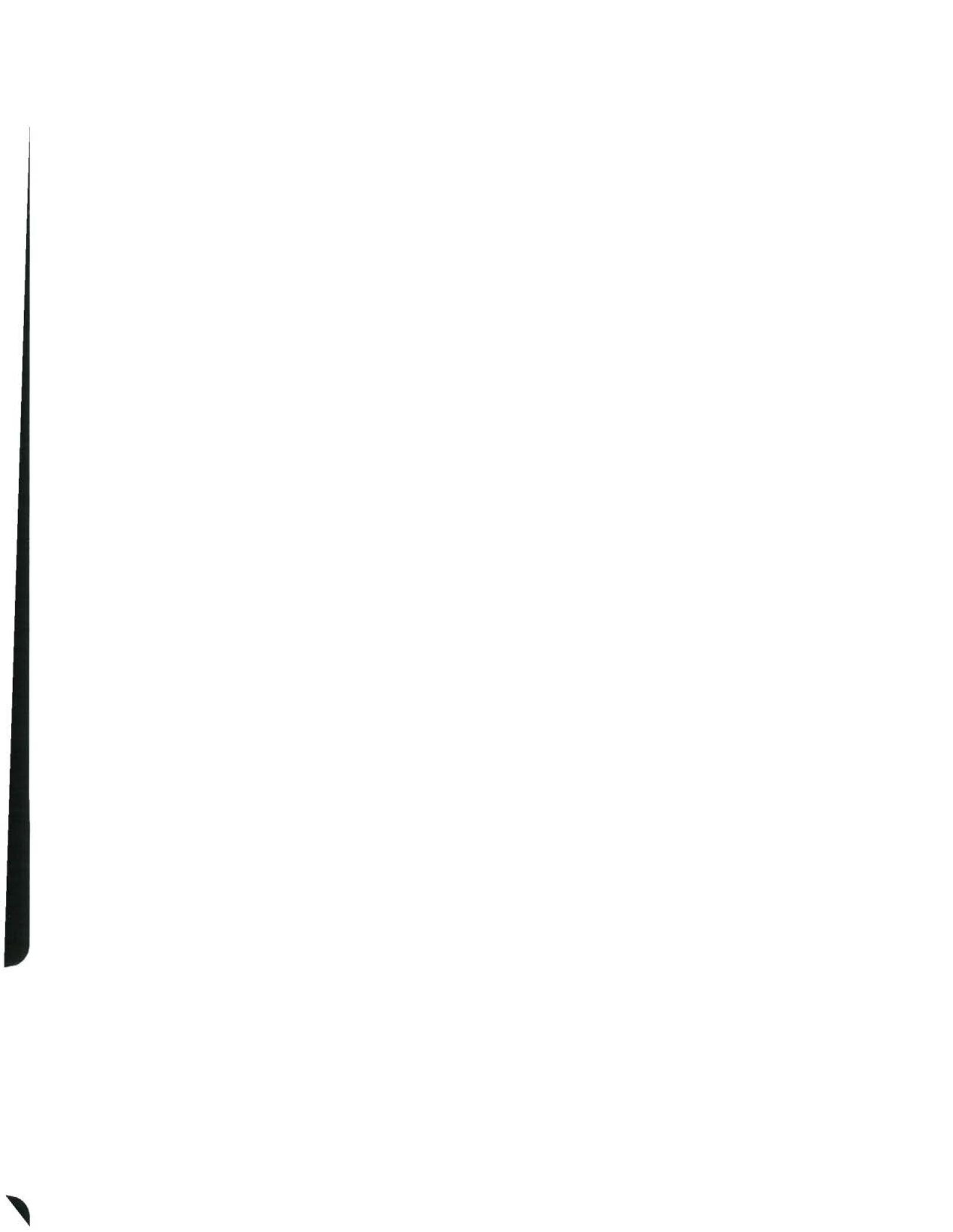
3-5.4.1 Construction Period

For all alternatives, construction period impacts would be reduced to less than adverse under NEPA and less than significant by compliance with accidental find provisions (regulatory compliance). No further mitigation would be required and there would be no remainder adverse effects under NEPA and no remainder significant impacts under CEQA.

3-5.4.2 Long Term

No long-term impacts to cultural resources would occur, so no regulatory compliance nor long-term mitigation would be required. Impacts would be less than adverse under NEPA and less than significant under CEQA.





3-6 ENERGY

Summary of Impacts

Both LRT alternatives would have higher overall operational energy consumption compared to the No Build and TSM Alternatives.

Both LRT alternatives would result in the one-time, non-recoverable energy costs associated with construction of tracks/rails, systems/equipment, transportation-related facilities (stations and maintenance facility), and rail cars

3-6.1 Existing Conditions

Energy consumption in the state of California is dominated by transportation. Since the early 1970s there has been a drastic increase in vehicles operated, and vehicle miles traveled (VMT) in California. According to the California Energy Commission (CEC), the state's approximately 18 million automobiles consume more than 14 billion gallons of gasoline per year, accounting for roughly 51 percent of the state's energy usage.¹ Although technological advances in vehicle engines have improved fuel economy, the benefits of these advances are less noticeable due to an increase in the number of VMT. The Southern California Area Governments (SCAG) reported that the region's VMT had doubled between 1980 and 2000.²

The amount of VMT is directly related to energy consumption, and infers the need for improvements in vehicles and transportation infrastructure. The American Petroleum Institute (API) estimated that the United States has roughly 70 years worth of recoverable oil at the current rate of consumption. California's anticipated population growth is 13 million persons over the next 20 years.³ California's current rate of energy consumption, and its trend of increasing VMT and anticipated population increase, is likely to cause the state to outpace the assumptions of API.

3-6.2 Environmental Impacts

3-6.2.1 Evaluation Methodology

This analysis estimates the total amount of energy expected to be consumed in the region in 2025 by each of the alternatives. The direct (operational) energy impacts were assessed using the following methodology.

¹ As indicated at California Energy Commission website www.energy.ca.gov/transportation/index.html. Site accessed on December 4, 2003.

² SCAG State of the Region 2002. http://www.scag.ca.gov/publications/pdf/SRp43_end.pdf. Site accessed on December 2, 2003.

³ American Petroleum Institute as cited on the Consumer Energy Center website www.consumerenergycenter.org/vehicles/default.php. Site accessed on December 4, 2003.

Direct energy consumption involves energy used by the operation of vehicles (automobile, truck, bus, or train) within the region. In assessing the direct energy impact, consideration was given to the following factors:

- Annual VMT for automobiles, trucks, buses, light rail transit (LRT), and commuter rail vehicles
- Variation of fuel consumption rates by vehicle type.

The direct energy analysis for each alternative was based on projected year 2025 regional traffic volumes and total VMT. The 2025 daily traffic volumes for the region were provided by the MTA transportation model and annualized using a factor of 335 days per year. The VMT fuel consumption method utilized for this project is outlined in the *Technical Guidance on Section 5309 New Starts Criteria*.⁴ Energy consumption factors for the various modes identified in **Table 3-6.1** were developed by Oak Ridge Laboratory and published in the 1996 *Transportation Energy Book: Edition 16*. Direct energy, measured in British thermal units (BTUs)⁵, was converted to the equivalent barrels of crude oil for comparison of alternatives. The change in annual BTUs was also calculated for the TSM Alternative and Gold Line Phase II, Segments 1 and 2 Build Alternatives and compared to the No Build Alternative.

| TABLE 3-6.1 ENERGY CONSUMPTION FACTORS | |
|---|--------------------------|
| Mode | Factor |
| Passenger vehicles (auto, van, light truck) | 6,233 BTU/Vehicle Mile |
| Heavy trucks | 22,046 BTU/Vehicle Mile |
| Transit bus (all vehicle types) ¹ | 41,655 BTU/Vehicle Mile |
| Rail (light or heavy) | 77,739 BTU/Vehicle Mile |
| Commuter rail (Metrolink) | 100,000 BTU/Vehicle Mile |
| ¹ FTA recommends utilizing a transit bus energy consumption factor of 41,655 BTUs/VMT for all bus types (including alternative fueled buses). Sufficient data have not been available to develop consumption factors for alternative fuels such as CNG (compressed natural gas), LNG (liquefied natural gas), and others. Source: Oak Ridge Laboratory, 1996. | |

3-6.2.2 Impact Criteria

a. NEPA Impact Criteria

There are no National Environmental Policy Act (NEPA) criteria separate from California Environmental Quality Act (CEQA) criteria for the energy analysis. Therefore, the following CEQA impact criteria are used to assess impacts.

⁴ FTA 1999

⁵ One BTU is the quantity of energy necessary to raise the temperature of one pound of water one degree Fahrenheit.

b. CEQA Impact Criteria

Potential energy consumption of the TSM, Full Build, and Build LRT to Maintenance Facility Alternatives was compared to the No Build Alternative in order to assess the impacts of the project. The annual energy savings are expressed in BTUs.

The determination of CEQA importance for energy resources has until now been based on the criterion in Appendix G of CEQA: *Will the proposal use fuel, water, or energy in a wasteful manner?* On January 1, 1999, Appendix G was replaced by new guidelines implementing revisions to CEQA. While there is now no energy-specific criterion within the amended guidelines, one related to mineral resources would apply:

- Would the proposed project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

By comparing the alternatives' energy demands to current and anticipated energy supplies, it is possible to determine whether the alternatives would have a significant effect on energy supplies. Although no clear significance standards or thresholds are established, a one-percent increase in anticipated use over baseline conditions would be considered a significant impact.

3-6.2.3 Construction-Period Impacts

a. No Build Alternative

The No Build Alternative includes extension of I-210 from I-15 to I-215, implementation of increased service on Phase I of the Gold Line LRT, completion and service on the Eastside LRT Extension, and countywide bus service improvements, including the San Gabriel Valley.

Phase I – The Cities Affected and the Effects

The cities in Phase I are Los Angeles, South Pasadena and Pasadena. The projects in the No Build Alternative that could affect these cities are completion and service on the Eastside LRT Extension, implementation of increased service on Phase I of the Gold Line LRT, and countywide bus service improvements.

Construction-period energy impacts would occur in the city of Los Angeles from construction of the Eastside LRT Extension. The construction-period impacts and mitigations measures of this project are described in the Draft Supplemental Environmental Impact Statement/ Draft Subsequent Environmental Impact Report (FTA and LACMTA, 2001).⁶ That document concluded that there would be no significant construction-period energy impacts.

The construction-period energy impact would be expected to be less than adverse under NEPA. Increased service in Phase I would not include construction, and there would be no construction-period impacts.

That portion of countywide bus improvements that may occur within the Phase I cities (Los Angeles, South Pasadena, and Pasadena) during the construction-period for the proposed Phase II is not expected to include substantial amounts of construction in the Phase I cities. The planned service improvements

⁶ FTA and LACMTA 2001

would be likely to include upgraded or additional bus stops. Construction of these bus stops would require minor amounts of energy and would result in a less-than-significant impact under CEQA. The construction-period energy impact would be expected to be less than adverse under NEPA.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. The projects in the No Build Alternative affecting these cities during the Phase II construction-period are implementation of increased service on Phase I of the Gold Line LRT and countywide bus service improvements. As described for the Phase I cities, the construction-related activities associated with projects in the No Build Alternative would not result in substantial construction energy consumption within the Phase II Segment 1 area. The result would be a less than significant impact under CEQA. The construction-period energy impact would be expected to be less than adverse under NEPA.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. The project in the No Build Alternative affecting the cities during the construction-period of the proposed Phase II is the Los Angeles county bus service improvements. Even though Montclair and Upland are in San Bernardino County, they are affected by changes in Los Angeles County bus service because that service is linked to the Montclair TransCenter. The Eastside LRT extension and increased service on Phase I of the Gold Line LRT would not have an effect on the Segment 2 cities because there would be no stations in these cities. As noted earlier, the proposed extension of I-210 eastward is more than 5 miles east of the eastern end of the Phase II study area. Due to this distance, no effects from the freeway extension are expected within the study corridor.

As described for the Phase I cities, the construction-related activities associated with projects in the No Build Alternative would not result in substantial construction energy consumption within the Phase II Segment 2 area. The result would be a less than significant impact under CEQA. The construction-period energy impact would be expected to be less than adverse under NEPA.

b. Transportation System Management (TSM) Alternative

The TSM Alternative includes changes to existing bus routes to provide or improve connecting service to the Gold Line Phase I station at Sierra Madre Villa, and increasing peak period and off-peak period services frequencies to downtown Pasadena (the study corridor’s largest employment center) and among the cities and major activity centers within the study area.

There would be very minor construction-related activities associated with the TSM Alternative (signage installation, etc.) and thus energy consumption for construction would be negligible. Accordingly, there would be no adverse effects under NEPA, nor significant impacts under CEQA, to any of the cities in either segment of Phase II. There would be no construction-period energy impact to Phase I cities since there would be no changes in transit service in those cities under the TSM alternative.

c. LRT, Triple Track Configuration

Phase I – The Cities Affected and the Effects

The cities in Phase I are Los Angeles, South Pasadena and Pasadena. The LRT, Triple Track Configuration would have no impacts to energy in Los Angeles or South Pasadena during construction because there would be no construction activities in those cities. In Pasadena, construction would occur between the existing LRT station at Sierra Madre Villa and the eastern city limits. It should be noted that within the overall Triple Track Configuration, only two tracks would be built in this specific segment since there is no need for triple tracks west of Monrovia because there are no freight customers to be served. Within this area, construction would result in the one-time, non-recoverable energy costs associated with construction of tracks/rails and systems/equipment. Construction would result in a less than significant impact under CEQA to the availability of fossil fuels or electricity within the region or the state given the current and projected available resources. Construction-period demand would not exceed the threshold of one percent increase. The construction-period energy impact would be expected to be less than adverse under NEPA.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte, and Irwindale. It should be noted that within the overall Triple Track Configuration, only two tracks would be built west of Monrovia (i.e., through Arcadia and Pasadena) because there are no freight customers to be served. Construction of the Triple Track Configuration in this segment would result in the one-time, non-recoverable energy costs associated with construction of tracks/rails, systems/equipment, and transportation-related facilities (four stations and the maintenance and operations facility). Due to the size and components of the maintenance and operations facility, construction-period energy demand would be higher than in Phase II, Segment 2. Short-term use of oil, gas, and electricity for construction would reduce the overall amount of fossil fuels available within the area, region, and state. However, the overall energy demand for construction would result in a less than significant impact under CEQA to the availability of fossil fuels or electricity within the region or the state given the current and projected available resources. The construction-period demand would not exceed the threshold of one percent increase. The construction-period energy impact would be expected to be less than adverse under NEPA.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. The construction of the triple track configuration would result in the one-time, non-recoverable energy costs associated with construction of tracks/rails, systems/equipment, and transportation-related facilities (nine stations). However, the overall energy demand for construction would result in a less than significant impact under CEQA to the availability of fossil fuels or electricity within the region or the state given the current and projected available resources. Construction-period demand would not exceed the threshold of one percent increase. The construction-period energy impact would be expected to be less than adverse under NEPA.

Summary of Triple Track Impacts for Full Build Alternative

The Triple Track Configuration of the Full Build Alternative would result in the one-time, non-recoverable energy costs associated with construction of tracks/rails, systems/equipment, transportation-related facilities (stations and maintenance facility), and rail cars. Facility-related energy would include

energy consumed during the production of materials used in construction of the Full Build Alternative. Short-term use of oil, gas, and electricity for construction would reduce the overall amount of fossil fuels used within the area, region, and state. No cities would be specifically affected, as these minimal energy impacts would occur equally throughout the study area. Construction of the Full Build Alternative would not result in a significant impact, under CEQA, to the availability of fossil fuels or electricity within the region or the state given the current and projected available resources and would not exceed the threshold of one percent increase. The construction-period energy impact would be expected to be less than adverse effect under NEPA.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

Construction impacts for the Triple Track Configuration of the Build LRT to Maintenance Facility Alternative would have the impacts to energy during construction as described under the Full Build Alternative for Phase II Segment 1, and would result in a less than significant impact under CEQA and less than adverse under NEPA.

d. LRT, Double Track Configurations

The construction-period impacts for the LRT Double Track Configurations would be similar, but less than those described for the Triple Track Configuration for the cities in Phases I and II, Segment 1 and Phase II, Segment 2. The amount of construction energy needed would be less because only two tracks would be constructed rather than three.

Summary of Double Track Impacts for Full Build LRT Alternative

Construction-period impacts for the Double Track configurations of the Full Build LRT Alternative would have less impact to energy resources than the Triple Track configuration of the Full Build Alternative since only two tracks would be built. The construction-period demand for energy would not exceed the one percent threshold of impact. Overall, the Full Build LRT Alternative would result in a less than significant impact under CEQA and less than adverse impact under NEPA.

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

Construction-period impacts for the Double Track configurations for the Build LRT Alternative to Maintenance Facility would result in a less than significant impact under CEQA and less than adverse impact under NEPA. The construction-period demand for energy would not exceed the one percent threshold of impact.

3-6.2.4 Long-Term Impacts

Long-term impacts are assessed based on changes in regional VMT. Therefore, impacts are reported only for the alternative, not by Phase or by city.

a. No Build Alternative

Under the No Build Alternative, the annual 2025 VMT within the region is forecasted to be:

- 431.16 million miles for automobiles⁷
- 17.96 million miles for trucks⁴
- 8.65 million miles for buses⁴
- 4.35 million miles for LRT⁴

The annual VMT for automobiles and trucks would be slightly higher than the TSM and LRT Build Alternatives, resulting in higher energy usage for these modes. The VMT for buses and rail, however, would be equal to the TSM Alternative and lower than the VMT for the LRT Build Alternatives (see **Table 3-6.2**).

Given the VMT of the No Build Alternative, and vehicle fuel consumption on an annual basis, vehicles operating within the region are anticipated to consume approximately 603,049 barrels of oil or approximately 3,498 billion BTUs annually. As shown in **Table 3-6.2**, the No Build Alternative would have lower overall operational energy consumption compared to the LRT Build Alternatives, yet higher overall operational energy consumption compared to the TSM Alternative. No cities would be specifically affected, as these energy impacts would occur equally throughout the project study area.

While the No Build Alternative would have lower overall operational energy consumption compared to the LRT Build Alternatives, it would have a higher consumption of fossil fuels, due to the higher VMT of automobiles and trucks. Fossil fuels will continue to be future needs of the region and the residents of the state.

⁷ Vehicle Miles Traveled (PBQD, December 9, 2003); Energy Consumption Factors (Oak Ridge National Laboratory, 1996)

**TABLE 3-6.2
ANNUAL 2025 OPERATIONAL ENERGY CONSUMPTION**

| | No Build Alternative | TSM Alternative | Phase II, Segment 2 (Full Build LRT) | Phase II, Segment 1 (Build LRT to Maintenance Facility) |
|---|----------------------|-----------------|--------------------------------------|---|
| Vehicle Miles Traveled (VMT) | | | | |
| Daily Auto and Truck VMT | 1,340,662 | 1,340,487 | 1,340,504 | 1,340,323 |
| Annual Auto VMT (millions) | 431.16 | 431.10 | 431.11 | 431.05 |
| Annual Truck VMT (millions) | 17.96 | 17.96 | 17.96 | 17.96 |
| Daily Bus VMT | 27,447 | 27,447 | 27,447 | 27,447 |
| Annual Bus VMT | 8,645,805 | 8,645,805 | 8,645,805 | 8,645,805 |
| Daily LRT VMT | 13,810 | 13,810 | 23,238 | 21,397 |
| Annual LRT VMT | 4,350,000 | 4,350,000 | 7,320,000 | 6,740,000 |
| Energy Consumption (BTUs)¹ (billions) | | | | |
| Annual Auto BTUs ¹ | 2,687 | 2,687 | 2,687 | 2,686 |
| Annual Truck BTUs ¹ | 112 | 112 | 112 | 112 |
| Annual Bus BTUs ¹ | 360 | 360 | 360 | 360 |
| Annual LRT BTUs ¹ | 338 | 338 | 569 | 524 |
| Total Annual Direct BTUs (billions²) | 3,498 | 3,497 | 3,728 | 3,683 |
| Total Annual Barrels of Crude Oil³ | 603,049 | 602,986 | 642,799 | 634,960 |
| Change in BTUs vs. No Build (millions²) | N/A | -365 | 230,554 | 185,088 |
| Change in Barrels vs. No Build | N/A | -63 | 39,751 | 31,912 |
| Change in BTUs vs. TSM (millions²) | 365 | N/A | 230,920 | 185,454 |
| Change in Barrels vs. TSM | 63 | N/A | 39,814 | 31,975 |

¹One British thermal unit (BTU) is the quantity of energy necessary to raise the temperature of one pound of water one degree Fahrenheit.

²Rounded.

³One barrel of crude oil is equal to 5.8 million BTUs.

N/A – Not Applicable

Sources: Vehicle Miles Traveled (PBQD, Dec. 9, 2003); Energy Consumption Factors (Oak Ridge National Laboratory, 1996).

b. Transportation System Management (TSM) Alternative

Under the TSM Alternative, the annual 2025 VMT within the region is forecasted to be:

- 431.10 million miles for automobiles
- 17.96 million miles for trucks
- 8.65 million miles for buses
- 4.35 million miles for LRT.

The annual VMT for automobiles and trucks would be slightly lower than the No Build and Full Build Alternatives, resulting in lower energy usage for these modes, but would be slightly higher than the Build LRT Alternative to the Maintenance Facility. The VMT for buses and rail, however, would be equal to the No Build Alternative and lower than the LRT Build Alternatives (see **Table 3-6.2**).

Given the VMT and vehicle fuel consumption on an annual basis, vehicles operating within the region are anticipated to consume approximately 602,986 barrels of oil or approximately 3,497 billion BTUs. As shown in **Table 3-6.2**, the TSM Alternative would have lower overall operational energy consumption compared to all of the other alternatives. No cities would be specifically affected, as these energy impacts would occur equally throughout the project study area.

The TSM Alternative would result in comparatively less energy consumption, and therefore not result in a significant impact to the availability of fossil fuels or electricity within the region or the state given the current and projected available resources and would not exceed the threshold of one percent increase.

The change in long-term energy for the TSM alternative does not exceed the one percent threshold and therefore would result in a less than significant impact under CEQA and less than adverse impact under NEPA.

c. LRT, Triple Track Configuration

Summary of Triple Track Impacts for Full Build LRT Alternative

Under the Triple Track configuration of the Full Build LRT Alternative, the annual 2025 VMT within the region is forecasted to be:

- 431.11 million miles for automobiles
- 17.96 million miles for trucks
- 8.65 million miles for buses
- 7.32 million miles for LRT.

The annual VMT for automobiles and trucks would be slightly lower than the No Build Alternative resulting in lower energy usage for these modes, but would be slightly higher than the TSM and Build LRT to Maintenance Facility Alternatives. The VMT for buses and rail, however, would be higher than all other alternatives.

Given the VMT and vehicle fuel consumption on an annual basis, vehicles operating within the region are anticipated to consume approximately 642,799 barrels of oil or approximately 3,728 billion BTUs. As

shown in **Table 3-6.2**, the Full Build LRT Alternative would have higher overall operational energy consumption compared to the other alternatives. No cities would be specifically affected, as these energy impacts would occur equally throughout the project study area.

While the Triple Track Configuration of the Full Build LRT Alternative would result in slightly greater energy consumption than the No Build Alternative during operation, it would result in a less than a one-percent increase in energy consumption for the project study area. Thus, this alternative would not result in a significant impact to the availability of fossil fuels or electricity within the region or the state, given the current and projected available resources. The change in long-term energy does not exceed the one percent threshold and therefore would result in a less than significant impact under CEQA and less than adverse impact under NEPA.

Table 3-6.3 shows a breakdown of energy use in kilowatt hours (Kwh) with and without the stations and maintenance and storage facility associated with the two build alternatives. Stations for the Full Build LRT Alternative would use approximately 2.3 billion BTUs (182,614 Kwh or 392.2 barrels of crude oil) annually during the operation of the project (this is based on 13 stations multiplied by 175,000,000 BTUs, using FTA's *Technical Guidance on Section 5309 New Starts Criteria*, July 1999). Stations for the Build LRT Alternative to Maintenance Facility would use approximately 700 million BTUs (56,189 Kwh or 120.7 barrels of crude oil) annually during the operation of the project (this is based on 4 stations multiplied by 175,000,000 BTUs). The maintenance and storage facility would use approximately 8.7 billion BTUs (698,346 Kwh, 1,500 barrels of crude oil) annually during the operation of the project for either build alternative. (Caltrans Division of Engineering Services, Office of Transportation Laboratory, *Energy and Transportation Systems*, Table G-3, July 1983).

| TABLE 3-6.3 ANNUAL 2025 ENERGY CONSUMPTION (KWH) FOR SPECIFIC FACILITIES | | | | |
|---|-----------------------------|------------------------|---|--|
| Alternative | No Build Alternative | TSM Alternative | Phase II, Segment 2 (Full Build LRT) | Phase II, Segment 1 (Build LRT to Maintenance Facility) |
| Energy Without Stations (millions) | 280.76 | 280.73 | 299.26 | 295.61 |
| LRT Station Energy | N/A | N/A | 182,614 | 56,189 |
| Maintenance and Storage Facility Energy | N/A | N/A | 698,346 | 698,346 |
| Total (millions) | 280.76 | 280.73 | 300.15 | 296.37 |
| N/A – Not Applicable | | | | |
| Sources: Vehicle Miles Traveled (PBQD, Dec. 9, 2003); <i>Technical Guidance on Section 5309 New Starts Criteria</i> , (FTA, July 1999), <i>Energy and Transportation Systems</i> , Table G-3, (Caltrans Division of Engineering Services, July 1983). | | | | |

The total energy consumption for the Triple Track Configuration, for the Full Build LRT Alternative is shown in **Table 3-6.3** to be 6.9 percent higher than the No Build Alternative. For the Build LRT to Maintenance Facility Alternative, the incremental energy demand over the No Build Alternative is shown to be 5.5 percent higher. For either alternative, the energy demand would be less than one percent and

would thus result in a less than significant impact under CEQA and a less than adverse effect under NEPA.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

Under the Triple Track Configuration of the Build LRT Alternative to Maintenance Facility, the annual 2025 VMT within the region is forecasted to be:

- 431.05 million miles for automobiles
- 17.96 million miles for trucks
- 8.65 million miles for buses
- 6.74 million miles for LRT.

The annual VMT for automobiles and trucks would be slightly lower than all other alternatives, resulting in lower energy usage for these modes. The VMT for buses and rail, however, would be higher than the No Build and TSM Alternatives.

Given the VMT and vehicle fuel consumption on an annual basis, vehicles operating within the region are anticipated to consume approximately 634,960 barrels of oil or approximately 3,683 billion BTUs. As shown in **Table 3-6.2**, the Build LRT Alternative to Maintenance Facility would have higher overall operational energy consumption compared to the No Build and TSM Alternatives, and lower overall operational energy consumption compared to the Full Build LRT Alternative. No cities would be specifically affected, as these energy impacts would occur equally throughout the project study area.

While the Triple Track Configuration of the Build LRT Alternative to Maintenance Facility would result in slightly greater energy consumption than the No Build Alternative during operation, it would result in a less than a one percent increase to energy consumption in the project study area. Thus, this alternative would result in a less than significant impact to the availability of fossil fuels or electricity within the region or the state, given the current and projected available resources and would not exceed the threshold of one percent increase.

d. LRT, Double Track Configurations

Summary of Double Track Impacts for Full Build LRT Alternative

Operational impacts for the Double Track Configurations of the Full Build LRT Alternative would have lesser impacts to energy resources than the Triple Track Configuration of the Full Build Alternative, due to only two tracks being operated. Since the impacts of the Triple Track Configuration were shown to be less than significant, the impact of Double Track Configurations would result in a less than significant impact under CEQA and less than adverse effect under NEPA.

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

Operational impacts for the Double Track Configurations of the Build LRT Alternative to Maintenance Facility would have less impact to energy resources than the Triple Track Configuration of the LRT

Alternative to Maintenance Facility, since operations would occur on only two tracks. As with the Full Build Alternative, since the impacts of the Triple Track Configuration were shown to be less than significant, the impact of Double Track Configurations for the Build LRT to Maintenance Facility Alternative would result in a less than significant impact under CEQA and less than adverse effect under NEPA, and would not result in a significant impact.

3-6.2.5 Cumulative Impacts

The LRT Build Alternatives, in coordination with other regional public transportation improvements, would help to reduce dependency on single-occupant vehicles (SOVs). This would in turn reduce fossil fuel energy consumption and decrease roadway congestion. Construction of the LRT Build Alternatives in combination with other construction projects occurring within the same period and within the region may result in a short-term increase in energy consumption. This would be a temporary effect and given the available energy resources within the region and state, no significant impact is anticipated. Some of the materials needed to construct the project may not be manufactured within the region or state and would, therefore, not result in the use of local or statewide energy resources.

Impacts Addressed by Regulatory Compliance

a. Construction-Period Impacts

Impacts that would arise from construction of any of the alternatives were identified in Section 3-6.2.3, above. The overall impacts were reported to be less than significant under CEQA and less than adverse under NEPA. Some of the specific construction-period impacts which would occur as part of any construction process would be eliminated or reduced through compliance with local, state or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies. Following is a discussion of the construction-period impacts for each of the alternatives that would be addressed by the regulatory compliance. It should be noted that regulatory compliance is not a mitigation measure, but is rather a legal requirement that must be met during project implementation.

To reduce the less-than-significant impacts to energy resources from construction of any of the alternatives, the Construction Authority or LACMTA will comply with all federal, state, and local requirements for separation of differing standards of waste materials. During design and construction of the LRT Build Alternative, the Construction Authority or LACMTA will comply with the requirements of Resource Conservation and Recovery Act (RCRA) Section 6002 (EPA's Buy-Recycled program) where technically feasible and appropriate. The agencies will strive to incorporate the latest Comprehensive Procurement Guide (CPG) listings of recycled or re-used materials applicable to construction, landscaping, and transportation products used on the LRT Build Alternatives. Procurement decisions regarding RCRA Section 6002 compliance will consider the price of designated items made with recovered materials versus typical products, the competition base of recovered goods suppliers, unusual and unreasonable delays for procurement of products, and the compliance of recovered and/or recycled goods with LACMTA design criteria.

b. Long-Term Impacts

Long-term impacts associated with of the alternatives were identified in Section 3-6.2.4, above. The overall impacts were reported to be less than significant under CEQA and less than adverse under NEPA.

Some of the specific impacts which would occur as part of any transit operation would be eliminated or reduced through compliance with local, state or federal regulations or permits that have been developed by agencies to reduce energy demands. The LACMTA design criteria and operational guidelines under which the Build Alternatives would be implemented incorporate all legal and regulatory requirements.

3-6.3 Potential Mitigation

3-6.3.1 Construction-Period Mitigation Measures

Since construction-period impacts for energy would be less than significant under CEQA and less than adverse under NEPA, no measures to mitigate impacts are required.

3-6.3.2 Long-Term Mitigation

Since operational impacts for energy would be less than significant under CEQA and less than adverse under NEPA, no measures to mitigate impacts are required.

3-6.4 Impact Results with Mitigation

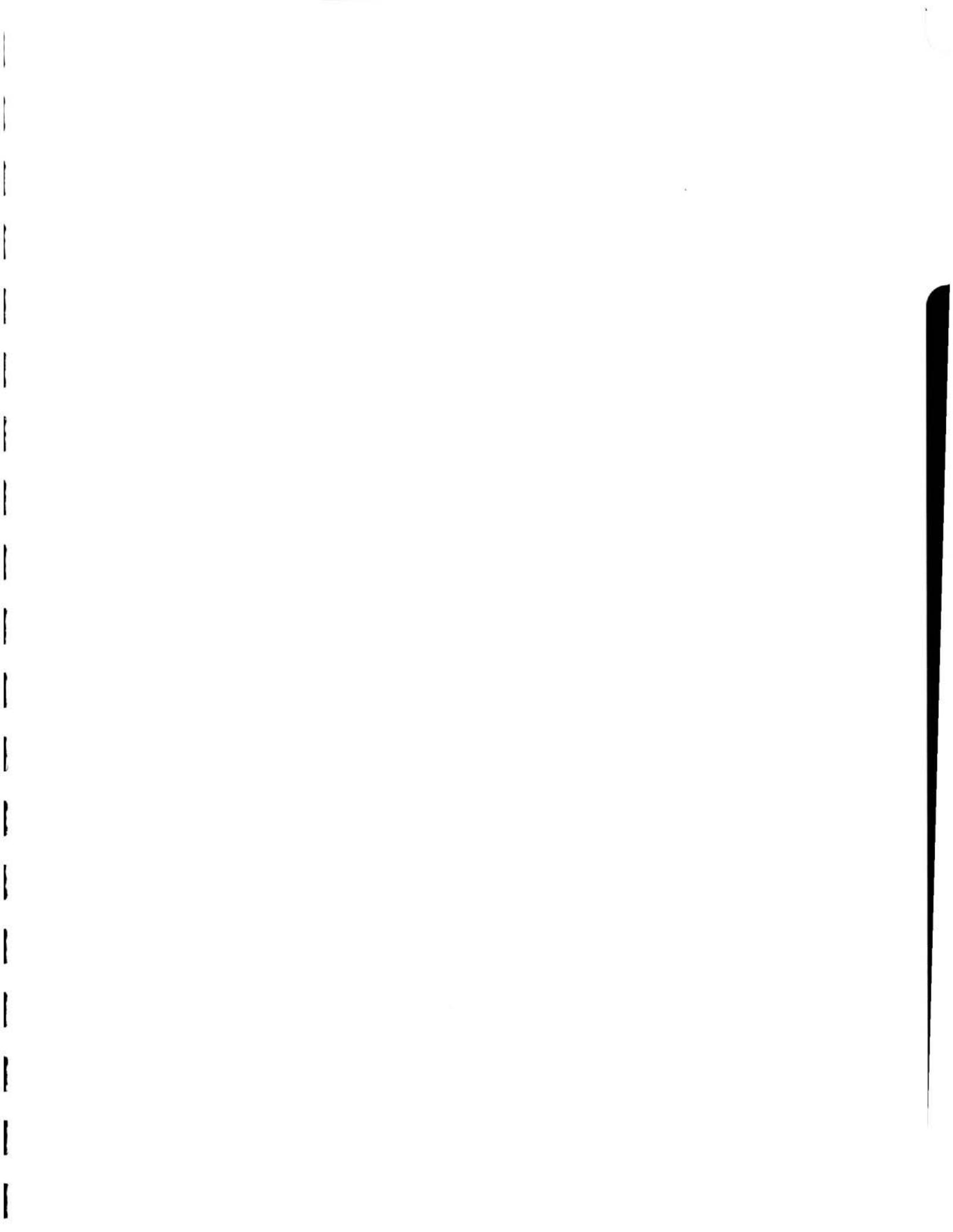
3-6.4.1 Construction Period

Construction-period impacts for energy would be less than significant under CEQA and less than adverse under NEPA. Since no measures to mitigate impacts are required, the net result remains that construction-period energy impacts would be less than significant under CEQA and less than adverse under NEPA.

3-6.4.2 Long Term

Operational impacts for energy would be less than significant under CEQA and less than adverse under NEPA. Since no measures to mitigate impacts are required, the net result remains that operational period energy impacts would be less than significant under CEQA and less than adverse under NEPA.

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3-7 EXECUTIVE ORDERS

Summary of Impacts

None of the alternatives would result in violations of Executive Orders.

Introduction

This section briefly summarizes the requirements of certain federal executive orders applicable to the proposed project. As indicated in the cross-references cited below, documentation of how the proposed project complies with each executive order is provided in various sections of Chapter 3.

Because the proposed project has a federal component, it must comply with federal executive orders. Since the executive orders evaluation is required by the National Environmental Policy Act (NEPA) and not by the California Environmental Quality Act (CEQA), only the NEPA term “adverse” is used to describe impacts. The CEQA term “significant” does not apply and therefore is not used in this section.

3-7.1 Floodplain Management

Executive Order 11988, Floodplain Management, signed on May 24, 1977, requires that federal agencies “...avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative....” within the 100-year flood elevation. Federal agencies that propose to construct projects in floodplain areas must consider alternatives that will avoid adverse effects and incompatible development. If the proposed project is to be located in a floodplain, the federal agency shall take action to modify the project in a way that minimizes potential harm. As described in Section 3-18, Water-Water Quality, neither construction nor operation of the proposed project would adversely affect floodplains. Therefore, the project does not conflict with Executive Order 11988.

3-7.2 Protection of Wetlands

Executive Order 11990, Protection of Wetlands, signed on May 24, 1977, requires that federal agencies “...avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative....” Federal agencies must avoid constructing proposed projects in wetland areas unless the head of the agency determines that there are no practicable alternatives to such construction and that the proposed project includes measures that will minimize any harm to wetlands. As described in Section 3-18, Water-Water Quality, neither construction nor operation of the proposed project would adversely affect wetlands. Therefore, the project does not conflict with Executive Order 11990.

3-7.3 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations, signed on February 11, 1994, directs that “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority

populations and low-income populations....” The fundamental principles underlying environmental justice assessment are: (1) to avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority and low-income populations; (2) to ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and (3) to prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations. Section 3-14, Socio-Economics, reports that no disproportionate impacts to minority or low-income populations would result from construction or operation of the proposed project. Chapter 8 reports the public outreach effort that was made to communities surrounding the proposed project. These communities do include minority and low-income populations.

3-7.4 Environmental Health and Safety Risks to Children

Executive Order 13045, Environmental Health and Safety Risks to Children, was signed by the President on April 21, 1997. This executive order acknowledges that children may suffer disproportionately from environmental health and safety risks. Therefore, Executive Order 13045 requires each federal agency to make it a priority to identify and assess environmental health and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks. As described in Chapter 3-13, Safety and Security, safety of children and all passengers has been addressed and adequate mitigation measures have been described to reduce safety risks within and adjacent to the corridor to a “not adverse” level. Also, Sections 3-2, 3-8, 3-9, and 3-11 describe impacts to and mitigation measures to reduce impacts to Air Quality, Geologic-Seismic, Hazardous Materials, and Noise and Vibration, respectively. Potential health hazards due to these factors have been addressed and adequate mitigation measures have been described to reduce health risk to children and all passengers to a “not adverse” level.

3-7.5 Invasive Species

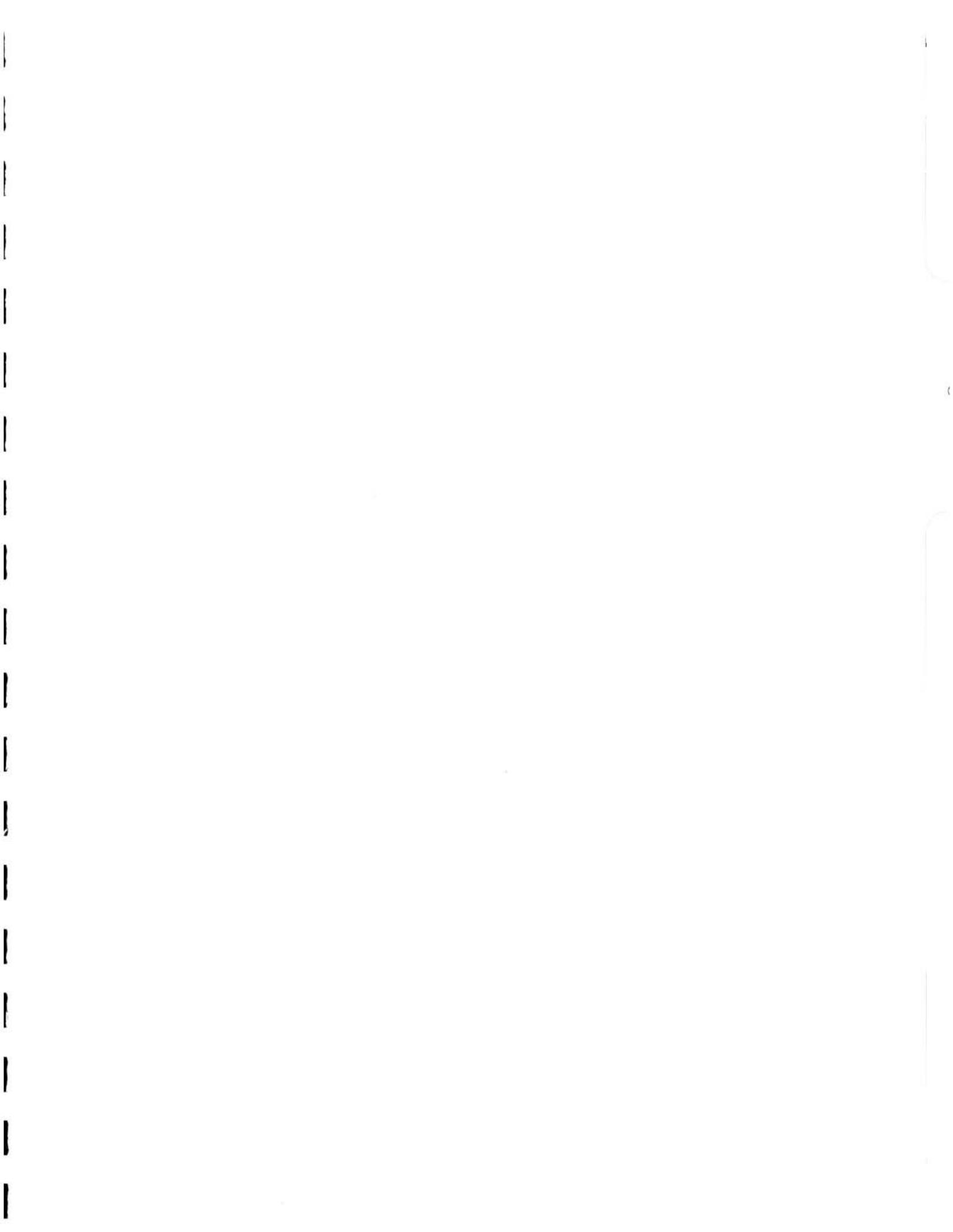
Executive Order 13112, Invasive Species, signed on February 3, 1999, requires that a federal agency “...not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.” The primary purpose of this directive is to reduce the ecological and economic effects of invasive plant and animal species to agriculture, industry, recreation, and the environment. As described in Section 3-3, Biological Resources, neither construction nor operation of the proposed project includes any activities that would introduce or spread invasive species. Therefore the project is not in conflict with Executive Order 13112.

3-7.6 Improving Access to Services for Persons with Limited English Proficiency

Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, signed on August 11, 2000, requires that Federal agencies “...examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them. It is expected that agency plans will provide for such meaningful access consistent with, and without unduly burdening, the fundamental mission of the agency.” The Executive Order also requires that the Federal agencies work to

ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries. The public outreach efforts for the environmental process has been conducted with provisions to outreach to LEP communities during Scoping, and in the conduct of Scoping meetings. Notifications for public hearings on the DEIS/DEIS will be conducted in the same manner as done for Scoping, as described in Chapter 8. Therefore, the project does not conflict with Executive Order 13166.

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3-8 GEOLOGIC-SEISMIC

Summary of Impacts

The No Build and TSM alternatives would not have adverse/significant impact related to geologic or seismic issues.

The LRT alternatives cross areas of seismic activities and potentially unstable geomorphology that underlie the entire study area. During Preliminary Engineering, specific design studies would be undertaken to determine the appropriate design solutions. Compliance with applicable design standards should result in less than adverse/less than significant impacts.

3-8.1 Existing Conditions

The Gold Line Phase II project site is located along the Atchison-Topeka railroad right-of-way in the San Gabriel Valley (SGV). The project site consists of the existing rail alignment and an adjacent buffer zone extending 1000 feet along both sides of the railroad. Although most of the project site lies within areas of commercial and residential development, a portion of the site is located in an open space as it crosses the San Gabriel River floodplain.

3-8.2 Site Description

The project site is located on generally flat to gently inclined terrain along its 24-mile length. Elevations along the alignment range from approximately 440 feet above mean sea level (msl), just west of the San Gabriel River in Duarte, to 1220 feet msl, at the end of the line in Montclair. Elevations vary locally across major washes and rivers. The San Gabriel Mountain front lies north of the project site. Three isolated hills, South Hills, Way Hill, and the San Jose Hills, are elevated above the valley south of the mountains along the project site.

3-8.2.1 Regional Geologic Setting

The Gold Line Phase II alignment is located in the Transverse Ranges geomorphic province of southern California, which extends 500 kilometers westward from the Mojave Desert to the Pacific Ocean. The project site lies within the northeastern portion of the Los Angeles Basin at the base of the San Gabriel Mountains. The Los Angeles basin is a large trough, filled with marine and non-marine sediments. Deposition of marine sediments began approximately 65 million years in a deep, structural trough that existed off the coast of southern California¹. Over time, sedimentation slowly filled the trough with tremendous amounts of sediments. About 7 million years ago, as sedimentation continued, an eastward shift of the boundary between the Pacific and North American plates to its present position would begin shaping the Los Angeles Basin from this deep trough. Deformation of the basin along contractional faults acted to shorten the basin in a north-south direction and uplift the bedrock units to form hills and mountains. The Elysian, Repetto, Puente Hills, were uplifted along thrust faults beginning approximately

¹ Yerkes 1972

2 to 5 million years ago.² Shortening of the Los Angeles Basin and San Gabriel Valley continues today along generally east-west trending faults.³

a. Local Geology

The project site passes from east to west along the northern part of the SGV, a structural basin extending from downtown Los Angeles to the upper Santa Ana River Valley. The SGV is bound to the southeast by the San Jose Hills, and to the north by the San Gabriel Mountains. It is an almost closed basin drained by three rivers, the San Gabriel River, Rio Hondo, and Arroyo Seco, from east to west, respectively. The deepest part of the SGV is beneath the San Gabriel River where approximately 4,000 feet of Upper Pleistocene to Holocene age (approximately 1 million years ago to recent) sediments are deposited.⁴ During the last few thousand years, the SGV has been receiving sediments shed from the surrounding mountains. Much of this sediment is transported along the San Gabriel River and deposited as sand and gravel within the river channel and as finer sand, silt and clay on the river floodplain. In addition to these unconsolidated surficial units are bedrock units. The bedrock units underlying the variable thickness of alluvial deposits are marine and nonmarine sedimentary rocks, and extrusive and plutonic igneous rocks. The bedrock units are exposed at the foothills of the San Gabriel Mountains and in the hills south of the main mountain front (i.e., South Hills, Way Hill, and San Jose Hills) adjacent to the project site.

b. Local Geologic Units

The aerial extent of the geologic units (surficial and bedrock) is shown on **Figures 3-8.1 through 3-8.4** and is discussed in more detail below. The geologic units presented in **Table 3-8.1** are a compilation of many lithologic units described in the California Geologic Survey’s Open-File Reports (98-12, 98-13, 98-15, 98-16, 98-20, 98-21, 98-23, and 2000-06).

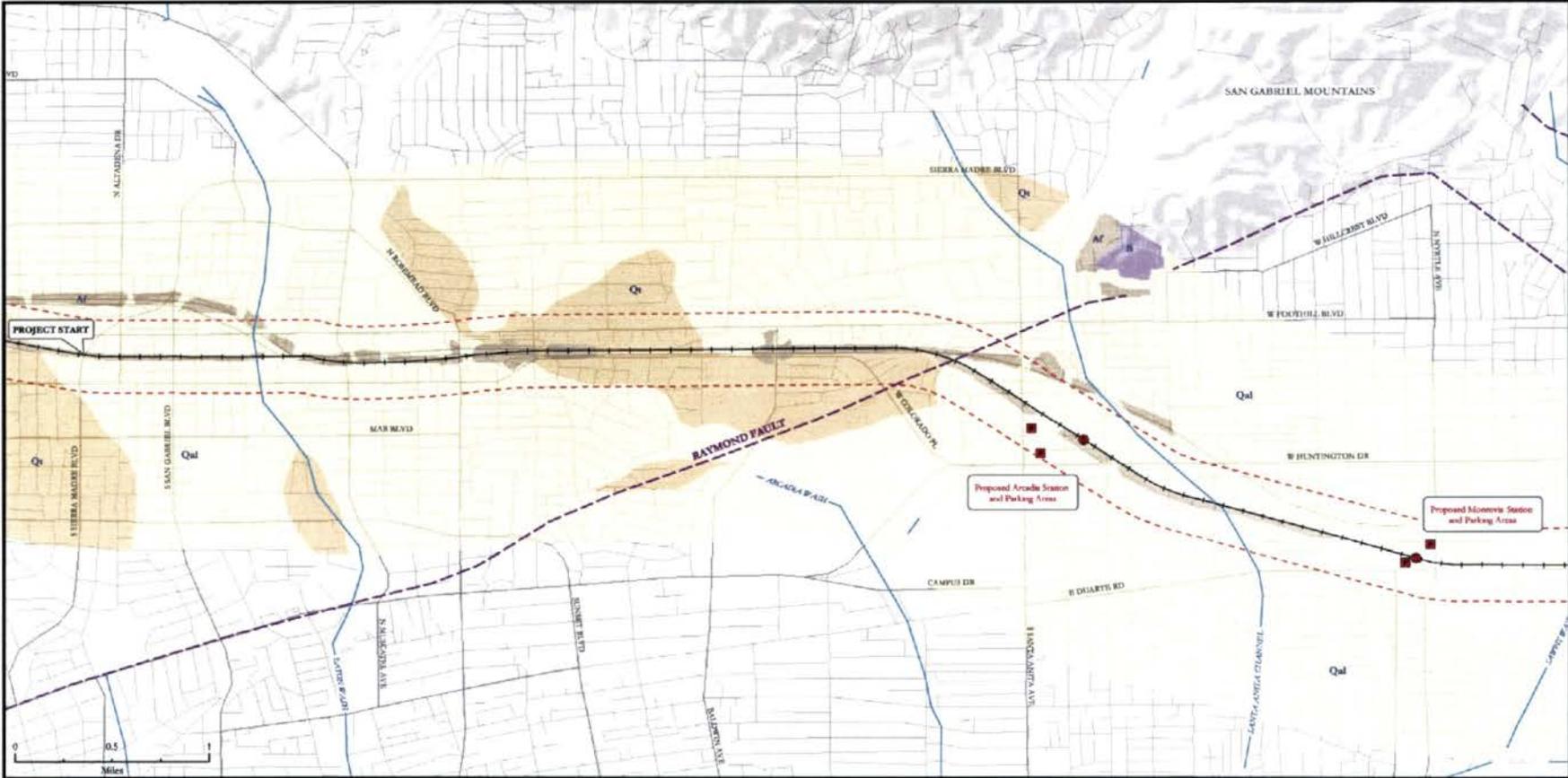
| TABLE 3-8.1 GEOLOGICAL UNITS IN THE STUDY AREA | | |
|---|-----------------------------|--------------------|
| | Type | Map Symbol* |
| Surficial Units | Artificial Fill | Af |
| | Quaternary Alluvium | Qal |
| | Quaternary Colluvium | Qc |
| | Quaternary Terrace Deposits | Qt |
| Bedrock Units | Glendora Volcanics | Tgv |
| | Topanga Formation | Tt |
| | Mountain Meadows Dacite | Tmda |
| | Bedrock Undifferentiated | B |

* See Figures 3.8-1 through 3-8.4.

² Shaw and Suppe 1996

³ Shaw and Suppe 1996; Shaw et al. 2002; Fuis et al. 2001

⁴ California Department Water Resources 1966



WARNING: SCALE IS APPROXIMATE

SOURCE & REFERENCE INFORMATION:
 Geology data compiled from CGS (California Geological Survey) Seismic Hazard Open-File Reports, various authors.
 Open-File Reports 98-12 (Azusa), 98-13 (Burbank Park), 98-15 (El Monte), 98-16 (Glendale), 98-20 (Los Angeles), 98-21 (Min Wilson), 98-23 (San Dimas), 2000-06 (Ontario)
 Fault data derived from CGS, Jennings California Geologic Map 1977 and USGS Preliminary Geologic Map San Bernardino County Sheet 04 Quadrangle 2003.
 Road data from U.S. Census Bureau 2000 TIGER data. National Elevation Data (NED) from USGS and orthorectified data from ESRI Data & Maps.

LEGEND

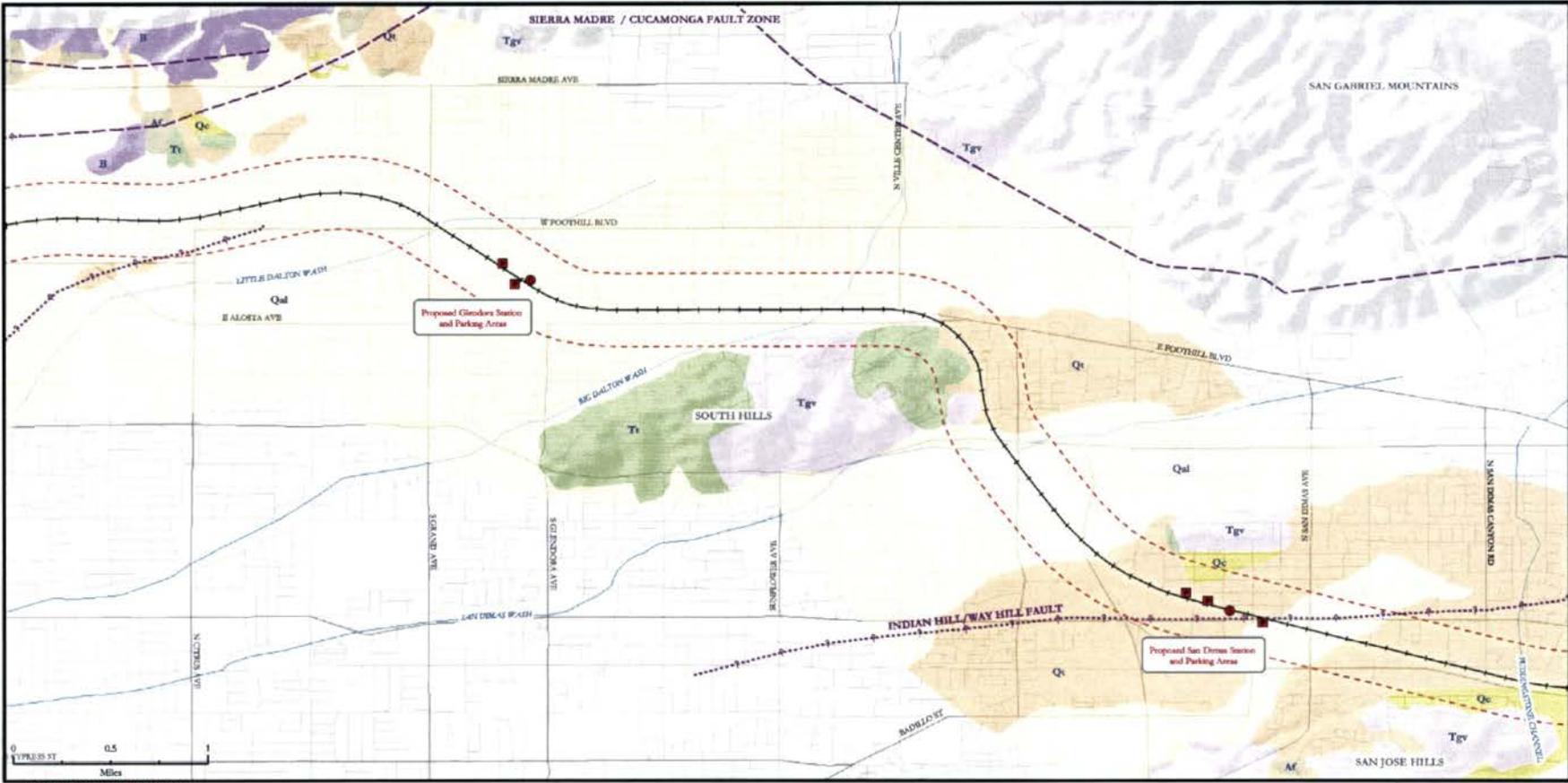
| | | |
|----------------------|--------------------------|--|
| Surface Units | Bedrock Units | Miscellaneous Lines |
| Af Artificial Fill | Tl Tertiary Formation | - - - - - Fault Fault, Approximate location Control where uncertain |
| Qc Collium | Tm Mountain Meadow Ditch | - - - - - Fault, Approximate location Active or potentially active |
| Qal Alluvium | Ty Tertiary Volcanics | ● Proposed Station Location |
| Qs Terrace Deposits | U Unconsolidated | ■ Proposed Parking Location |
| | | - - - - - 1000 Foot Buffer |
| | | — Gold Line Rail |

GEOLOGY MAP
 Los Angeles and San Bernardino Counties

GOLD LINE Phase II

Langston Consulting, Inc.
 4400 Wilshire Blvd, Suite 200
 Los Angeles, CA 90048
 Project No. 000189-001
 Produced By: C.J.K.
 Eng./Geol. D.J.C./R.E.J.
 Date: January 2004
 Figure 3-8.1

Figure 3-8.1: Geology Map - Los Angeles and San Bernardino Counties (Map 1 of 4)



SOURCE & REFERENCE INFORMATION:
 Geology data compiled from CGS (California Geological Survey) Source: Hazard Open-File Reports, various authors.
 Open File Reports: 98-12 (Azusa), 98-13 (Juchita Park), 98-15 (El Monte), 98-16 (Glendale), 98-20 (Los Angeles), 98-21 (New Wilson), 98-25 (San Dimas), 2000-06 (Ontario)
 Fault data derived from CGS, Jointing California Geologic Map 1977 and USGS Preliminary Geologic Map San Bernardino County 30x60 Quadrangle 2003.
 Road data from U.S. Census Bureau 2000 TIGER data. National Elevation Data (NED) from USGS and miscellaneous data from ESRI Data & Maps.

LEGEND

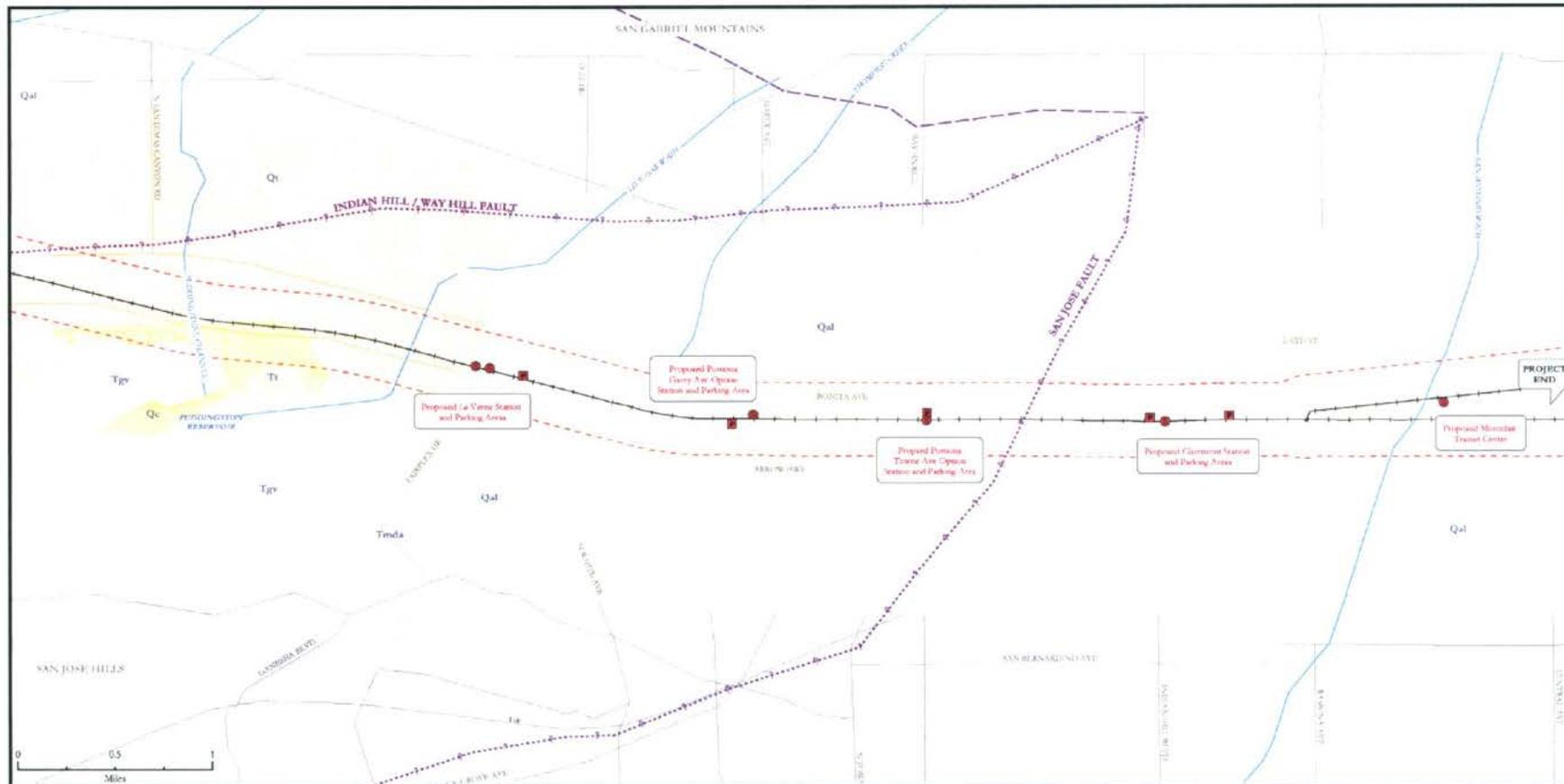
| | | |
|--|---|--|
| Bedrock Units: | Quaternary Units: | Miscellaneous Units: |
| <ul style="list-style-type: none"> Artificial Fill (Af) Colombian (Qc) | <ul style="list-style-type: none"> Alluvium (Qal) Recent Deposits (Qr) Terrace Deposits (Qt) | <ul style="list-style-type: none"> San Gabriel Mountains (Tgv) Sierra Madre (Tsm) San Jose Hills (Tsj) San Dimas (Tsd) San Gabriel (Tsg) San Bernardino (Tsb) San Gabriel Mountains (Tgm) San Jose Hills (Tsj) San Dimas (Tsd) San Gabriel (Tsg) San Bernardino (Tsb) |
| <ul style="list-style-type: none"> 1000 Foot Buffer Gold Line Rail | <ul style="list-style-type: none"> Proposed Station Location Proposed Parking Location | <ul style="list-style-type: none"> Proposed Station Location Proposed Parking Location |

GEOLOGY MAP
 Los Angeles and San Bernardino County

GOLD LINE Phase II

Langston Consulting, Inc.
 Project No. 605189-001
 Produced By: C.J.A.
 Eng/Geol: DPC/RJD
 Date: January 2004
 Page 3-8.3

Figure 3-8.3: Geology Map - Los Angeles and San Bernardino Counties (Map 3 of 4)



WARNING: SCALE IS APPROXIMATE.

SOURCE & REFERENCE INFORMATION:

Geology data compiled from CGS (California Geological Survey) Science Hazard Open File Reports, various authors.

Open File Reports: 98-12 (Azusa), 98-13 (Bakers Park), 98-15 (El Monte), 98-76 (Glendora), 98-20 (Los Angeles), 98-21 (Nor Wilson), 98-23 (San Dimas), 2000-06 (Ontario)

Fault data derived from CGS, Jennings California Geologic Map 1977 and USGS Preliminary Geologic Map San Bernardino County 3x60 Quadrangle 2003. Road data from U.S. Census Bureau 2000 TIGER data. National Elevation Data (NED) from USGS and miscellaneous data from ESRI Data & Maps.

LEGEND

- | | | |
|--|---|--|
| Surface Data: | Bedrock Data: | Maintenance Data: |
| <ul style="list-style-type: none"> Alluvial Fill Colluvium Trench Deposits | <ul style="list-style-type: none"> Tertiary Formations Miocene Shale and Sandstone Bedrock, Unconsolidated | <ul style="list-style-type: none"> Fault Band, Approximate Location (shown where surface) Fault, Approximate Location (not at ground surface) Proposed Station Location Proposed Parking Location |

| | |
|--|---|
| <p>GEOLOGY MAP Los Angeles and San Bernardino Counties</p> <p style="font-size: 2em; margin: 0;">N</p> <p style="font-weight: bold; font-size: 1.2em;">GOLD LINE Phase II</p> | <p style="font-size: 0.8em; margin: 0;">Langston Consulting, Inc. 4000 CRENSHAW SQUARE Project No. 000185-001 Prepared By: C.L.R. Eng./Geol. D.S.C./R.E.D. Date: January 2004 Page: 3-8-6</p> |
|--|---|

Figure 3-8.4: Geology Map - Los Angeles and San Bernardino Counties (Map 4 of 4)

3-8.2.2 Regional Faulting and Seismicity

The two principal seismic considerations for most sites in southern California are surface rupture along active fault traces and damage to structures due to seismically induced ground shaking. Surface rupture occurs during an earthquake when movement along an active fault breaks the ground surface. Strong ground motion may also affect any area of southern California to varying degree due to the proximity and earthquake potential of nearby active faults, and to the local geologic and topographic conditions, that can either amplify or attenuate the seismic waves. Seismic hazards that may affect the project site include primary hazards from surface rupturing of the ground surface along active fault traces, and secondary hazards resulting from strong ground shaking.

a. Surface Rupture

Surface rupture can be very devastating to structures built across an active fault. To protect structures from the hazard of ground surface rupture along a fault, the California Geologic Survey (CGS), under the State-mandated Alquist-Priolo Act of 1972, has delineated "Earthquake Fault Zones" along well-defined active or potentially active faults.⁵ A fault is considered active if there is evidence of movement along one or more of its segments in the last 11,000 years that is either directly observable or inferred. **Figure 3-8.5** shows the project site and the active and potentially active faults in the region. A well-defined fault is one in which "its trace can be clearly detectable by a trained geologist as a physical feature at or just below the ground surface." The well-defined fault may be identified by either direct or indirect methods. If a site is located within an Earthquake Fault Zone, a detailed fault investigation is required prior to construction. An Earthquake Fault Zone has been delineated for the Raymond fault, which crosses the alignment in Arcadia approximately 0.5 mile (0.3 kilometer) west of the proposed Arcadia Station and Parking areas (see **Figures 3-8.1 and 3-8.10**). No other active faults are known to cross the project site although numerous active faults are located in the region (see **Figure 3-8.5**). Ground rupture from these regional faults are not likely to affect the project site although strong ground shaking from an earthquake on one of these faults could adversely affect the project site.

b. Seismic Shaking

The project area is likely to be subjected to strong ground shaking during its lifetime. The intensity of ground shaking at a given location along the alignment would depend primarily upon the earthquake's magnitude, faulting mechanism, distance from the seismic source (focus), and the site response characteristics.⁶ The intensity of shaking is generally amplified in areas underlain by deep deposits of loose, unconsolidated soils. Ground shaking is also known to be enhanced by topographic highs, but this phenomena is poorly understood at this time. The most common effects of strong seismic shaking include liquefaction and its related ground deformations, dynamic settlement, and landsliding (see **Section 3-8.3.2** for a detailed discussion of these terms). To evaluate the ground motion and determine an appropriate level of peak ground acceleration (PGA) that the project site will likely experience, a site-specific analysis would be performed for the alignment during Preliminary Engineering. PGA is the greatest acceleration an earthquake causes the ground surface to move. However, for the purposes of this general evaluation of the project alignment, a deterministic seismic hazard analysis was performed. This analysis estimated the PGA values to be expected along the alignment. The PGA values are based on amount of ground shaking the site will experience during an earthquake the type of material that underlies

⁵ Hart and Bryant 1999

⁶ Petersen et al. 1998

the site. For our evaluation we assumed that alluvium underlies the project site, therefore, the attenuation relationship for alluvium was used during the calculation of the PGA expected along the alignment.⁷ The resultant PGA maps are presented in **Figures 3-8.11** through **3-8.14**. The PGA values on the figures have been contoured using a 0.1g interval.⁸

Another way of describing the intensity of an earthquake at a particular site is based on the observations of individuals during and after the earthquake. This represents the severity of shaking, as perceived by those who experienced it. It is also based on observations of damage to structures, movement of furniture, and changes in the earth surface as a result of geologic processes during the earthquake. The Modified Mercalli Intensity Scale is commonly used to quantify intensity descriptions. The intensity scale ranges from I to XII (see **Table 3-8.2**).

The greatest impact of an earthquake is usually in the epicentral region, with lower intensities occurring in zones outward from the epicenter. The quality of construction and variation of geologic conditions affect the distribution of intensity. Some buildings are safer than others depending on design, foundation, location, and furnishings. Most buildings constructed on bedrock suffer less damage than those constructed on thick alluvium (unconsolidated sediments) or fill.

| | |
|------------|--|
| I | Not felt by people, except under especially favorable circumstances. However, dizziness or nausea may be experienced. Sometimes birds and animals are uneasy or disturbed. Trees, structures, liquids, bodies of water may sway gently, and doors may swing very slowly. |
| II | Felt indoors by a few people, especially on upper floors of multistory buildings and by sensitive or nervous persons. As in Level I, birds and animals are disturbed, and trees, structures, liquids, and bodies of water may sway. Hanging objects swing, especially if they are delicately suspended. |
| III | Felt indoors by several people, usually as a rapid vibration that may not be recognized as a earthquake at first. Vibration is similar to that of a light truck, or lightly loaded trucks passing nearby, or heavy trucks some distance away. Duration may be estimated in some cases. Movements may be appreciable on upper levels of tall structures. Standing cars may rock slightly. |
| IV | Felt indoors by many, outdoors by few. Awakens a few individuals, particularly light sleepers, but frightens no one except those apprehensive from previous experience. Characterized by vibration like that due to passing of heavy or heavy loaded trucks, sensation like a heavy body striking building, or the falling of heavy objects inside. Dishes, windows, and doors rattle; glassware and crockery clink and clash. Walls and house frames creak, especially if intensity is in the upper range of this level. Hanging objects often swing. Liquids in open vessels are disturbed slightly. Stationary cars rock noticeably. |
| V | Felt indoors by practically everyone, outdoors by most people. Direction can often be estimated by those outdoors. Awakens many or most sleepers. Frightens a few people, with slight excitement; some persons run outdoors. Buildings tremble throughout. Dishes and glassware break to some extent. Windows crack in some cases, but not generally. Vases and small or unstable objects overturn in many instances, and few fall. Hanging objects and doors swing open or close abruptly. Pendulum clocks stop, or run fast or slow. Small objects move, and furnishings may shift to a slight extent. Small amounts of liquids spill from well-filled open containers. Trees and bushes shake slightly. |
| VI | Felt by everyone, indoors and outdoors. Awakens all sleepers. Frightens many people; general |

⁷ Sadigh et al. 1997

⁸ PGA is expressed as a percent of the acceleration due to gravity (g). Values of PGA are primarily utilized by scientists and engineers in site analyses.

TABLE 3-8.2 *continued (page 2 of 2)*
MODIFIED MERCALLI INTENSITY SCALE

| | |
|------|---|
| | excitement, and some persons run outdoors. Persons move unsteadily. Trees and bushes shake slightly to moderately. Liquids are set in strong motion. Small bells in churches and schools ring. Poorly built buildings may be damaged. Plaster falls in small amounts. Other plaster cracks somewhat. Many dishes and glasses, and a few windows, break. Knickknacks, books, and pictures fall. Furniture overturns in many instances. Heavy furnishings move. |
| VII | Frightens everyone. General alarm, and everyone runs outdoors. People find it difficult to stand. Persons driving cars notice shaking. Trees and bushes shake moderately to strongly. Waves form on ponds, lakes, and streams. Water is muddied. Gravel or sand banks along streams cave in. Large church bells ring. Suspended objects quiver. Damage is negligible in buildings of good design and construction; slight to moderate in well-built ordinary buildings; considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up with mortar), spires, etc. Plaster and some stucco fall. Many windows and some furniture break. Loosened brickwork and tiles shake down. Weak chimneys break at the roofline. Cornices fall from towers and high buildings. Bricks and stones are dislodged. Heavy furniture overturns. Concrete irrigation ditches are considerably damaged. |
| VIII | General fright, and alarm approaches panic. Persons driving cars are disturbed. Trees shake strongly, and branches and trunks break off (especially palm trees). Sand and mud erupt in small amounts. Flow of springs and wells is temporarily and sometimes permanently changed. Dry wells renew flow. Temperatures of spring and well waters vary. Damage is considerable in ordinary substantial buildings, with some partial collapse; heavy in some wooden houses, with some tumbling down. Panel walls break away in frame structures. Decayed pilings break off. Walls fall. Solid stone walls crack and break seriously. Wet grounds and steep slopes crack to some extent. Chimneys, columns, monuments, and factory stacks and towers twist and fall. Very heavy furniture moves conspicuously or overturns. |
| IX | General panic. Ground cracks conspicuously. Damage is great in masonry structures and buildings, with some collapsing in large part. Some wood frame houses built especially to withstand earthquakes are thrown out of plumb, others are shifted wholly off foundations. Reservoirs are seriously damaged, and underground pipes sometimes break. |
| X | Most masonry and frame structures and their foundations are destroyed. Ground, especially where loose and wet, cracks up to widths of several inches; fissures up to a yard in width run parallel to canal and stream banks. Landsliding is considerable from riverbanks and steep coasts. Sand and mud shift horizontally on beaches and flat land. Water level changes in wells. Water is thrown on banks of canals, lakes, rivers, etc. Dams, dikes, embankments are seriously damaged. Well-built wooden structures and bridges are severely damaged, and some collapse. Dangerous cracks develop in excellent brick walls. Railroad rails bend slightly. Pipelines buried in earth tear apart or are crushed endwise. Open cracks and broad wavy folds open in cement pavements and asphalt road surfaces. |
| XI | Few if masonry structures remain standing. Disturbances in ground are many and widespread, varying with the ground material. Broad fissures, earth slumps, and landslips develop in soft wet ground. Water charged with sand and mud is ejected in large amounts. Sea waves of significant magnitude may develop. Damage is severe to wood frame structures, especially near epicenter, great to dams, dikes and embankments, even at long distances. Supporting piers or pillars of large, well built bridges are wrecked. Wooden bridges that "give" are less affected. Railroad rails bend greatly and some thrust endwise. Pipelines buried in earth are put completely out of service. |
| XII | Damage is nearly total. Practically all works of construction are damage greatly or destroyed. Disturbances in the ground are great and varied, and numerous shearing cracks develop. Landslides, rockfalls, and slumps in riverbanks are numerous and extensive. Large rock masses are wrenched loose and torn off. Fault ruptures develop in firm rock, and horizontal and vertical displacements are noted. Water channels, both surface and underground, are disturbed and modified greatly. Lakes are dammed, new waterfalls are produced, rivers are deflected, etc. Surface waves are seen on ground surfaces. Lines of sight and level are destroyed. Objects are thrown upward into the air. |

c. Nearby Active Faults

There are numerous active and potentially active faults within a few miles of the project site. Below is a description of the more prominent faults near the site and a few which cross the alignment.

Chino Fault

The Chino fault, located about 3.7 miles from the eastern terminus of the project site, is the northward extension of the Elsinore Fault Zone, north of the Puente Hills (see **Figure 3-8.5**). Offset drainages, fault scarps and trench excavations show that this is an active fault.⁹ It has been estimated that the Chino fault is capable of generating an earthquake of maximum moment magnitude (Mw) 6.7. Moment magnitude (Mw) is a measurement of an earthquake's magnitude based on area of the fault, amount of movement during the earthquake, and the strength of the rocks ruptured during the earthquake.

Clamshell-Sawpit Fault

The Clamshell-Sawpit fault is located 2.4 miles north of the project site near Arcadia and Monrovia (see **Figure 3-8.5**). It is a 16-kilometer long, north to northeast dipping fault zone that branches northeastward from the Sierra Madre fault zone.¹⁰ It has a slip rate of 1.5 to 2.5 mm/yr and is capable of producing an earthquake with an estimated maximum moment magnitude (Mw) of 6.5.¹¹

Duarte Fault

The Duarte fault is a southern splay of the Sierra Madre-Cucamonga Fault Zone that crosses the project site in Azusa (see **Figures 3-8.2 and 3-8.7**), approximately 1 mile west of the proposed Irwindale Station and Parking area. It has been mapped¹² as scarps within the older and younger alluvial fan deposits emanating from Bradbury, Spinks, and Monrovia Canyons north of the cities of Duarte and Azusa. The fault extends through the San Gabriel River and into Azusa based on vegetation lineaments observed on aerial photographs, geophysical evidence, and a groundwater barrier observed through water table variations.¹³ Multiple groundwater barriers present north of Azusa indicate the presence of an Upper Duarte fault, which has an inferred trace a few thousand feet north of the Duarte fault.¹⁴ The Upper Duarte and Duarte faults have not been zoned under the Alquist-Priolo Act because the timing of its latest movement has not yet been determined; however, the Duarte fault is considered active by the County of Los Angeles.¹⁵ The CGS has not delineated this as an active fault at this time.

⁹ Dolan et al. 2001

¹⁰ Cao et al. 2003, Leighton 1990

¹¹ Cao et al. 2003, Dolan et al. 1995

¹² Morton 1973, Crook et al. 1987

¹³ Crook et al. 1987

¹⁴ Crook et al. 1987

¹⁵ Leighton 1990

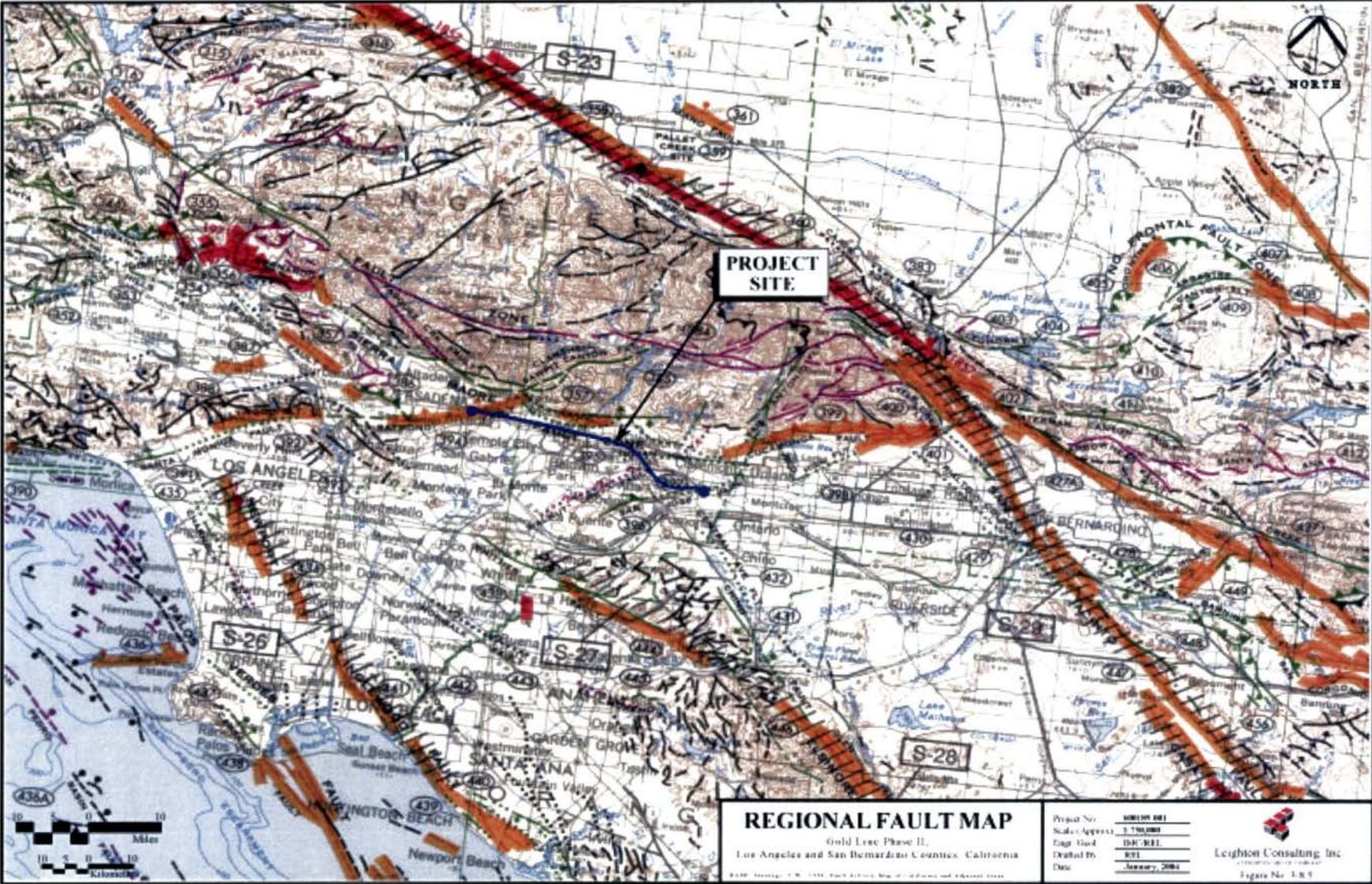


Figure 3-8.5: Regional Fault Map

Hollywood Fault

The Hollywood fault is located 7.3 miles from the western terminus of the project site (see **Figure 3-8.5**). It extends for 8.7 miles from the Los Angeles River to Beverly Hills along the eastern Santa Monica Mountains. This fault places older bedrock of the Santa Monica Mountains next to young (late Pleistocene to Holocene age; i.e., a few hundred thousand years old) alluvial fan deposits of the adjacent basin.¹⁶ The Hollywood fault has an estimated slip rate of 0.5 to 1.5 mm/yr and is capable of producing an earthquake with a maximum moment magnitude (Mw) 6.4.¹⁷

Puente Hills Blind-Thrust Fault

Movement on the Puente Hills Blind-Thrust Fault (PHT) caused the 1987 Mw 6.0 Whittier Narrows earthquake. Blind thrust faults are located in the subsurface with no mapped fault trace at the ground surface. The focus of the 1987 event was at depth of approximately 13 kilometers below the San Gabriel Valley near Whittier Narrows. The PHT does not reach the surface, however, upward movement along the fault has produced a fold above it and just below the ground surface.¹⁸ To the north of the 1987 focus, the fault flattens and continues beneath the San Gabriel Mountains and merges with the Sierra Madre-Cucamonga Fault System.¹⁹ The PHT is located approximately 8 miles from the western terminus of the project site and is capable of producing an earthquake with an estimated maximum moment magnitude (Mw) of 7.1.²⁰

Raymond Fault

The Raymond fault extends across the Los Angeles Basin from the Los Angeles River to the foot of the San Gabriel Mountains in Monrovia. Its trace is arcuate, convex to the south, and trends roughly east-west at the western portion, then curves to east-northeast trend in the eastern portion (see **Figures 3-8.1, 3-8.6, and 3-8.11**). It crosses the project site in Arcadia approximately 0.5 miles (0.3 kilometers) west of the Arcadia Station and Parking areas (see **Figure 3-8.10**). This fault has been delineated as an Earthquake Fault Zone under the Alquist-Priolo Act.²¹

Geomorphic features along the surface trace of the Raymond fault indicate it is predominately a left-lateral strike-slip fault.²² A left-lateral strike-slip fault is one in which the left side will move away from an observer straddling the fault. Seismic evidence and aftershock analyses indicate that the Mw 4.9 1988 Pasadena earthquake occurred on the Raymond fault.²³ This fault is capable of producing a Mw 6.5, and has a slip rate of 1.5 ± 1.0 mm/yr.²⁴ Evidence from paleoseismologic fault trenching²⁵ suggests the most recent surface-rupturing event occurred more than 1,000 years ago.

¹⁶ Dolan et al. 1997

¹⁷ Cao et al. 2003, Petersen et al. 1996

¹⁸ Shaw and Shearer 1999, Pratt et al. 2001, Christofferson et al. 2001, Dolan et al. 2003

¹⁹ Fuis et al 2001

²⁰ Cao et al. 2003, Petersen et al. 1996

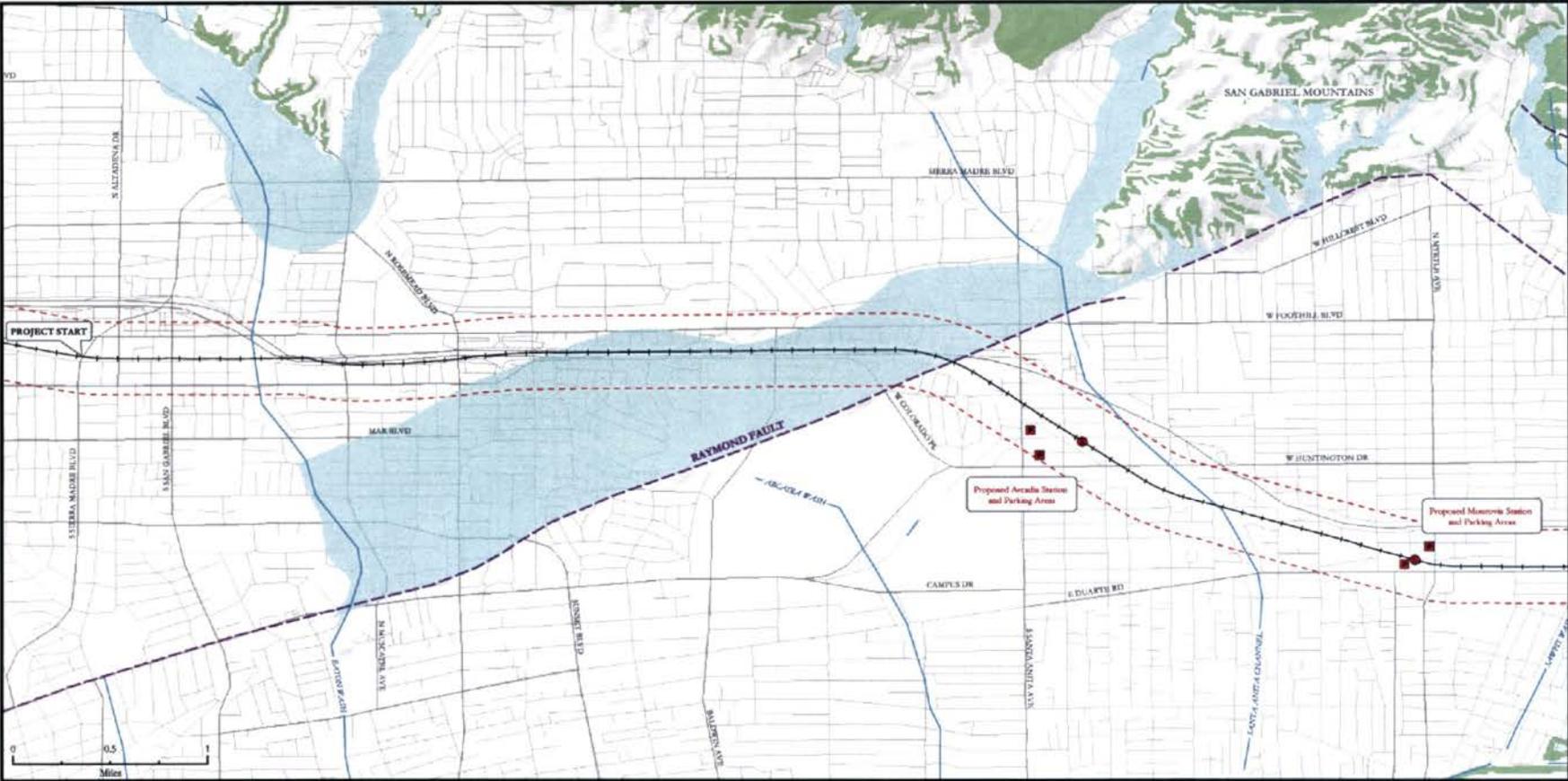
²¹ Hart and Bryant 1999

²² Crook et al. 1987, Jones et al. 1990, Weaver and Dolan 2000

²³ Jones et al. 1990

²⁴ Cao et al. 2003, Marin et al. 2000

²⁵ Crook et al. 1987, Weaver and Dolan 2000



WARNING: SCALE IS APPROXIMATE

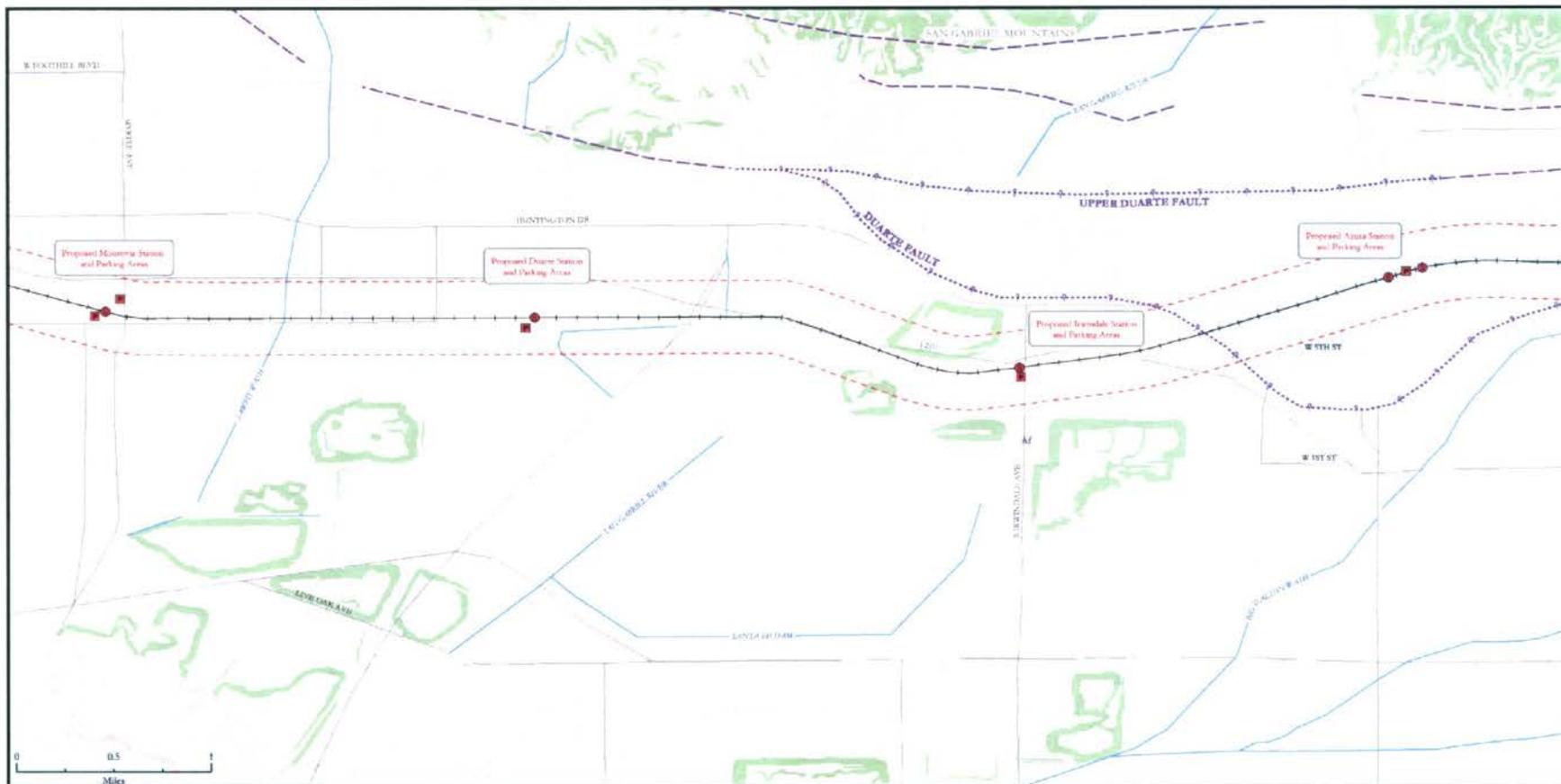
SOURCE & REFERENCE INFORMATION:
 Seismic Hazard data from CGS, (California Geological Survey)
 Seismic Hazard Open-File Reports, various authors
 Open File Reports: 98-12 (Azusa), 98-13 (Baldwin Park), 98-15 (El Monte), 98-16 (Glendora),
 98-20 (Los Angeles), 98-21 (Mac Wilson), 98-23 (San Dimas), 2000-06 (Ontario)
 Flash data derived from CGS, Jennings California Geologic Map, 1977
 USGS Preliminary Geologic Map San Bernardino County 30469 Quadrangle 2003
 Road data from 2000 TRUCK U.S. Census Bureau, National Elevation Data (NED) from USGS
 and miscellaneous data from ESRI Data & Maps

LEGEND

- Liquefaction Zone
- Landslide Zone
- Area of Zone Overlap
- Fault, Approximate location
Quarrel where location
- Fault, Approximate location
Active or potentially active
- SB Line Buffer
- Gold Line Rail
- Proposed Station Location
- Proposed Parking Location

| | |
|--|--|
| <p>SEISMIC HAZARDS Los Angeles and San Bernardino County</p> <p style="text-align: center;">N</p> <p style="text-align: center;">GOLD LINE Phase II</p> | Logoflex Consulting, Inc. 11000 Wilshire Blvd, Suite 1000 Beverly Hills, CA 90210 Project No: 000189-001 Produced By: CJE Eng/Geol: DYC/PRL Date: January 2004 Page 3-8.6 |
|--|--|

Figure 3-8.6: Seismic Hazards - Los Angeles and San Bernardino Counties (Map 1 of 4)



WARNING: SCALE IS APPROXIMATE

SOURCE & REFERENCE INFORMATION

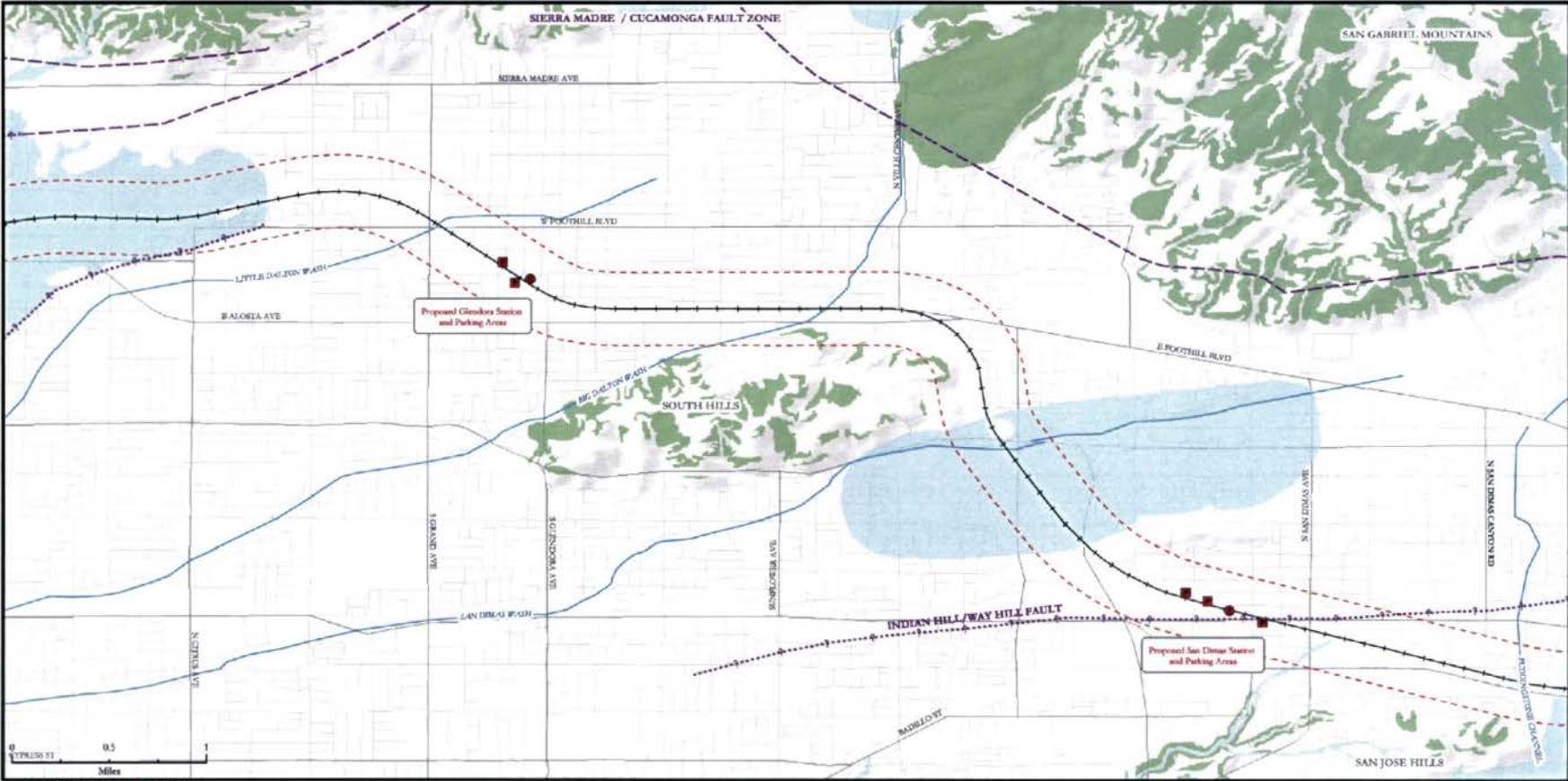
Seismic Hazard data from CGS, (California Geological Survey)
 Seismic Hazard Open File Reports, various authors.
 Open File Reports: 98-12 (Azusa), 98-13 (Redden Park), 98-15 (El Monte), 98-16 (Glendora),
 98-20 (Los Angeles), 98-21 (Mor Wilson), 98-23 (San Dimas), 2000-06, (Ontario)
 Fault data derived from CGS, (California Geological Survey), (1977)
 USGS Preliminary Geologic Map, San Bernardino County 30x60 Quadrangle, 2000
 Road data from 2000 TIGER, U.S. Census Bureau, National Transportation Data (NEDT) from USGS
 and miscellaneous data from ESRI Data & Maps

LEGEND

- Uplifted Zone
- Landslide Zone
- Area of Zone Overlap
- Peak Period, Approximate location
Quarrel where uncertain
- Fault, Approximate location
Active or potentially active
- 300-foot Buffer
- Gold Line Rail
- Proposed Station Location
- Proposed Parking Location

| | |
|--|--|
| <p>SEISMIC HAZARDS Los Angeles and San Bernardino Counties</p> <p>GOLD LINE Phase II</p> | <p>Logothem Consulting, Inc. 14000 Vanowen Street Vanowen, CA 91761 Project No. 000109-001 Prepared By: C.J.R. Eng./Geol.: D.J.C./R.E.J. Date: January 2006 Figure 3.8.7</p> |
| | |

Figure 3-8.7: Seismic Hazards - Los Angeles and San Bernardino Counties (Map 2 of 4)



WARNING: SCALE IS APPROXIMATE

SOURCE & REFERENCE INFORMATION:

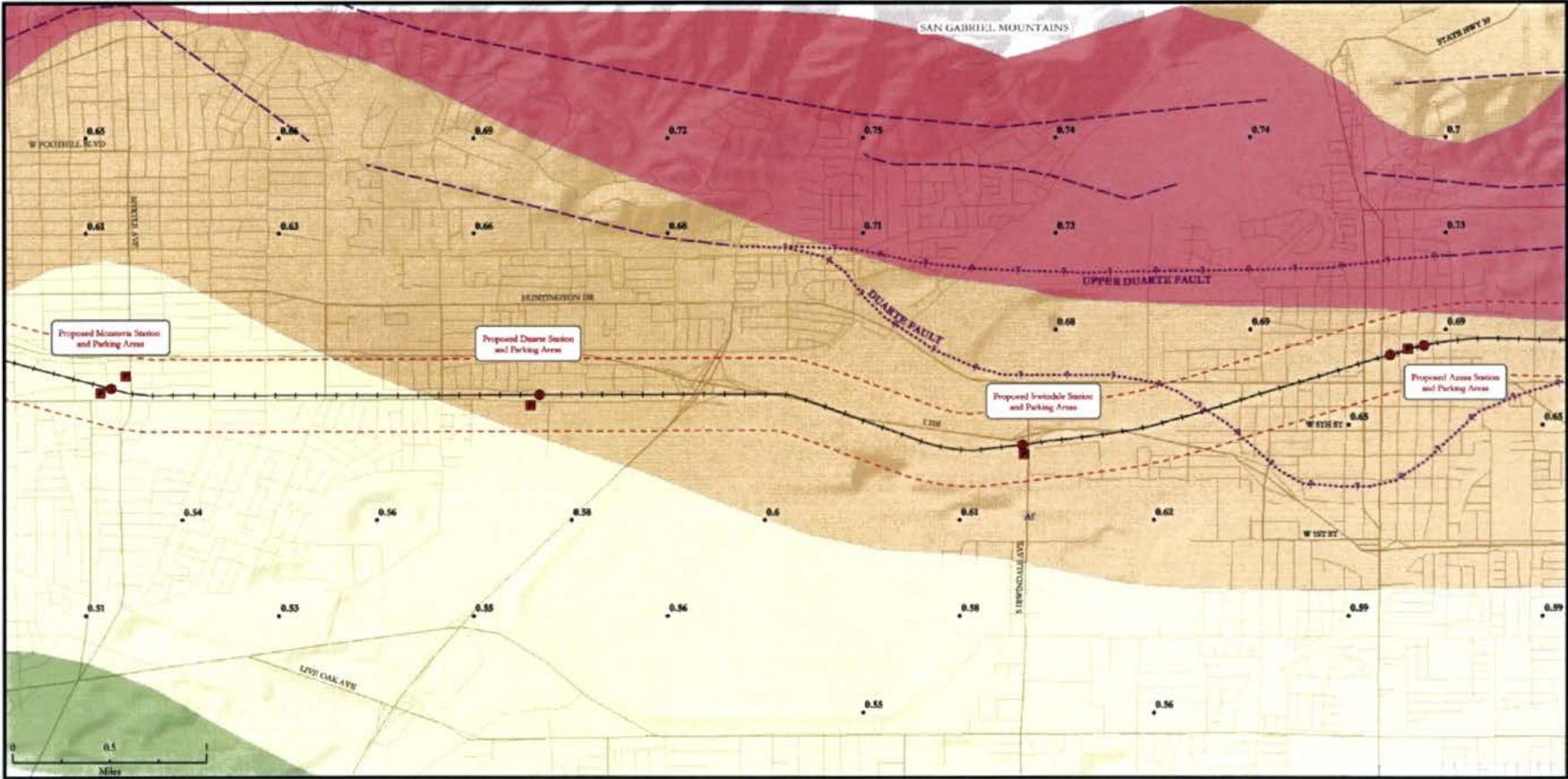
Seismic Hazard data from CGS, (California Geological Survey)
 Seismic Hazard Open-File Reports, various authors.
 Open-File Reports: 98-12 (Azusa), 98-13 (Bakers Park), 98-15 (El Monte), 98-16 (Glendora),
 98-20 (Los Angeles), 98-21 (Mt Wilson), 98-23 (San Dimas), 2000-06 (Ontario)
 Fault data derived from CGS, Jennings California Geologic Map, 1977
 USGS Preliminary Geologic Map San Bernardino County 30660 Quadrangle 2003
 Road data from 2000 TIGER U.S. Census Bureau. National Elevation Data (NED) from USGS
 and miscellaneous data from 1581 Data & Maps.

LEGEND

- Liquefaction Zone
- Landslide Zone
- Area of Zone Overlap
- Fault Buffer, Approximate location
Quoted where uncertain
- Fault, Approximate location
Active or potentially active
- Gold Line Rail
- Proposed Station Location
- Proposed Parking Location
- 500 Feet Buffer

| | |
|---|--|
| <p>SEISMIC HAZARDS Los Angeles and San Bernardino County</p> <p style="text-align: center;">N</p> <p style="text-align: center;">GOLD LINE Phase II</p> | Logline Consulting, Inc. A CALIFORNIA REGISTERED COMPANY Project No: 00189-001 Produced By: C.J.R. Eng/Geol: DJC/RLJ Date: January 2004 Page 3-8-3 |
|---|--|

Figure 3-8.8: Seismic Hazards - Los Angeles and San Bernardino Counties (Map 3 of 4)



WARNING: SCALE IS APPROXIMATE

SOURCE & REFERENCE INFORMATION:
 Peak Ground Acceleration data compiled by Engstrom Consulting, Inc. Nov 2003
 Peak data derived from CGS, Jennings California Geologic Map, 1977
 USGS Preliminary Geologic Map San Bernardino County X060 Quadrangle 2003
 Road data from U.S. Census Bureau 2000 TIGER Data. National Elevation Data (NED) from USGS and miscellaneous data from ESRI Data & Maps.

Peak Ground Acceleration Values (g)

| | |
|------------|------------|
| 0.40 - .49 | 0.60 - .69 |
| 0.50 - .59 | 0.70 - .79 |

0.77 - Location where PGA value has been calculated

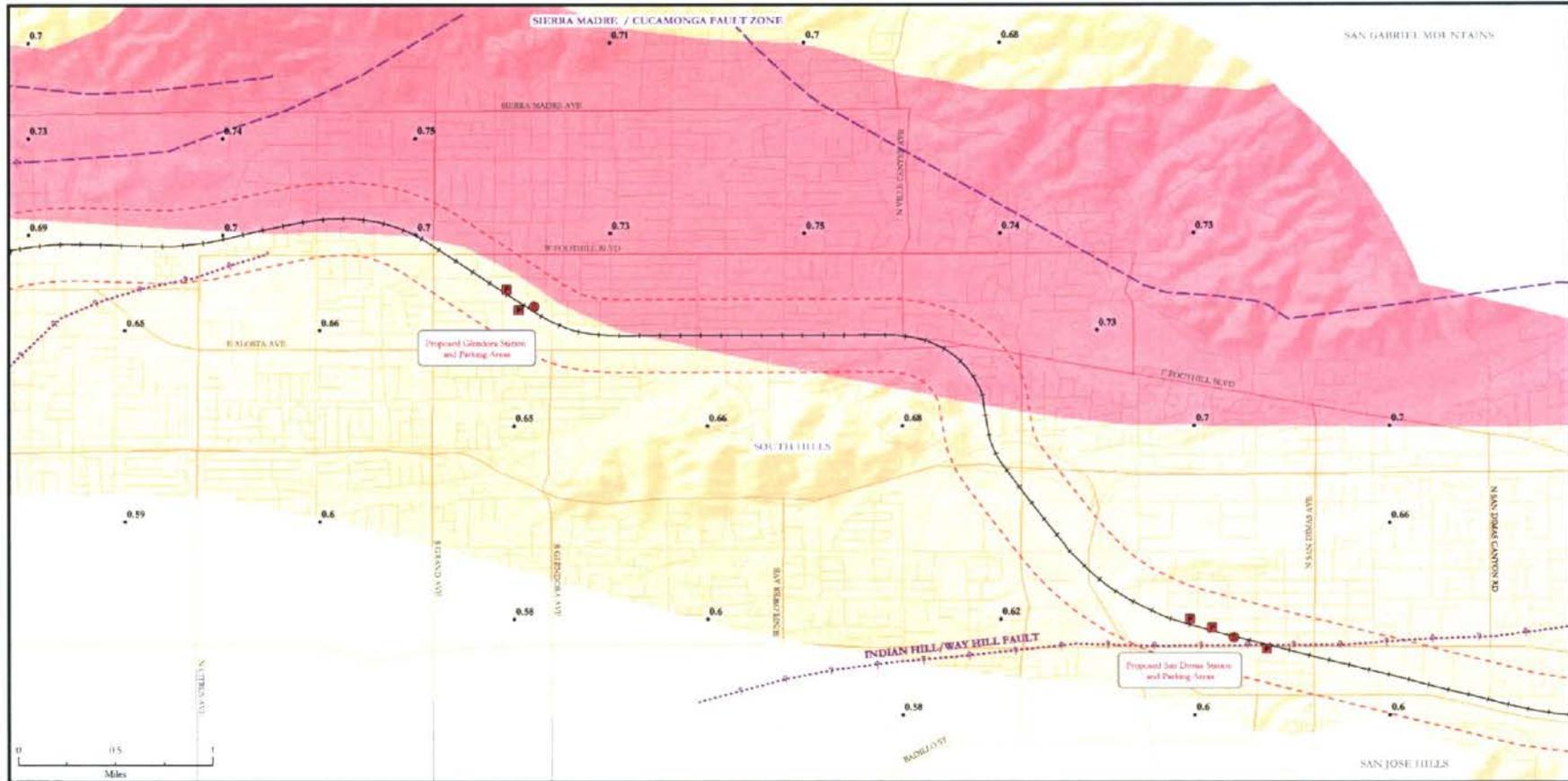
LEGEND

Miscellaneous Lines

- Fault Buffer, Approximate location Quoted where accurate
- Fault, Approximate location Active or potentially active
- Proposed Station Location
- Proposed Parking Location
- 1000 Foot Buffer
- Gold Line Rail

| | |
|--|---|
| <p>PEAK GROUND ACCELERATION Los Angeles and San Bernardino County</p> <p>GOLD LINE Phase II</p> | <p>Engstrom Consulting, Inc. a subsidiary of CH2M HILL</p> |
| | Project No: 000189-001 |
| | Produced By: CJR |
| | Eng/Geok: DJC/003 |
| | Date: January 2004 |
| Figure 3-8.12 | |

Figure 3-8.12: Peak Ground Acceleration (Map 2 of 4)



WARNING: SCALE IS APPROXIMATE.

SOURCE & REFERENCE INFORMATION

Peak Ground Acceleration data compiled by Leighton Consulting, Inc. Nov 2003
 Fault data derived from CGS, Jennings California Geologic Map, 1977
 USGS Preliminary Geologic Map San Bernardino County 30650 Quadrangle 2003
 Road data from U.S. Census Bureau 2000 TIGER Data - National Elevation Data (NED) from USGS
 and transportation data from ESRI Maps & Maps

Peak Ground Acceleration Values (g)



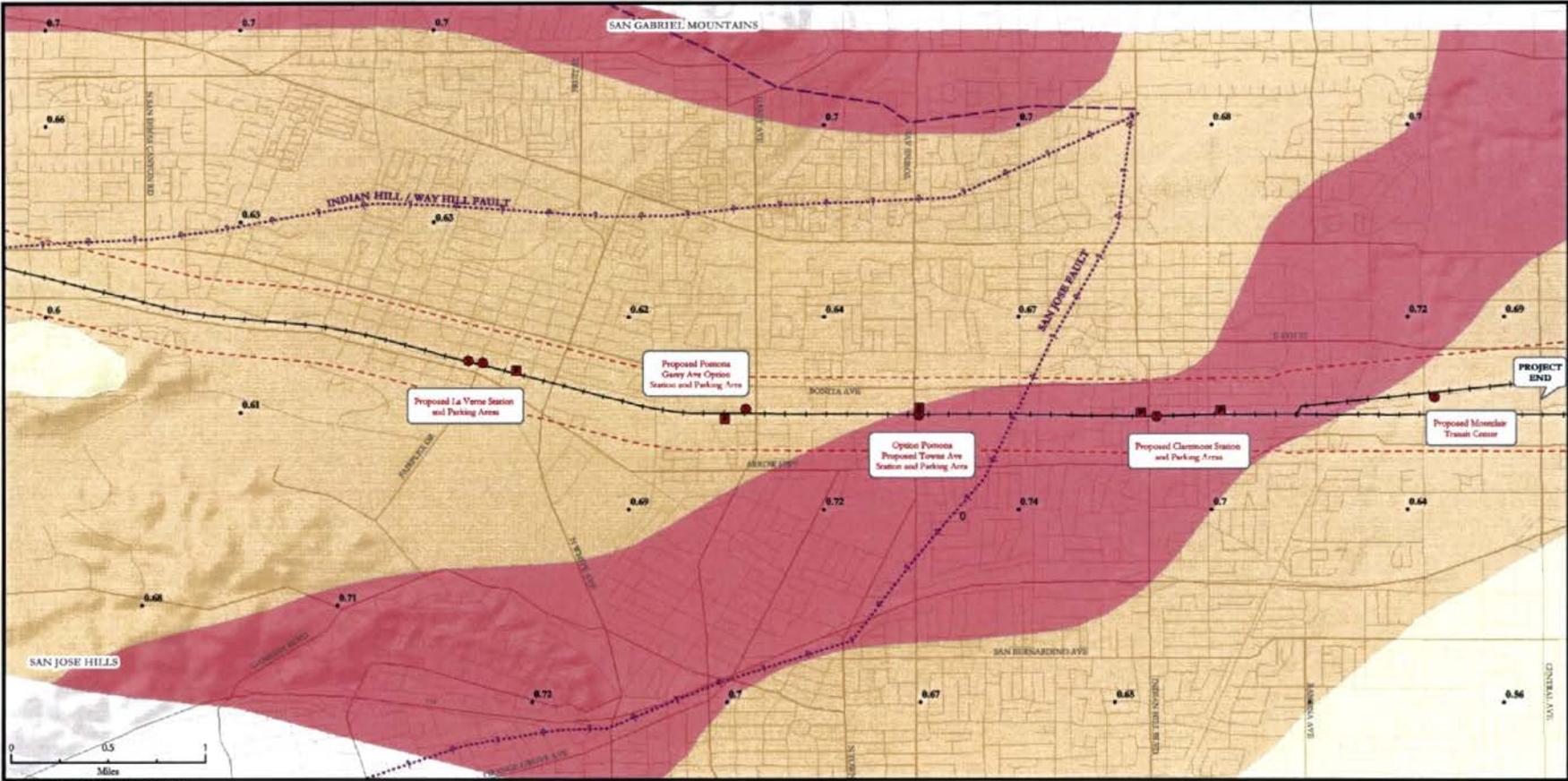
LEGEND

Maximums Units



| | |
|---|---|
| <p>PEAK GROUND ACCELERATION Los Angeles and San Bernardino County</p>  <p>GOLD LINE Phase II</p> |  Leighton Consulting, Inc. a subsidiary of CH2M HILL |
| | Project No. 000189-001 |
| | Produced by: CLR |
| | Eng./Cart. DJC/RBJ |
| | Date: January 2004 Figure 3-8.13 |

Figure 3-8.13: Peak Ground Acceleration (Map 3 of 4)



WARNING: SCALE IS APPROXIMATE

SOURCE & REFERENCE INFORMATION:
 Peak Ground Acceleration data compiled by Lightson Consulting, Inc. Nov 2003
 Fault data derived from CGS, Jennings California Geologic Map, 1977
 USGS Preliminary Geologic Map San Bernardino County 91660 Quadrangle 2005
 Road data from U.S. Census Bureau 2000 TIGER Data, National Elevation Data (NED) from USGS
 and miscellaneous data from ESRI Data & Maps.

Peak Ground Acceleration Values (g)

| | |
|------------|------------|
| 0.40 - .49 | 0.60 - .69 |
| 0.50 - .59 | 0.70 - .79 |

0.77 Location where PGA value has been calculated.

Miscellaneous Units

- (---)--- Fault Buffer, Approximate location Queried where accurate
- --- Fault, Approximate location Active or potentially active
- Proposed Station Location
- Proposed Parking Location
- --- 1000 foot Buffer
- +--- Gold Line Rail

| | |
|--|---|
| <p>PEAK GROUND ACCELERATION Los Angeles and San Bernardino County</p> <p>GOLD LINE Phase II</p> | <p>Lightson Consulting, Inc. 14250 VANOWEN AVENUE VANOWEN, CA 91760 (909) 451-1100 FAX (909) 451-1101 WWW.LIGHTSONCONSULTING.COM</p> |
| | Project No: 600189-001 |
| | Produced By: CLJ |
| | Eng/Geol: DJC/REJ Date: January 2004 Figure 3-8.14 |

Figure 3-8.14: Peak Ground Acceleration (Map 4 of 4)

San Andreas Fault Zone

The San Andreas fault is the longest and most well known fault in California. Its activity is known from historic earthquakes, most notable are the 1857 and 1906 magnitude 8 earthquakes, and from many fault studies that have shown that the San Andreas offsets, or displaces, recently deposited sediments. The closest portion of the San Andreas fault to the project site is the southern segment, which is located about 16 miles to the east-northeast. This segment is capable of producing an earthquake of a maximum moment magnitude (Mw) 7.1.²⁶

San Jacinto Fault

The San Jacinto fault zone extends for over 200 kilometers northwest from El Centro to Cajon Pass, California, where it intersects with the San Andreas fault. This fault zone is segmented along its entire length into smaller sub-parallel strands and cross faults. The closest segment to the project site is the San Bernardino segment, which is approximately 12.5 miles from the eastern terminus of the project site. The San Jacinto Fault Zone has produced more moderate to large earthquakes than any other fault zone in southern California.²⁷ The most recent earthquake occurred on November 23 1987 on the Superstition Hills fault segment approximately 90 miles east of San Diego. Up to 12.5 cm (approximately 5 inches) of surface displacement was observed for this Mw 6.2 seismic event. Along the length of the fault slip rate data is variable, ranging from approximately 2 to almost 20 mm/yr. A rate of 12 ± 6 mm/yr has been estimated for the San Bernardino segment of the fault with an earthquake of moment magnitude of Mw 6.7 possible.²⁸

San Jose Fault

The San Jose fault is an 11 to 14 mile-long fault that branches southwestward from the Cucamonga-Sierra Madre Fault Zone in the Upland area and continues southwest along the southern boundary of the San Jose Hills. The fault crosses the alignment approximately 0.5 mile west of the Pomona Towne Avenue Station. The fault has been mapped based on a water barrier in the vicinity of the project site where it reportedly impedes the flow of ground water, with ground water levels on the north side of the fault higher than water levels to the south of the fault.²⁹

Two Upland earthquakes of 1988 and 1990, magnitude 4.6 and 5.2, respectively, have been attributed to this fault.³⁰ Analyses of these earthquakes indicate the San Jose fault has left-lateral strike-slip motion on a northeast oriented fault.³¹ An earthquake on this fault, rupturing the entire length of the fault, could result in an earthquake of moment magnitude (Mw) 6.5.³²

²⁶ Petersen et al. 1996; Cao et al. 2003

²⁷ Petersen and Wesnousky 1994

²⁸ Petersen et al. 1996; Cao et al. 2003

²⁹ Tinsley et al. 1985, Los Angeles County Department of Public Works 1996

³⁰ Hauksson and Jones 1991

³¹ Yeats 2001, Hauksson and Jones 1991

³² Cao et al. 2003

Sierra Madre-Cucamonga Fault Zone

The Sierra Madre-Cucamonga Fault Zone includes several fault segments extending for over 86 miles along the southern margin of the San Gabriel Mountains. The two main portions of the Sierra Madre-Cucamonga Fault Zone include the Sierra Madre fault to the west and the Cucamonga fault to the east. The fault zone is inclined to the north, dipping below the San Gabriel Mountains and uplifting them above the Los Angeles Basin. The fault zone was responsible for the 1971 Mw 6.6 San Fernando earthquake on its westernmost segment near the town of Sylmar, California. The Sierra Madre fault passes through the northern portions of Pasadena, Arcadia, Monrovia, Duarte, Azusa, and portions of San Dimas. The Sierra Madre fault is approximately 1 mile at its closest point to the project alignment north of Glendora. This fault segment has an estimated maximum moment magnitude of Mw 7.0.³³

The Cucamonga fault is the eastern extent of the Sierra Madre-Cucamonga Fault Zone and lies to the north of Pomona, Claremont, and Montclair. It is located 2.2 miles north of Claremont at its closest point to the project site. This segment of the Sierra Madre-Cucamonga fault zone is capable of producing an estimated maximum moment magnitude earthquake of Mw 7.0.³⁴

Upper Elysian Park Blind-Thrust Fault

The upper Elysian Park fault is, like the Puente Hills blind thrust fault, a fault that does not intersect with the ground surface. The fault is expressed as an elongated group of low hills (Elysian Park Hills, Repetto Hills and Monterey Hills) extending for approximately 12.4 miles from northern Los Angeles to San Gabriel.³⁵ These hills are Pliocene to Quaternary-aged (approximately 2 million years old) folded sediments that have been uplifted along the fault. The Elysian Park fault has a slip rate of 0.9 to 1.7 mm/yr and is capable of producing a maximum moment magnitude earthquake of Mw 6.4.³⁶ It is near the western terminus of the project site, approximately 5.7 miles away.

Verdugo Fault

The Verdugo fault lies along the southeastern edge of the Pacoima Hills and Verdugo Mountains, north of the San Fernando Valley. It is a northwest-southeast striking fault, following the orientation of the Pacoima Hills to the north, and dips north below the hills. It is located approximately 3 miles from the western terminus of the project site. The estimated maximum moment magnitude earthquake this fault is capable of producing is a Mw 6.7.³⁷

Whittier Fault

The Whittier fault is the northwestward extension of the Elsinore Fault Zone, a 250-kilometer long fault zone that is traced from Los Angeles to northern Baja California (Mexico). The Whittier segment is approximately 24.8 miles long and extends from the Whittier Narrows section of the San Gabriel River southeastward to the Santa Ana River. Although no major historical earthquakes have been attributed to the Whittier fault, studies completed by several investigators, most of which included trenching, have

³³ Cao et al. 2003, Petersen et al. 1996

³⁴ Cao et al. 2003, Petersen et al. 1996

³⁵ Dolan et al. 2001

³⁶ Cao et al. 2003, Oskin et al. 2000

³⁷ Cao et al. 2003, Petersen et al. 1996

documented movement on this fault in the last 11,000 years.³⁸ The closest section of this fault lies approximately 10.5 miles from the project site. A maximum moment magnitude of Mw 6.8 has been estimated for this fault.³⁹

Local faults

Local faults include short, inferred faults that cross the project site and are not considered active or their activity has yet to be determined because of their inaccessibility to a detail study (i.e., buried). In the northeastern San Gabriel Valley three faults have been identified based on groundwater barriers observed by the California Department of Water Resources. The San Jose fault, discussed above, is oriented northeast - southwest along the southern edge of the San Jose Hills and has been determined to be the causative fault of the 1988 and 1990 Upland Earthquakes.⁴⁰ Walnut Creek fault has an inferred location on the north side of the San Jose Hills and is oriented roughly parallel to the San Jose fault. The Indian Hill fault, also called the Way Hill-Lone Hill fault, is known to exist based on differences in groundwater levels across this part of the San Gabriel Valley.⁴¹ The fault has been mapped along the trend of Way and Lone Hills east to the Cucamonga fault.

3-8.2.3 Subsidence

In California, subsidence related to man's activities has been attributed to withdrawal of subsurface fluids such as oil and groundwater, oxidation of subsurface organic material such as peat and coal, and by hydroconsolidation (from excessive irrigation) of loose, dry soils in a semi-arid climate.

Withdrawal of groundwater has occurred in the SGV and along the alignment for agricultural purposes. This practice has been greatly reduced in recent years, due to the urbanization of the area. As a result, groundwater elevations in the SGV have risen or remained constant in recent years.⁴² A majority of the SGV and alignment is underlain by alluvial deposits that can include isolated organic-rich soils and floodplain deposits. Subsidence due to oxidation of these deposits is possible. The extent or exact locality of such subsidence would be determined during investigations for the proposed stations and alignment during Preliminary Engineering.

3-8.2.4 Volcanic Hazards

Hazards from nearby volcanic activity may include surface rupture, lava flows and ash falls. Amboy Crater is the closest potentially active volcano to the project site. It lies approximately 100 miles to the northeast of the alignment. It includes a complex of cinder cone volcanoes that last erupted approximately 6,000 years ago; and that have erupted many times in the past 10,000 years.⁴³ The project site is not within the potential hazard area of the Amboy Crater volcanic area.⁴⁴

3-8.2.5 Existing Slope Stability

³⁸ Leighton et al. 1987, Rockwell et al. 1988, Gath et al. 1992, Patterson and Rockwell 1993

³⁹ Cao et al. 2003, Petersen et al. 1996

⁴⁰ Hauksson and Jones 1991

⁴¹ California Department of Water Resources 2003 and 1966

⁴² California Department of Water Resources 2003

⁴³ Parker 1963, Miller 1989

⁴⁴ Miller 1989

Most of the alignment, particularly east of the proposed Arcadia Station, is located on flat terrain. The few slopes that exist are those constructed for railroad bridges to cross above local roads and streams. Currently these man-made slopes appear in good stable condition. However, within the alignment buffer zone exist a few areas where slope instability could exist, particularly during an earthquake (see **Figures 3-8.7 through 3-8.9**). These areas are mapped as potential seismically induced landslide zones on the Seismic Hazard Zones Maps and Reports.⁴⁵ A seismically induced landslide zone is an area where previous landslides have occurred or an area where conditions exist for potential permanent ground displacement such that mitigation as defined in Public Resources Code Section 2693(c) would be required. These areas include some of the quarried slopes near the Santa Fe Dam and along the northern slopes of the South Hills. In these areas, seismically induced landslides could occur if shaking from an earthquake causes pre-existing landslides to reactivate or triggers new landslides along planes of weakness. Potential landslide hazard along the areas zoned by the State would be considered high. For the rest of the alignment not within the seismically induced landslide zones, the potential for this hazard would be low.

3-8.2.6 Groundwater

The San Gabriel Valley Groundwater Basin is structurally bound by the Raymond fault to the north, the Puente and Repetto Hills to the south and the San Jose and Chino faults to the southeast. Groundwater is contained in the older and more recent alluvium shed from the San Gabriel Mountains and transported to the basin by the Rio Hondo and San Gabriel River drainages.⁴⁶ Groundwater elevations are highest near the range front of the San Gabriel Mountains with decreasing elevations to the southwest, as groundwater flows southwesterly along the topographic slope through the Whittier Narrows.

Historical shallow groundwater levels vary across the basin due, in part, to faults that act as groundwater barriers.⁴⁷ North of the Raymond fault shallow ground water ranges from 10 feet below ground surface (bgs) at the north side of the Raymond fault to 100 feet bgs south of the fault in Pasadena.⁴⁸ Shallow groundwater in Monrovia and Arcadia south of the Raymond fault is between 100-200 feet bgs.⁴⁹ Where the alignment passes the San Gabriel River historically high groundwater levels are reported at depths of almost 200 feet bgs, however, there is an abrupt change to a shallow groundwater level to about 30 feet bgs north of the 210 freeway in Arcadia and Duarte.⁵⁰ The Sierra Madre Fault Zone creates a ground water barrier at this location juxtaposing basement igneous and metamorphic rocks against porous alluvium. In the Glendora area, north of the South Hills, historic shallow groundwater is between 100 to 150 feet bgs (Loyd and Wills 1998c). To the south of South Hills there is an area where the historic groundwater levels are anomalously high at less 30 feet bgs. South and east of the San Jose Hills the San Jose and Indian Hill faults act as barriers to groundwater flow and historic high ground water levels differ by more than 300 feet across the fault zone.⁵¹

⁴⁵ California Division of Mine and Geology 1999a, 1999b, 1999c, and 1999d; Perez et al. 1998; Schlosser and Wills 1998a and 1998b

⁴⁶ California Department of Water Resources 2003

⁴⁷ California Department of Water Resources 1966 and 2003

⁴⁸ Loyd and Wills 1998a

⁴⁹ Loyd and Wills 1998a

⁵⁰ Loyd and Wills 1998b

⁵¹ Loyd 1998

3-8.2.7 Soils

Soils in the study area have been heavily disturbed by urban development, which often includes the importation of soils for fill. Since soils underlying the right-of-way have proven capable of supporting rail infrastructure for over 100 years, no analysis of their characteristics was undertaken. Areas proposed for stations and parking have been previously developed; soils on these sites would be evaluated during Preliminary Engineering to ascertain any conditions which would require special construction techniques to meet current building codes.

Of concern in California is whether soils are prone to liquefaction during seismic events. Liquefaction often occurs in earthquake-prone areas underlain by young alluvium where the groundwater table is within 50 feet of the ground surface. The impact section discusses the presence or absence of liquefaction soils for each station/parking location.

3-8.3 Environmental Impacts

The potential environmental (geotechnical) impacts that could affect the project site are discussed below. These potential geotechnical impacts are similar for each of the construction alternatives for any given location along the alignment. However, potentially significant hazards, their impact and severity will differ along the alignment and have been presented below for specific locations within each city, from west to east. Potential impacts from subsidence, tsunamis and volcanic hazards are low to nil along the alignment and are not discussed any further.

3-8.3.1 Evaluation Methodology

This preliminary geotechnical assessment was conducted in accordance with the guidelines set forth by the California Geological Survey (formerly know as the California Division of Mines and Geology) in Notes 46 and 52, for preparation of Environmental Impact Reports.⁵² These guidelines identify geologic problems, such as earthquake damage, loss of mineral resources, slope instability, and erosion and flooding, that must be evaluated for their potential impact on the proposed development. The assessment includes:

- A review of available published documents and unpublished reports, including each city's general plan was conducted. A review of vintage historical aerial photographs from numerous flights between 1928 and 1979 was made.
- An evaluation and review of data collected during previous geotechnical investigations of the site was also conducted.
- The discussion of the geologic, seismic, groundwater, and soil engineering aspects of the site.
- A deterministic seismic hazard analysis for the major active and potentially active faults in the region was performed. The analysis is a site-specific evaluation of the potential ground motion expected for the site, which would be caused by the maximum earthquake expected to occur along any fault within about 62.5 mile radius of the site. The seismic hazard analysis estimates the peak horizontal ground acceleration (PGA) to be expected along the alignment, based on the shortest distance to the fault, the maximum expected earthquake magnitude, and the attenuation of the seismic energy. The expected

⁵² California Division of Mines and Geology 1982 and 2001

PGA values along the alignment have been contoured and are presented on **Figures 3-8.11 through 3-8.14**.

3-8.3.2 Impact Criteria

The potential impact that each condition may have on the site was evaluated and assessed as being either less-than-significant or potentially significant. The California Geological Survey guidelines for geologic and seismic considerations in environmental impact reports were utilized to identify potential geologic hazards and assist in recognizing data needed for design analysis and mitigation measures. The guidelines address the following sections.

a. Fault-Induced Ground Rupture

During a moderate to large earthquake differential movement of blocks of the earth's crust along a fault can cause the ground surface to break. This results in a localized area of intense cracking and offset of surface features such as buildings and roads.

b. Seismic Shaking

During an earthquake, ground shaking at a given location depends primarily on the earthquake magnitude, the distance from the earthquake focus to the site, and the response characteristics of the soils or bedrock units. Seismic shaking is described by the peak ground acceleration (PGA) relative to the gravitational constant of the earth. For example, 0.5g, represents a PGA of 0.5 times gravity. **Tables 3-8.3 to 3-8.6** (Phase II, Segment 1 proposed stations) and **Tables 3-8.7 to 3-8.13** (Phase II, Segment 2 proposed stations) provide a summary of faults, fault distances, magnitudes, expected PGA values, and estimated intensity values (Modified Mercalli) for each proposed station.

c. Secondary Effects of Seismic Shaking

Secondary effects are non-tectonic processes that are directly related to strong seismic shaking.⁵³ Ground deformation, including fissures, settlement, displacement and loss of bearing strength are common expressions of these processes, and is one of the leading causes of damage to structures during a moderate to large earthquake. Secondary effects leading to ground deformation include liquefaction, lateral spreading, settlement, and landsliding. Other hazards indirectly related to seismic shaking are inundation, tsunamis, and seiches.

d. Liquefaction

Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sand and silt) are subjected to strong seismic ground motion of significant duration. These soils essentially behave similar to liquids, losing bearing strength. Structures built on these soils may tilt or sink when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the groundwater table is within 50 feet of the ground surface. Areas where possible liquefaction can occur have been mapped as potential liquefaction zones on the Seismic Hazard Zones Maps and Reports by the CGS. A liquefaction zone is an area where historic liquefaction has occurred or an area where

⁵³ Yeats et al. 1997

conditions exist for potential permanent ground displacement such that mitigation as defined in Public Resources Code Section 2693(c) would be required. We have delineated possible liquefaction zones on **Figures 3-8.6 through 3-8.9**.

e. Lateral Spreading

Lateral spreading is a phenomenon where large blocks of intact, nonliquefied soil move down-slope on a liquefied substrate of large areal extent.⁵⁴ The mass moves toward an unconfined area, such as a descending slope or stream-cut bluff, and is known to move on slope gradients as gentle as one degree.

f. Seismically Induced Landslides

Marginally stable slopes (including existing landslides) may be subject to landsliding caused by seismic shaking. The seismically induced landslide hazard depends on many factors including existing slope stability, shaking potential, and presence of existing landslides. We have delineated possible seismically induced landslide zones on **Figures 3-8.6 through 3-8.9**.

g. Seismically Induced Settlement

Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, loosely packed granular alluvial deposits are especially susceptible to this phenomenon. Poorly compacted artificial fills may also experience seismically induced settlement.

h. Seismically Induced Inundation

Strong seismic ground motion can cause dams and levees to fail, resulting in damage to structures and properties located downstream. Flood control and water-storage facilities can also fail as a result of flaws not recognized in the feasibility studies, design or construction phases of the facilities.

NEPA Impact Criteria

There are no separate NEPA criteria for assessing geologic-seismic impacts. Accordingly, CEQA criteria are used.

CEQA Impact Criteria

The CEQA Environmental Checklist Guidelines focus on whether a proposed project would have significant affect on geologic and seismic resources by exposing people or structures to potential substantial adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, or landslides. The Guidelines also inquire about whether a project would be located in an area of erosive soils, liquefaction, and expansive soils.

⁵⁴ Yeats et al. 1997, Tinsley et al. 1985

3-8.3.3 Construction-Period Impacts

a. No Build Alternative

There are no elements of the No Build Alternative that would be expected to result in adverse effects or significant impacts to geologic or seismic resources underlying the cities in Phase I, Phase II Segment 1 or Phase II Segment 2. Projects in the No Build Alternative would be subject to geologic and seismic influences. It is assumed that all construction would be in accordance with the latest federal and state seismic requirements. By compliance with these standards, potential impacts would be less than adverse under NEPA and less than significant under CEQA.

b. Transportation Systems Management (TSM) Alternative

There are no elements in the TSM Alternative that would affect geologic-seismic resources. Elements such as bus shelters would be subject to geologic and seismic influences. It is assumed that any construction would be in accordance with the latest federal and state seismic requirements. By compliance with these standards, potential impacts would be less than adverse under NEPA and less than significant under CEQA.

c. LRT, Triple Track Configuration

The Triple Track Configuration does not have any elements that would affect geologic-seismic resources. Project elements would be subject to geologic and seismic influences. It is assumed that all construction would be in accordance with the latest federal and state seismic requirements. Data that would influence design development that would occur in the Preliminary Engineering stage is reported for each affected city.

Phase I – The Cities Affected and the Effects

There are no elements of the Triple Track Configuration in Los Angeles, South Pasadena, or east of the Sierra Madre Villa Station in Pasadena. Accordingly, there would be no construction-period impacts.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II Segment 1 are Pasadena, Arcadia, Monrovia, Duarte, and Irwindale.

□ Pasadena

The project alignment begins in Pasadena along I-210 near Sierra Madre Boulevard and trends eastward along the freeway into Arcadia. The San Gabriel Mountain front lies to the north, approximately 2 miles away, and the San Rafael Hills are located a few miles to the south. This portion of the site is underlain by artificial fill that has been placed over Quaternary age sand and gravel alluvial fan and valley deposits.

The Safety Element of the City of Pasadena's General Plan (2002) describes geologic hazards that can be found in Pasadena. These include hazards within the city but not necessarily in the vicinity of the project site. Potential hazards include ground rupture and seismic shaking due to earthquakes on the Sierra Madre and Raymond faults and secondary seismic shaking effects due to earthquakes on a number of

Southern California's major faults. These secondary effects may include liquefaction, seismically induced landslides, and possible dam failure of the Devils Gate and Eaton Wash Dams.

Liquefaction is a potentially significant hazard along the project alignment as shown on Seismic Hazard Zones Map and accompanying report.⁵⁵ The liquefaction potential is primarily found north of the Raymond fault.⁵⁶ Here, the fault acts as a barrier to groundwater flow away from the San Gabriel Mountains. The fault impedes the southerly flow of the groundwater, which rises on the northern side of the fault and saturates the shallow, loose sand and gravel deposits. Seismic shaking during an earthquake can cause the water to escape from the porous sands and create a temporarily liquefied surface.

Seismically-Induced Inundation is a potentially adverse/significant hazard for the project alignment. The Eaton Wash Dam lies less than 1.5 miles north of the site. Failure of this dam during an earthquake could potentially flood the downstream area. This would include the project alignment from Daisy Avenue to Rosemead Boulevard.⁵⁷ The Morris S. Jones Dam and Reservoir No. 19-3 could also be compromised during shaking. However, flooding from failure of this dam would be less momentous and only affect a small area along Rosemead Boulevard and a small area along Michellinda Avenue.⁵⁸ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking: Seismic shaking for this portion of the project site in Pasadena is summarized in the peak ground acceleration (PGA) contour map (see Plate 4, Sheet 1). The greatest PGA determined in Pasadena is between Sierra Madre Villa Avenue and Michellinda Avenue along the project site. **Table 3-8.2** provides a summary of the fault parameters and PGA values for the proposed Pasadena station. The Raymond fault is the closest fault to the station. The maximum moment magnitude earthquake of Mw 6.5 could potentially produce a PGA of 0.65g, which would correlate to an approximate Modified Mercalli Intensity of X.

| TABLE 3-8.3 PROPOSED PASADENA STATION SEISMIC SUMMARY | | | | |
|--|----------------------|-----------------------------------|----------------------------|--|
| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
| Raymond | 1.0 mi/1.6 km | 6.5 | 0.65 | X |
| Sierra Madre | 2.2 mi/3.5 km | 7.0 | 0.59 | X |
| Verdugo | 3.0 mi/4.8 km | 6.7 | 0.52 | X |
| Clamshell-Sawpit | 5.6 mi/9.0 km | 6.5 | 0.37 | IX |
| Upper Elysian Park Blind Thrust | 5.7 mi/9.2 km | 6.4 | 0.34 | IX |
| Puente Hills Blind Thrust | 8.1 mi/13 km | 7.1 | 0.37 | IX |

Source: Leighton Consultants, 2004.

⁵⁵ California Division of Mines and Geology 1999c, Loyd and Wills 1998a

⁵⁶ Loyd and Wills 1998a

⁵⁷ Los Angeles County Flood Control District 1973g

⁵⁸ Pasadena Water and Power Department 1974

□ **Arcadia**

The project site in Arcadia is coincident with I-210 to the East Branch Arcadia Wash where it diverges from the freeway and turns to the southeast. Alluvial fan and valley deposits consisting mainly of sand and gravel underlie the project site. The Raymond fault crosses the alignment in Arcadia near Santa Anita Avenue, approximately 0.5 miles west of the Arcadia Station.

The City of Arcadia's General Plan (1996) recognizes that the significant threat to the city property is posed by future earthquakes on the Raymond and Sierra Madre faults as well as other nearby faults. The Raymond and Sierra Madre faults have a surface expression within the city and therefore represent a ground rupture hazard.

The potentially significant geologic hazards in the City of Arcadia include fault-induced ground rupture, liquefaction, seismically induced flooding, and seismic shaking. As described in the city's General Plan, seismic hazards are the most important geologic hazard within Arcadia, and also at the project site.

Fault-induced ground rupture due to an earthquake on the Raymond fault could result in property damage at the project site. The Raymond fault has been delineated as an Earthquake Fault Zone under the Alquist-Priolo Act.⁵⁹ It is approximately 2000 feet wide, extending from Rancho Road to Colorado Boulevard across the site (California Division of Mines and Geology 1977). Within this zone two fault traces have been identified to pose a threat of surface rupture.

Liquefaction presents a potentially significant hazard to the project site in a localized area along the Raymond fault.⁶⁰ The area susceptible to liquefaction lies approximately between Michellinda Avenue and Colorado Boulevard as mapped on the Mt. Wilson and Azusa Quadrangle Seismic Hazard Zones Map and accompanying report. This is an area where a shallow ground water condition occurs on the northwest side of the Raymond fault. As groundwater flows in the subsurface from the San Gabriel Mountains it encounters the impermeable Raymond fault zone and 'ponds' against the north side of the fault, saturating loose, sand and gravel deposits. These sediments are then susceptible to liquefaction during seismic shaking.

Seismically Induced Inundation is a potentially significant hazard at the project site in Arcadia. If the Santa Anita Dam, which has a capacity of 1,376 acre-feet was compromised due to seismic shaking or other impacts, the flooding would cover 11 square miles and would possibly inundate the project site from the East Branch of Arcadia Wash to Myrtle Avenue in Monrovia.⁶¹ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for the portion of the project site in Arcadia is summarized in a PGA contour map. The greatest PGA determined in Arcadia is between Baldwin Avenue and Santa Anita Avenue. **Table 3-8.4** provides a summary of the fault parameters and PGA values for the proposed Arcadia station. The Raymond fault is the closest fault to the station. The maximum moment magnitude earthquake of Mw 6.5 could potentially produce PGA of 0.66g, which would correlate to an approximate Modified Mercalli Intensity of XI.

⁵⁹ Hart and Bryant 1999

⁶⁰ California Division of Mines and Geology 1999a and 1999c, Loyd and Wills 1998b

⁶¹ Los Angeles County Flood Control District 1973e

**TABLE 3-8.4
PROPOSED ARCADIA STATION SEISMIC SUMMARY**

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------------|-----------------------------|--|-----------------------------------|---|
| Raymond | 0.8 mi/1.3 km | 6.5 | 0.66 | XI |
| Sierra Madre | 2.2 mi/3.6 km | 7.0 | 0.59 | X |
| Clamshell-Sawpit | 2.9 mi/4.7 km | 6.5 | 0.50 | X |
| Verdugo | 6.3 mi/10.2 km | 6.7 | 0.37 | IX |
| Upper Elysian Park Blind Thrust | 6.7 mi/10.8 km | 6.4 | 0.31 | IX |
| Puente Hills Blind Thrust | 8.8 mi/14.2 km | 7.1 | 0.35 | IX |

Source: Leighton Consultants, 2004.

□ **Monrovia**

The project alignment in Monrovia is located north of Duarte Road and south of I-210 on flat to very gentle grades. The San Gabriel Mountain front is located more than 1 mile north of the site. The site is underlain by Quaternary age sand and gravel alluvial fan and valley deposits. Like Arcadia and Pasadena, Monrovia has geologic conditions that make it susceptible to seismically related geologic hazards. The Safety Element of the City of Monrovia’s General Plan (2002) includes in its list of potential geologic hazards: ground rupture related to large earthquakes occurring along the Raymond and Sierra Madre faults, and potential landslides in the hillside area due to seismic shaking, over-steepened slopes, and fractured bedrock. The project site is not susceptible to fault-induced ground rupture hazard. Flooding due to a dam failure of the Santa Anita Dam or the Sawpit Debris basin pose potential impacts.⁶² Seismically induced liquefaction and landslide hazards have not been identified within the project site.⁶³

Seismically Induced Inundation is a potentially significant impact to the project site in Monrovia. Seismic shaking could potentially cause a failure of the Santa Anita and Sawpit Dam structures resulting in flooding of the downstream areas in Monrovia. The area of inundation resulting from a failure at the Santa Anita Dam includes the portion of Monrovia west of Myrtle Avenue. Failure of the Sawpit Dam could potentially inundate the majority of the project site within Monrovia and extending into Duarte.⁶⁴ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for this portion of the project site is summarized in the PGA contour map (see **Figures 3-8.11 and 3-8.12**). The greatest PGA determined in Monrovia is to the north of the project site. **Table 3-8.5** provides a summary of the fault parameters and PGA values for the proposed Monrovia station. The Raymond fault is the closest fault to the station. The maximum moment magnitude earthquake of Mw 6.5 could potentially produce a PGA of 0.55g at the proposed station, which would correlate to an approximate Modified Mercalli Intensity of X.

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------------|----------------------|-----------------------------------|----------------------------|--|
| Raymond | 2.2 mi/3.6 km | 6.5 | 0.55 | X |
| Sierra Madre | 2.6 mi/4.2 km | 7.0 | 0.57 | X |
| Clamshell –Sawpit | 3.1 mi/5.0 km | 6.5 | 0.49 | X |
| Upper Elysian Park Blind Thrust | 7.5 mi/12 km | 6.4 | 0.29 | IX |
| Verdugo | 8.0 mi/12.9 km | 6.7 | 0.32 | IX |
| Puente Hills Blind Thrust | 8.7 mi/14 km | 7.1 | 0.35 | IX |

Source: Leighton Consultants, 2004.

⁶² City of Monrovia 2002

⁶³ Loyd and Wills 1998b

⁶⁴ City of Monrovia 2002, Los Angeles County Flood Control District 1973d and 1973e

□ Duarte

The project site in Duarte is approximately 6,000 feet long, on nearly flat terrain located less than a mile south of the San Gabriel Mountains. The Duarte segment of the Sierra Madre fault lies at the base of the mountains foothills, buried beneath alluvial fan deposits north of the project site.⁶⁵ The main trace of the Sierra Madre fault is less than a mile north of the Duarte segment, closer to the mountain front. The City of Duarte identifies the fault-induced rupture hazard due to an earthquake on such mapped faults in the Public Safety Element Background Report.⁶⁶ The hillside area in the northern portion of Duarte is susceptible to seismically induced landslides and the valleys draining the mountains are susceptible to liquefaction.⁶⁷

Seismically Induced Inundation is a potentially significant impact to the project site. Sawpit Dam and Debris Basin is located northeast of the city. A potential dam failure could result in inundation of the entire project site within Duarte.⁶⁸ The Morris Dam, which lies to the northwest of the city, could potentially inundate the project site in Duarte from Buena Vista Avenue into the City of Irwindale.⁶⁹ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for this portion of the project site is summarized in the PGA contour map (see **Figure 3-8.12**). The greatest PGA determined in Duarte is to the north of the project site. **Table 3-8.6** provides a summary of the fault parameters and PGA values for the proposed Duarte station. The Sierra Madre fault is the closest fault to the station. The estimated maximum moment magnitude earthquake of Mw 7.0 could potentially produce a PGA of 0.61g at the proposed station, which would correlate to an approximate Modified Mercalli Intensity of X.

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------------|----------------------|-----------------------------------|----------------------------|--|
| Sierra Madre | 1.9 mi/3.0 km | 7.0 | 0.61 | X |
| Raymond | 3.2 mi/5.1 km | 6.5 | 0.49 | X |
| Clamshell-Sawpit | 3.6 mi/5.8 km | 6.5 | 0.46 | X |
| San Jose | 8.0 mi/12.8 km | 6.5 | 0.30 | IX |
| Puente Hills Blind Thrust | 8.7 mi/14.0 km | 7.1 | 0.35 | IX |
| Upper Elysian Park Blind Thrust | 8.9 mi/14.3 km | 6.4 | 0.25 | IX |

Source: Leighton Consulting, 2004.

⁶⁵ Crook et al. 1987

⁶⁶ City of Duarte 1989

⁶⁷ California Division of Mines and Geology 1999a, Loyd and Wills 1998b, Schlosser and Wills 1998

⁶⁸ Los Angeles County Flood Control District 1973d and 1974a

⁶⁹ Metropolitan Water District of Southern California, date unknown

□ Irwindale

The project site in Irwindale crosses the San Gabriel River channel. The Santa Fe Dam Spillway and Flood Control Basin are located immediately to the south of the project site. Gravel pits are located to the north and south the project site within the San Gabriel River channel. There are no active faults mapped in the City of Irwindale; however, the potentially active Duarte fault lies within a few thousand feet north of the proposed Irwindale Station. The Sierra Madre fault also lies to the north, outside the city's boundaries. The Safety and Seismic Element of the City of Irwindale's General Plan (1975), notes the susceptibility of city property to seismic shaking hazards. Seismically induced liquefaction and landslide hazards have not been identified by the CGS for this area (California Division of Mines and Geology 1999a; Loyd and Wills 1998b).

Seismically Induced Inundation is a potentially significant hazard to the project site in Irwindale. Failure of the San Gabriel or Morris Dam would inundate the all of the alignment within Irwindale.⁷⁰

Seismic Shaking for the portion of the project site in Irwindale is summarized in the PGA contour map (see **Figure 3-8.12**). The greatest PGA determined in Irwindale is to the north of the project site. **Table 3-8.7** provides a summary of the fault parameters and PGA values for the proposed Irwindale station. The Sierra Madre fault is the closest fault to the station. The maximum moment magnitude earthquake of Mw 7.0 could potentially produce a PGA of 0.64g at the proposed station, which would correlate to an approximate Modified Mercalli Intensity of X.

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|----------------------|-----------------------------------|----------------------------|--|
| Sierra Madre | 1.5 mi/2.4 km | 7.0 | 0.64 | X |
| Raymond | 4.8 mi/7.8 km | 6.5 | 0.40 | X |
| Clamshell-Sawpit | 4.9 mi/7.9 km | 6.5 | 0.40 | X |
| San Jose | 6.6 mi/10.7 km | 6.5 | 0.33 | IX |
| Puente Hills Blind Thrust | 8.6 mi/13.9 km | 7.1 | 0.35 | IX |
| Whittier | 10.5 mi/16.9 km | 6.8 | 0.21 | VIII |

Source: Leighton Consulting, 2004.

⁷⁰ Los Angeles County Flood Control District 1995

Phase II, Segment 2 – The Cities Affected and the Effects

□ Azusa

The project alignment passes through the City of Azusa first trending in a northeasterly direction to near Rockvale Avenue and then turning back to an east-west direction. The alignment comes within a few thousand feet of the San Gabriel Mountain front and bedrock exposures of the Glendora Volcanics and Topanga Formation. The site is underlain by Quaternary age alluvial fan and valley deposits.

As indicated in the City of Azusa's General Plan, seismic risks (primary and secondary seismic effects) are a significant geologic hazard for the city. This is due to the nature of the Sierra Madre fault zone in this area, which has three mapped fault splays within the alluvial deposits and low hills south of its main trace in the San Gabriel Mountains.⁷¹ The three fault splays, Duarte, Upper Duarte, and Fault "C", are inferred based on vegetation lineaments observed from aerial photographs, water table variations, and geophysical surveys across the faults in Azusa (see **Figure 3-8.2**).⁷² Although these fault splays have not been zoned as active under the Alquist-Priolo Act, they are considered potentially active by the State and active by the County of Los Angeles.⁷³ The City of Azusa recommends investigations to locate such active faults be conducted prior to construction and suggest the appropriate setbacks be made at that time.

Fault-induced ground rupture is a potentially significant hazard at, and in the vicinity of, the project site. The inferred Duarte fault is mapped crossing the project alignment near Virginia Avenue and 6th Street, south of Foothill Boulevard and north of I-210 (see **Figure 3-8.2**).

Liquefaction is a potentially significant hazard to the project site from near Virginia Avenue and 6th Street to east of Citrus Avenue in Glendora.⁷⁴ A ground water barrier caused by the buried Duarte fault, creates a condition in which loose granular alluvial deposits are saturated by shallow ground water north of the fault (see **Figure 3-8.7**).

Seismically Induced Inundation is a potentially significant hazard due to possible failure of the San Gabriel and Morris Dams, located north of the project site. The flooding could possibly engulf the entire project alignment in this area in less than one hour.⁷⁵ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for this portion of the project site in Azusa is summarized in the PGA contour map, **Figure 3-8.12**. The greatest PGA determined in Azusa is to the north of the project site. **Table 3-8.8** provides a summary of the fault parameters and PGA values for the proposed Azusa station. The Sierra Madre fault is the closest fault to the station. The maximum moment magnitude earthquake of Mw 7.0 could potentially produce a PGA of 0.69g at the proposed station, which would correlate to an approximate Modified Mercalli Intensity of XI.

⁷¹ Crook et al. 1987

⁷² Crook et al. 1987

⁷³ Leighton 1990

⁷⁴ California Division of Mines and Geology 1999b, Loyd and Wills 1998c

⁷⁵ Metropolitan Water District of Southern California, date unknown; Los Angeles County Flood Control District 1995

**TABLE 3-8.8
PROPOSED AZUSA STATION SEISMIC SUMMARY**

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (M_w) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|-----------------------------|---|-----------------------------------|---|
| Sierra Madre | 0.7 mi/ 1.2 km | 7.0 | 0.69 | XI |
| San Jose | 5.8 mi/9.4 km | 6.5 | 0.36 | IX |
| Clamshell-Sawpit | 5.8 mi/9.3 km | 6.5 | 0.36 | IX |
| Raymond | 6.9 mi/11.1 km | 6.5 | 0.33 | IX |
| Cucamonga | 8.6 mi/13.9 km | 7.0 | 0.34 | IX |
| Puente Hills Blind Thrust | 8.9 mi/14.4 km | 7.1 | 0.35 | IX |

Source: Leighton Consulting, 2004.

□ **Glendora**

The present railroad configuration has three major bends as it passes through Glendora. It changes orientation from roughly east-west to southeast-northwest at Grand Avenue, then returns to an east-west orientation near Glendora Avenue before turning once again to a southeast-northwest orientation as the railroad passes around the eastern end of the South Hills. The project site is underlain by predominately sand and gravel deposits of the Glendora Fan, which is a fan-shaped accumulation of sediments deposited by rivers emanating from mountain canyons to the north. The South Hills are the dominant topographic feature south of the mountain front within the Glendora area, and are comprised of marine sandstone and siltstone deposits of the Tertiary-aged Topanga Formation and the andesitic tuffs and breccias of the Glendora Volcanics (see **Figure 3-8.3**).⁷⁶

Geologic hazards within the City of Glendora, as described by the General Plan⁷⁷, include landslides and other slope failures, faulting, seismic shaking, and expansive soils. Numerous landslides have been mapped along the slopes of the San Gabriel Mountain front and the South Hills. The Sierra Madre Fault zone extends along the San Gabriel Mountain front from Azusa into Glendora presenting a possible ground rupture hazard to specific areas of the city and a potential for large ground accelerations (i.e., PGA values) during seismic events on nearby faults.⁷⁸

Fault-Induced ground rupture is a potentially significant hazard due to the Duarte fault. The presence of the Duarte fault has been inferred from differences in groundwater elevations, lineaments observed in aerial photographs and geophysical surveys.⁷⁹ The fault as mapped by Crook et al. (1987) crosses the project alignment near Barranca Avenue and is shown on **Figure 3-8.8** coincident with the liquefaction zone boundary. This fault is not considered active by the State, however, is considered active by the County of Los Angeles. The City of Glendora does not recognize this fault in its General Plan.⁸⁰

Liquefaction is a potentially significant hazard in two locations at the project site in Glendora (see **Figure 3-8.8**). The Seismic Hazard Zones Map and accompanying report for the Glendora Quadrangle shows that the potential liquefaction extends from Citrus Avenue to just west of Barranca Avenue, and from just north of I-210 into San Dimas.⁸¹

Seismically Induced Inundation is a potentially significant impact to the project site. Failure of the Big Dalton Dam has a flood area that extends from Little Dalton Wash to San Dimas Wash. This possible flood would inundate the project site from Grand Avenue to Lone Hill Avenue in less than 30 minutes.⁸² If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for the portion of the project site in Glendora is summarized in the PGA contour map, **Figure 3-8.13**. The greatest PGA determined in Glendora is along the project site between Lone Hill Avenue and Lorraine Avenue and west of Grand Avenue. **Table 3-8.9** provides a summary of the fault parameters and PGA values for the proposed Glendora station. The Sierra Madre fault is the closest fault to the proposed station. The maximum moment magnitude earthquake of Mw 7.0 could potentially

⁷⁶ Morton 1973

⁷⁷ City of Glendora 1990

⁷⁸ Leighton 1973, City of Glendora 1990

⁷⁹ Crook et al. 1987

⁸⁰ City of Glendora 1990

⁸¹ California Division of Mines and Geology 1999b, Loyd and Wills 1998c

⁸² Los Angeles County Flood Control District 1973c

produce a PGA of 0.69g at the proposed station, which would correlate to an approximate Modified Mercalli Intensity of XI.

**TABLE 3-8.9
PROPOSED GLENDORA STATION SEISMIC SUMMARY**

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|-----------------------------|--|-----------------------------------|---|
| Sierra Madre | 0.8 mi/1.3 km | 7.0 | 0.69 | XI |
| San Jose | 5.0 mi/8.0 km | 6.5 | 0.40 | X |
| Clamshell-Sawpit | 6.3 mi/10.2 km | 6.5 | 0.34 | IX |
| Cucamonga | 7.3 mi/11.8 km | 7.0 | 0.38 | IX |
| Raymond | 8.4 mi/13.5 km | 6.5 | 0.28 | IX |
| Puente Hills Blind Thrust | 8.8 mi/14.1 km | 7.1 | 0.35 | IX |

Source: Leighton Consulting, 2004

□ **San Dimas**

The project alignment has a south-southeast orientation as it enters the City of San Dimas. After it passes between Way Hill and Lone Hill it turns to a more easterly direction. Both older and younger alluvial fan deposits underlie the project site. Bedrock units of the Topanga Formation and the Glendora Volcanics are exposed nearby on Way Hill and in the San Jose Hills (see **Figure 3-8.3**). The Sierra Madre fault passes through the northern portion of the city, north of Foothill Boulevard.

The San Dimas General Plan identifies a number of geologic conditions that pose a significant hazard to particular parts of the city. Landslide risk is noted in the San Jose Hills and along San Gabriel Mountain front as well as seismic risks including ground rupture, liquefaction, and differential settlement. At the project site there are no faults zoned under the Alquist-Priolo Act.⁸³ However, the Indian Hill-Way Hill fault is mapped crossing the alignment near the proposed San Dimas station (see **Figure 3-8.3**).⁸⁴ The Indian Hill-Way Hill fault location is not clear at the surface and is inferred by the presence of a groundwater barrier and the volcanic ridge (Way Hill) in the alluvial valley.

Fault-Induced Ground Rupture is a potentially significant geologic hazard. In San Dimas, the Indian Hill fault is not expressed at the surface, however, its location is inferred from variations of groundwater elevations on either side of it. It is mapped⁸⁵ crossing the project alignment at approximately Bonita Avenue near the propose station.

Liquefaction is a potentially significant geologic hazard north of the Way Hill fault at the project site. The CGS indicates a liquefaction hazard north of the fault due to the shallow groundwater condition that saturates loose, granular alluvial fan deposits at the project site.⁸⁶

Seismically Induced Inundation is a potentially significant hazard due to the location of San Dimas Dam upstream of the city. Failure of San Dimas Dam would result in inundation of the project area from the Foothill Freeway south of South Hills, to approximately Amelia Avenue.⁸⁷ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for the portion of the project site in San Dimas is summarized in the PGA contour map, **Figure 3-8.13**. The greatest PGA determined in San Dimas is to the north and south of the project alignment. **Table 3-8.10** provides a summary of the fault parameters and PGA values for the proposed San Dimas station. The Sierra Madre fault is the closest fault to the proposed station. The estimated maximum moment magnitude earthquake of Mw 7.0 could potentially produce a PGA of 0.62g at the proposed station, which would correlate to an approximate Modified Mercalli Intensity of X.

⁸³ Hart and Bryant 1999

⁸⁴ Jennings 1994, Leighton 1972

⁸⁵ Morton and Miller 2003

⁸⁶ California Division of Mines and Geology 1999d, Loyd 1998

⁸⁷ Los Angeles County Flood Control District 1973h

**TABLE 3-8.10
PROPOSED SAN DIMAS STATION SEISMIC SUMMARY**

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|-----------------------------|--|-----------------------------------|---|
| Sierra Madre | 1.8 mi/ 2.9 km | 7.0 | 0.62 | X |
| San Jose | 2.5 mi/4.0 km | 6.5 | 0.53 | X |
| Cucamonga | 4.8 mi/7.7 km | 7.0 | 0.46 | X |
| Chino-Central Ave | 6.2 mi/10.0 km | 6.7 | 0.37 | IX |
| Puente Hills Blind Thrust | 8.6 mi/13.8 km | 7.1 | 0.35 | IX |
| Clamshell-Sawpit | 9.1 mi/14.6 km | 6.5 | 0.27 | IX |

Source: Leighton Consulting, 2004.

□ **La Verne**

In the City of La Verne, the project alignment is located on the north side of Arrow Parkway, which passes near the northeastern extent of the San Jose Hills. Bedrock exposures of the Glendora Volcanics are within 1,000 feet of the project site. The underlying surficial units, however, are silt and sand alluvial fan sediments (see **Figure 3-8.4**).

Liquefaction has been identified as a potentially significant geologic hazard as mapped on the San Dimas Quadrangle Seismic Hazard Zones Map and accompanying report.⁸⁸ The zone of potential liquefaction is located on the southern margin of the project site, between Damien and Wheeler Avenues (see **Figure 3-8.9**).

Seismically Induced Inundation is a potentially significant hazard if the Live Oak Reservoir were to fail. Failure of the reservoir would inundate only a small portion of the project site, approximately between Wheeler Avenue and D Street.⁸⁹ Potential flooding due to failure of the Live Oak Dam would cover the area from Wheeler Avenue to Thompson Creek Wash.⁹⁰ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for the portion of the project site in La Verne is summarized in the PGA contour map, **Figure 3-8.14**. The greatest PGA determined in La Verne is to the north and south of the project site. **Table 3-8.11** provides a summary of the fault parameters and PGA values for the proposed La Verne station. The San Jose fault is the closest fault to the proposed station. The maximum moment magnitude earthquake of Mw 6.5 could potentially produce a PGA of 0.60g at the station that would result in a Modified Mercalli Intensity of X.

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|----------------------|-----------------------------------|----------------------------|--|
| San Jose | 1.5 mi/2.4 km | 6.5 | 0.60 | X |
| Sierra Madre | 2.2 mi/3.5 km | 7.0 | 0.59 | X |
| Cucamonga | 3.0 mi/4.9 km | 7.0 | 0.54 | X |
| Chino-Central Ave | 4.7 mi/7.6 km | 6.7 | 0.43 | X |
| Puente Hills Blind Thrust | 9.4 mi/15.2km | 7.1 | 0.33 | IX |
| Clamshell-Sawpit | 10.6 mi/17.1 km | 6.5 | 0.25 | IX |

Source: Leighton Consulting, 2004.

⁸⁸ California Division of Mines and Geology 1999d, Loyd 1998

⁸⁹ Los Angeles County Flood Control District 1973i

⁹⁰ Los Angeles County Flood Control District 1973i

□ **Pomona**

As the alignment enters the City of Pomona at Fulton Avenue it turns slightly and takes on an east-west orientation. Younger alluvial fan deposits consisting mostly of sand underlie the project site. Shallow groundwater conditions have not been identified at the project site (Loyd 1998) and no active or potentially active faults have been mapped along the project alignment (see **Figure 3-8.4**). Due to the absence of shallow groundwater, liquefaction is not considered a potential hazard along this portion of the alignment (see **Figure 3-8.9**).

Seismically Induced Inundation presents a potentially significant geologic hazard in the area. Flooding due to possible failure of the San Antonio Dam would inundate the project site with approximately 4 to 7 feet of water (United States Army Corps of Engineers 1986). If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for the portion of the project site in Pomona is summarized in the PGA contour map, **Figure 3-8.14**. The greatest PGA determined in Pomona is to the north and southeast of the project site. **Table 3-8.12** provides a summary of the fault parameters and PGA values for the proposed Pomona station. The San Jose fault is the closest fault to the proposed station. An estimated maximum moment magnitude earthquake of Mw 6.5 on the San Jose fault could potentially produce PGA of 0.65g at the proposed station, which would correlate to an approximate Modified Mercalli Intensity of X.

**TABLE 3-8.12
PROPOSED POMONA STATION SEISMIC SUMMARY**

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|----------------------|-----------------------------------|----------------------------|--|
| San Jose | 0.9 mi/1.5 km | 6.5 | 0.65 | X |
| Sierra Madre | 2.1 mi/3.4 km | 7.0 | 0.60 | X |
| Cucamonga | 2.5 mi/4.1 km | 7.0 | 0.57 | X |
| Chino-Central Ave | 4.2 mi/6.8 km | 6.7 | 0.45 | X |
| Puente Hills Blind Thrust | 9.9 mi/15.9 km | 7.1 | 0.32 | IX |
| Clamshell-Sawpit | 11.4 mi/18.4 km | 6.5 | 0.22 | IX |

Source: Leighton Consulting, 2004.

□ **Claremont**

In the Claremont area, the project alignment has an east-west orientation and is underlain by unconsolidated alluvial fan sediments with rock fragments up to boulder size (see **Figure 3-8.4**). The Sierra Madre-Cucamonga fault zone and San Jose fault are present within the city limits. Shallow groundwater conditions have not been identified at the project site.⁹¹ Due to the absence of shallow groundwater, liquefaction is not considered a potential hazard along this portion of the alignment (see **Figure 3-8.9**).

Fault-Induced Ground Rupture is a potentially significant geologic hazard at the project site due to the San Jose fault. The San Jose fault crosses the project site between Carnegie Avenue and Indian Hill Boulevard.⁹²

Seismically Induced Inundation presents a potentially significant geologic hazard. Flooding due to failure of the San Antonio Dam would inundate the project site with approximately 4 to 7 feet of water.⁹³ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for the portion of the project site in Claremont is summarized in the PGA contour map, **Figure 3-8.14**. The greatest PGA determined in Claremont is along the project alignment. **Table 3-8.13** provides a summary of the fault parameters and PGA values for the proposed Claremont station. The San Jose fault is the closest fault to the proposed station. The estimated maximum moment magnitude earthquake of Mw 6.5 could potentially produce a PGA of 0.75g at the proposed station, which would correlate to a Modified Mercalli Intensity of XI.

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|----------------------|-----------------------------------|----------------------------|--|
| San Jose | 0.0 mi/0.0 km | 6.5 | 0.75 | XI |
| Cucamonga | 2.2 mi/3.6 km | 7.0 | 0.59 | X |
| Sierra Madre | 2.4 mi/3.8 km | 7.0 | 0.58 | X |
| Chino-Central Ave | 4.5 mi/7.3 km | 6.7 | 0.44 | X |
| Puente Hills Blind Thrust | 11.3 mi/18.2 km | 7.1 | 0.30 | IX |
| Clamshell-Sawpit | 12.5 mi/20.1 km | 6.5 | 0.21 | VIII |

Source: Leighton Consulting, 2004.

⁹¹ Loyd 1998

⁹² Morton and Miller 2003

⁹³ U.S. Army Corps of Engineers 1986

□ **Montclair/Upland**

The project alignment is oriented in an east-west fashion. Gravel and boulder-rich sediments carried from the San Gabriel Mountains by the San Antonio River make up the alluvial fan deposits that underlie the project site. The Sierra Madre-Cucamonga Fault Zone lies less than 1 mile to the north of the project site (see **Figure 3-8.4**). Shallow groundwater conditions have not been identified at the project site⁹⁴ and no active or potentially active faults have been mapped along the project alignment. Due to the absence of shallow groundwater, liquefaction is not considered a potential hazard along this portion of the alignment (see **Figure 3-8.9**).

Seismically Induced Inundation is a potentially significant impact due to possible failure of the San Antonio Dam located north of the project site. Flooding due to failure of the San Antonio Dam would inundate the project site with 7 to 8 feet of water.⁹⁵ If flooding of the alignments were to occur, there would be an adverse effect under NEPA and a significant impact under CEQA.

Seismic Shaking for the portion of the project site in Montclair is summarized in the PGA contour map, **Figure 3-8.14**. The greatest PGA determined in Montclair is along the project alignment. **Table 3-8.14** provides a summary of the fault parameters and PGA values for the proposed Montclair station. The San Jose fault is the closest fault to the proposed station. The estimated maximum moment magnitude earthquake of Mw 6.5 could potentially produce a PGA of 0.66g at the proposed station, which would correlate to a Modified Mercalli Intensity of XI.

**TABLE 3-8.14
PROPOSED MONTCLAIR/UPLAND STATION SEISMIC SUMMARY**

| Fault Name | Approximate Distance | Maximum Earthquake Magnitude (MW) | Peak Site Acceleration (g) | Estimated Site Modified Mercalli Intensity |
|---------------------------|----------------------|-----------------------------------|----------------------------|--|
| San Jose | 0.9 mi/1.4 km | 6.5 | 0.66 | XI |
| Cucamonga | 2.8 mi/4.5 km | 7.0 | 0.56 | X |
| Sierra Madre | 3.2mi/5.2 km | 7.0 | 0.54 | X |
| Chino-Central Ave | 5.1 mi/8.2 km | 6.7 | 0.42 | X |
| Puente Hills Blind Thrust | 12.3 mi/19.8 km | 7.1 | 0.28 | IX |
| Clamshell-Sawpit | 13.3 mi/21.4 km | 6.5 | 0.19 | VIII |

Source: Leighton Consulting, 2004.

Summary of Triple Track Impacts for Full Build Alternative

The proposed alignment crosses the areas of seismic activities and potentially unstable geomorphology that underlie the entire study area. During Preliminary Engineering, specific design studies would be undertaken to determine the appropriate design solutions. These solutions would consider both site-

⁹⁴ Loyd 1998

⁹⁵ U.S. Army Corps of Engineers 1986

specific data and the latest federal and state design standards. The results of these studies would be reported in the Final EIS/EIR.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

Impacts for the Phase 1, Segment 1 alternative are the same as for the Full Build Alternative.

d. LRT, Double Track Configurations

Potential construction-period impacts for Double Track Configurations are the same for all cities in Phase II as was reported for the Triple Track Configuration. During Preliminary Engineering, specific design studies would be undertaken to determine the appropriate design solutions. These solutions would consider both site-specific data and the latest federal and state design standards. The results of these studies would be reported in the Final EIS/EIR.

3-8.3.4 Long-Term Impacts

It is assumed that all construction would be in accordance with the latest federal and state seismic requirements. In addition, the operation of all improvements included in any of the alternatives would be operated in accordance with policies and procedures developed by Caltrans, LACTMA and other transit agencies that recognize the possibility of seismic events. There are no project elements in any of the alternatives that would have long-term geologic or seismic impacts in any of the cities in Phase I or Phase II.

3-8.3.5 Cumulative Impacts

There are no project elements in any of the alternatives that would contribute to cumulative geologic or seismic impacts.

3-8.3.6 Impacts Addressed by Regulatory Compliance

a. Construction-Period Impacts

Impacts that would arise from construction of any of the alternatives were identified in Section 3-8.3.3, above. Elimination or reduction of these construction-period impacts would occur through two steps, as follows: (1) compliance with local, state or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies, and (2) implementation of the proposed alternatives with additional construction-period mitigation measures defined in Section 3-8.3. Following is a discussion of the construction-period impacts for each of the alternatives that would be addressed by the first step, regulatory compliance.

Geologic and seismic issues would be addressed during Preliminary Engineering and implemented during Construction. Potential impacts associated with geologic and seismic conditions require a greater degree of design development that is available during preparing of this Draft EIS/EIR. During Preliminary Engineering, specific design studies would be undertaken to determine appropriate design solutions.

These solutions would consider both site-specific data and the latest federal and state regulations and design standards. The results of these studies would be reported in the Final EIS/EIR. Based on the fact that there are numerous functioning railroad facilities in the Los Angeles region that have been designed with the same geologic and seismic considerations, it is anticipated that the level of design conducted during Preliminary Engineering would result in less than adverse effects under NEPA and less than significant impacts under CEQA.

Table 3-8.15 provides a list of recommendations for matters to be addressed in the special design studies. During Preliminary Engineering, subject to the results of detailed studies, these recommendations may be transposed into design standards and/or mitigation measures that would be reported in the FEIS/FEIR.

**TABLE 3-8.15
SUMMARY OF POTENTIALLY SIGNIFICANT GEOLOGIC HAZARDS ALONG PHASE II**

| Location | Geologic Hazard | Geologic Condition | Potential Design Solutions |
|---|--------------------------------|--|---|
| Pasadena | | | |
| Michellinda Avenue | Liquefaction | Shallow ground water (less than 40 feet bgs) within the loose, granular alluvial fan sediments deposited in this area. | Reinforce all station and parking foundations, bridge abutments and railway tracks; support structures on deep foundations. |
| Daisy Ave. to Rosemead Blvd. | Seismically-Induced Inundation | Presence of Eaton Wash Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Rosemead Blvd., Michellinda Blvd. | Seismically-Induced Inundation | Presence of Morris S. Jones Dam and Reservoir No. 19-3 located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Arcadia | | | |
| Rancho Rd. to Colorado Blvd. | Fault-Induced Ground Rupture | Raymond fault zone has the potential for surface rupture during a moderate to large earthquake. | Structural setback for buildings. |
| Michellinda Ave. to Colorado Blvd. | Liquefaction | Shallow ground water (less than 40 feet bgs) within the loose, granular alluvial fan sediments deposited in this area. | Reinforce all station and parking foundations, bridge abutments and railway tracks; support structures on deep foundations. |
| East Branch Arcadia Wash to Myrtle Ave. | Seismically-Induced Inundation | Presence of the Santa Anita Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Monrovia | | | |
| 5th Ave. to Myrtle Ave. | Seismically-Induced Inundation | Presence of the Santa Anita Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| West of Santa Anita Wash to Duarte | Seismically-Induced Inundation | Presence of the Sawpit Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Duarte | | | |
| Mountain Ave. to Highland Ave. | Seismically-Induced Inundation | Presence of Sawpit Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |

TABLE 3-8.15 *continued (page 2 of 4)*
SUMMARY OF POTENTIALLY SIGNIFICANT GEOLOGIC HAZARDS ALONG PHASE II

| Location | Geologic Hazard | Geologic Condition | Potential Design Solutions |
|---|--------------------------------|--|---|
| Duarte and Irwindale | | | |
| Buena Vista Ave. to Highland Ave. | Seismically-Induced Inundation | Presence of Morris Dam and located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Azusa | | | |
| Irwindale Ave. to Citrus Ave. | Seismically-Induced Inundation | Presence of the San Gabriel and Morris Dams located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Near Virginia Ave. and 6th St. | Fault-Induced Ground Rupture | Duarte fault inferred to cross project site, Holocene rupture not yet determined. | Structural setback for buildings. |
| Virginia Ave. to Barranca Ave. | Liquefaction | Shallow ground water (less than 40 feet bgs) within the loose, granular alluvial fan sediments deposited in this area. | Reinforce all station and parking foundations, bridge abutments and railway tracks; support structures on deep foundations. |
| Glendora | | | |
| Barranca Avenue | Fault-Induced Ground Rupture | Duarte fault inferred to cross project site, Holocene rupture not yet determined. | Structural setback for buildings. |
| Citrus Ave. to Barranca Ave. | Liquefaction | Shallow ground water (less than 40 feet bgs) within the loose, granular alluvial fan sediments deposited in this area. | Reinforce all station and parking foundations, bridge abutments and railway tracks; support structures on deep foundations. |
| Grand Ave. to Lone Hill Ave. | Seismically-Induced Inundation | Presence of the Big Dalton Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| San Dimas | | | |
| South of Gladstone Ave. to North of 210 Freeway | Liquefaction | Shallow ground water (less than 40 feet bgs) within the loose, granular alluvial fan sediments deposited in this area | Reinforce all station and parking foundations, bridge abutments and railway tracks; support structures on deep foundations. |
| Bonita Ave. | Fault-Induced Ground Rupture | The Indian Hill Fault is inferred to cross the project site. Its activity has not yet been confirmed. | Structural setback for buildings. |

TABLE 3-8.15 *continued (page 3 of 4)*
SUMMARY OF POTENTIALLY SIGNIFICANT GEOLOGIC HAZARDS ALONG PHASE II

| Location | Geologic Hazard | Geologic Condition | Potential Design Solutions |
|-------------------------------------|--------------------------------|--|---|
| 210 Freeway to Highland Place | Liquefaction | Shallow ground water (less than 40 feet bgs) within the loose, granular alluvial fan sediments deposited in this area. | Reinforce all station and parking foundations, bridge abutments and railway tracks; support structures on deep foundations. |
| Foothill Freeway to Amelia Ave. | Seismically-Induced Inundation | Presence of the San Dimas Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| La Verne | | | |
| Damien Ave. to Wheeler Ave. | Liquefaction | Shallow ground water (less than 40 feet bgs) within the loose, granular alluvial fan sediments deposited in this area. | Reinforce all station and parking foundations, bridge abutments and railway tracks; support structures on deep foundations. |
| Wheeler Ave. to D St. | Seismically-Induced Inundation | Presence of the Live Oak Reservoir located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Wheeler Ave. to Thompson Creek Wash | Seismically-Induced Inundation | Presence of the Live Oak Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Pomona | | | |
| Fulton Rd. to Carnegie Ave. | Seismically-Induced Inundation | Presence of the San Antonio Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Claremont | | | |
| Carnegie Ave. to Indian Hill Blvd. | Fault-Induced Ground Rupture | The inferred trace of the San Jose fault crosses the project site. | Structural setback for buildings. |
| Carnegie Ave. to Claremont Blvd. | Seismically-Induced Inundation | Presence of the San Antonio Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |



TABLE 3-8.15 *continued (page 4 of 4)*
SUMMARY OF POTENTIALLY SIGNIFICANT GEOLOGIC HAZARDS ALONG PHASE II

| Location | Geologic Hazard | Geologic Condition | Potential Design Solutions |
|------------------------------------|--------------------------------|---|--|
| Montclair | | | |
| Claremont Blvd. to Central Ave. | Seismically-Induced Inundation | Presence of the San Antonio Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Upland | | | |
| Claremont Blvd. to Central Ave. | Seismically-Induced Inundation | Presence of the San Antonio Dam located topographically higher than the project site. | Construct alignment higher than flood water; design floodwater diversion devices for stations and parking areas. |
| Source: Leighton Consulting, 2004. | | | |

b. Long-Term Impacts

There are no regulations related to long-term impacts. Additionally, there are no anticipated long-term impacts for any of the alternatives related to geological or seismic issues.

3-8.4 Mitigation Measures

3-8.4.1 Construction-Period Mitigation Measures

Construction-period impacts would be eliminated or reduced to less than adverse/less than to significant by complying with the federal and state regulatory requirements and/or permits identified in Section 3-8.3.6, so no additional measures to mitigate impacts are anticipated.

3-8.4.2 Long-Term Mitigation

Since no long-term impacts were identified, no long-term mitigation measures are required.

3-8.5 Impact Results with Mitigation

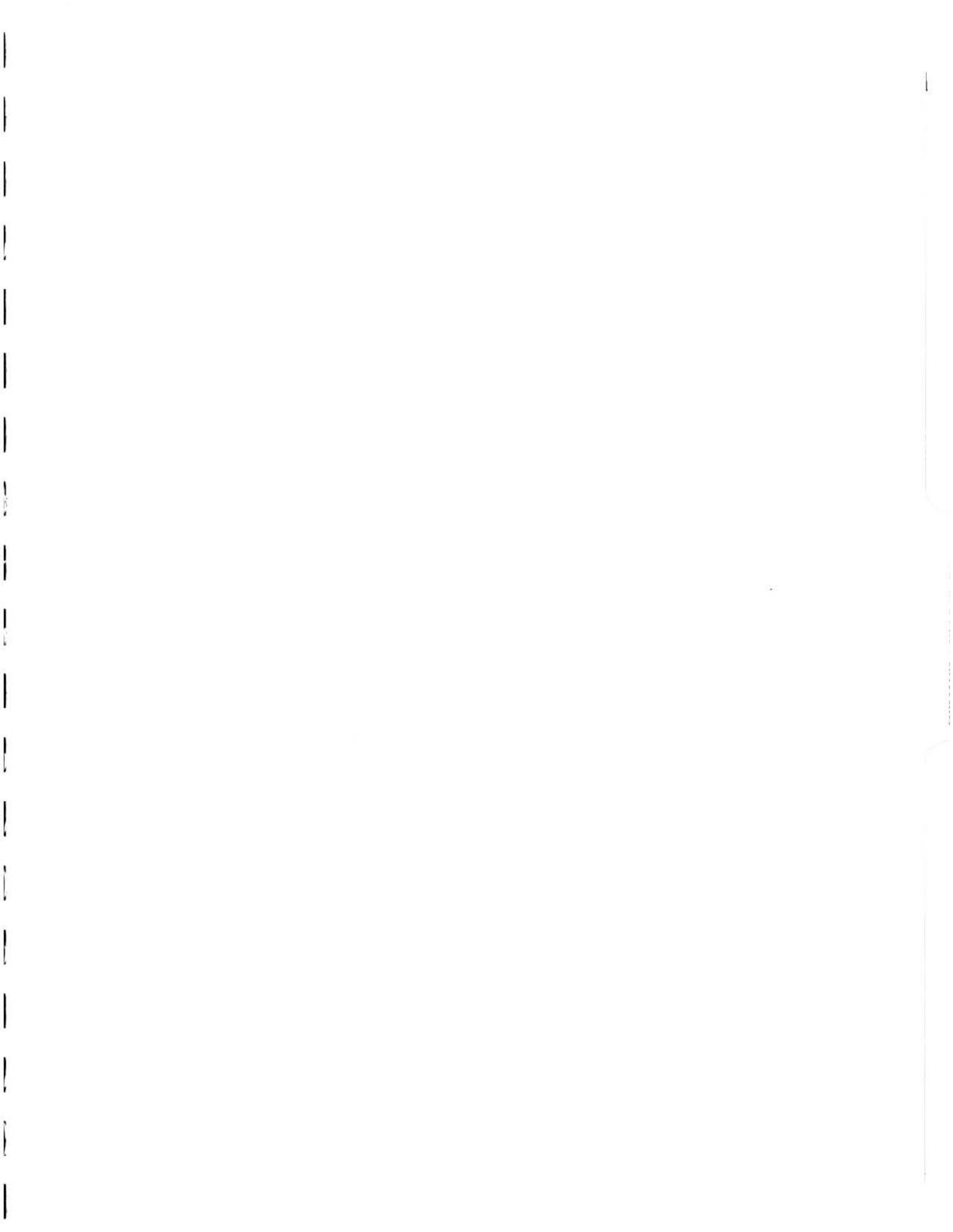
The following sections report the result of complying with regulatory requirements and proposed mitigation measures. The intent of this section is to summarize where identified impacts have been eliminated or reduced to less than adverse/less than significant levels, or whether there may be remainder impacts.

3-8.5.1 Construction Period

Construction-period impacts would be eliminated or reduced to less than adverse/less than significant levels by complying with federal and state regulatory requirements and/or permits identified in Section 3-8.3.6. No mitigation measures are necessary. As a result of these two conditions, construction-period impacts would be not adverse under NEPA and not significant under CEQA.

3-8.5.2 Long-Term Mitigation

No long-term impacts were identified, and no mitigation measures are required.



3-9 HAZARDOUS MATERIALS

Summary of Impacts

An initial identification of potential hazardous materials was conducted only for the alignment and station areas of the LRT alternatives. Several potentially hazardous materials were identified from databases or field observations. Detailed evaluations and development of mitigations will not occur until the Preliminary Engineering phase when the precise location of facilities is determined. However, based on the fact that transportation projects in the area have been successfully built in circumstances with similar hazardous material issues as identified for the study corridor, it can be assumed that impacts would be eliminated or reduced to less than adverse/less than significant levels by complying with the federal and state regulatory requirements and/or permits.

3-9.1 Existing Conditions

A draft Phase I Environmental Site Assessment (ESA) of the proposed LRT right-of-way, station locations and parking areas was conducted. The purpose of this draft ESA was to identify, to the extent feasible pursuant to the processes prescribed in American Society for Testing and Materials International (ASTM) E1527-00, recognized environmental conditions in connection with the subject property (Site). The scope of work for this draft Phase I ESA included: records review; site reconnaissance; interviews; and report preparation. The draft Phase I ESA is an appendix to the EIS/EIR and is available upon request.

An environmental database report prepared using the FirstSearch™ database was reviewed for local, state, and federal listings for properties within 1,000 feet of the rail alignment. Regulatory database lists were reviewed for cases pertaining to leaking USTs, hazardous waste sites, and abandoned sites. Historical information was obtained from a review of aerial photographs, Sanborn-Perris Maps, and historical topographic maps. The historical map review was conducted only on the railroad right-of-way.

Since there would be no substantial construction in Phase I under any of the alternatives, information gathering was focused on the Phase II area. A summary of the areas of potential concern for each Segment of Phase II follows.

3-9.1.1 Phase II, Segment 1

Adjacent properties in the cities of Monrovia and Duarte were historically utilized for agricultural purposes, including orchards. Potential issues associated with agricultural areas and agricultural use can include pesticides, buried smudge pots, pipes, and buried transite piping (which may contain asbestos). The former agricultural use is considered a High potential to adversely affect the Site.

One “plugged and abandoned dry hole” oil well was determined to be located near the proposed project in the City of Duarte. Leighton Consulting requested information from the California Division of Oil, Gas, and Geothermal Resources. As of the date of this report a response has not yet been received from the Division of Oil and Gas. A potential oil well is considered a High potential to adversely affect the Site; however, this classification may change by the information obtained in the file review.

During site visits between November 10 and 24, 2003, evidence of staining and abandoned drums was observed within the railroad right-of-way. These areas are described below:

- Approximately five batteries were observed within a concrete vault within the railroad right-of-way in the City of Pasadena. Staining was not observed beneath the batteries.
- Approximate five square foot area of dark staining was observed on the northern portion of the railroad right-of-way, south of Flower Street in the City of Arcadia. The source of the staining is not known.
- An area of staining was observed beneath a railcar within the railroad right-of-way in the City of Arcadia. The source of the staining is not known.
- Dark staining was observed in a drainage area on the northern portion of the railroad right-of-way, south of the intersection of Flower Street and Saint Joseph Street in the City of Arcadia. The staining appears to have originated from offsite.
- A dilapidated wall was observed south of a residential area located west of Monterey Avenue in the City of Monrovia. Stucco was observed to be crumbling onto the railroad right-of-way. It is possible that the stucco may contain asbestos. In addition, debris was observed along the wall. A battery was observed in the debris. Staining was not observed beneath the battery.
- Approximately three small (less than one square foot) areas of dark staining were observed in the northern portion of the railroad right-of-way, east of Shamrock Avenue in the City of Monrovia. The source of the staining is not known.
- An approximate 800 square foot area of gray staining was observed north of the railroad right-of-way in the City of Duarte. The source of the staining is not known.

Based on the review of the environmental database report prepared using FirstSearch™, the following properties were identified onsite and offsite that have a classification criterion of High:

Onsite:

- ABCO Metal Finishing located at 1617 through 1621 South Myrtle Avenue in Monrovia
- Nu-Way Industries located at 145 West Duarte Road in Monrovia
- Pacific Atlas Oil (ARCO) located at 1601 South Myrtle Avenue in Monrovia.

Based on the review of the environmental database report prepared by FirstSearch™, the following properties identified offsite that have a classification criterion of Moderate:

Offsite:

- Nu Way Car Wash located at 123 West Duarte Road in Monrovia.

3-9.1.2 Phase II, Segment 2

Adjacent properties in the Cities of San Dimas, La Verne, Pomona, Claremont, and Montclair were historically utilized for agricultural purposes, including orchards. Potential issues associated with agricultural areas and agricultural use can include pesticides, buried smudge pots, pipes, and buried transite piping (which may contain asbestos). The former agricultural use is considered a High potential to adversely affect the Site.

Evidence of staining and abandoned drums was observed within the railroad right-of-way during a field reconnaissance conducted visits between November 10 and 24, 2003. These areas are described below:

- A large drum storage area was observed on the adjacent property to the south of the railroad right-of-way in association with Wynn Oil Company in the City of Azusa. Staining was not observed beneath the drums from the railroad right-of-way.
- Additional drum storage was observed on the adjacent property to the north of railroad right-of-way in the City of Azusa. The former use at the property where these drums were identified is not known. Staining was not observed beneath the drums from the railroad right-of-way.
- A nursery was observed on the adjacent property to the north side of the rail alignment within the City of Glendora. The nursery also utilizes the railroad right-of-way to store plants. A sprinkler system was operating at the time of the site reconnaissance. In addition, an unlined ditch to the north of the railroad right-of-way collects water runoff from the nursery. Pesticides were not observed during the site reconnaissance.
- Concrete which appeared to be painted blue was observed north of the railroad right-of-way in the City of Glendora. The purpose of the concrete is not known.
- Aboveground Storage Tanks (ASTs) associated with Naked Juice, located at 533 Foothill Boulevard in the City of Glendora, were identified. The contents and size of the ASTs are not known. The ground surface beneath the ASTs could not be observed from the railroad right-of-way.
- What appeared to be two drainage pipes were observed on the slope adjacent to the railroad right-of-way in the City of San Dimas. Staining was not observed beneath these pipes.
- An area of stained soil was observed south of the railroad right-of-way between the rail line and an adjacent property within the City of San Dimas. The source of the staining is not known.
- Drums were observed on the adjacent property to the south of the railroad right-of-way in the City of La Verne. The property these drums were associated with is not known. Staining was not observed beneath the drums from the railroad right-of-way.
- An unlabeled 55-gallon drum was observed north of the rail line in the City of La Verne. Staining was observed beneath the drum and staining was also observed extending onto the railroad right-of-way from the adjacent property to the north.
- A stockpile of soil and gravel was observed north of the rail line in the City of Pomona. The source of the soil is not known.
- A mining operation was observed north of the railroad right-of-way in the City of Montclair. In this area an unlined drainage channel, a buried spur, and staining was observed. In addition a tar like substance was observed adjacent to the mining operations. This substance appears to have been dumped onsite.
- A substation containing numerous transformers was observed south of the railroad right-of-way within the City of Montclair. Staining was not observed beneath the transformers from the railroad right-of-way.

Based on the review of the environmental database report prepared using FirstSearch™, the following properties identified onsite and offsite have a classification criterion of High:

Onsite:

- Regional Groundwater Contamination in Azusa and Irwindale
- Orbital Sciences Group located at 2771 North Garey Avenue in Pomona
- Apex Painting located at 2700 North Garey Avenue in Pomona

- C.A.E. Wholesale is located at 2710 North Towne Avenue in Pomona.

Offsite:

- Claremont Colleges located at 303 1st Street East in Claremont.

Based on the review of the environmental database report prepared using FirstSearch™, the following properties identified offsite have a classification criterion of Moderate:

Offsite:

- Wynn Oil Company located at 1151 5th Street West in Azusa
- N & G Business Park located at 505 Foothill Boulevard in Glendora
- Chevron #9-3657 located at 465 Foothill Boulevard in Glendora
- Texaco (former) located at 304 Bonita Avenue in San Dimas
- Coast Foundry & Manufacturing located at 2707 Garey Avenue in Pomona
- Xerox Corporation located at 800 Bonita Avenue in Pomona
- Richard Hibbard Chevrolet located at 191 Indian Hills Boulevard in Claremont.

3-9.2 Environmental Impacts

3-9.2.1 Evaluation Methodology

The purpose of the Phase I ESA was to identify, to the extent feasible pursuant to the processes prescribed in ASTM E1527-00, recognized environmental conditions in connection with the properties that would be used for the LRT alternatives. These properties include the rail right-of-way and potential sites for parking. Recognized environmental conditions are defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimus conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

Due to lack of available historical resources, historical records were not reviewed for the period prior to 1938. Visual inspections of the railroad right-of-way were conducted visits between November 10 and 24, 2003, but potential parking sites were only inspected from the property boundaries. Obstructions such as fences, vegetation, and buildings limited the observations on many of these properties.

3-9.2.2 Impact Criteria

a. NEPA Impact Criteria

There are no specific impact criteria specified under NEPA. For the purposes of analysis, classification criteria were developed to assist in identifying the potential impacts of each contaminated or potentially contaminated facility that was identified in the FirstSearch™ environmental database report system or the

site reconnaissance. Each facility was classified as high, moderate, or low with respect to its type of operation, proximity to the Site, the anticipated hydrogeologic gradient, field observations, and regulatory information. In general, the classifications are:

- High – facilities with known or probable soil/groundwater contamination (i.e., Leaking Underground Storage Tanks [LUSTs]), and facilities where remediation is incomplete or undocumented.
- Moderate – facilities with identified or potential soil contamination (i.e., LUSTs), remediation is in progress, or groundwater contamination that does not appear to be migrating.
- Low – facilities that have completed remediation or have historically utilized only small amounts of known contaminants (i.e., small quantity generators or underground storage tanks).

In addition to these classification criteria, impacts were assessed using the CEQA criteria below.

b. CEQA Impact Criteria

Under CEQA, direct and indirect impacts must be clearly identified and described, giving due attention to both short-term (i.e., during project construction) and long-term effects. The 2003 CEQA Guidelines (Environmental Checklist, Appendix G), use the following questions to determine whether a significant impact would occur. Would the project:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

3-9.2.3 Construction-Period Impacts

a. No Build Alternative

Elements of the No Build Alternative have the potential to create construction-period impacts. However, it is assumed that all projects would be implemented in accordance with all federal and state requirements

and permits during the construction process. Accordingly, impacts would be less than adverse under NEPA and less than significant under CEQA.

b. Transportation System Management (TSM) Alternative

The TSM Alternative includes service improvements and is not anticipated to include construction that would result in exposure to subsurface hazardous materials. It is assumed that all projects would be implemented in accordance with all federal and state requirements and permits during the construction process. Accordingly, impacts would be less than adverse under NEPA and less than significant under CEQA.

c. LRT, Triple Track Configuration

Phase I

There are no elements of the Triple Track configuration that occur in Los Angeles or South Pasadena, or to the east of the Sierra Madre Villa Station in Pasadena. Accordingly, there are not anticipated to be any construction-period hazardous material impacts.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. The reconnaissance of the rail right-of-way in these cities revealed areas of staining, indicating the potential for hazardous materials. During Preliminary Engineering, specific testing shall be conducted and necessary and appropriate means for remediation of these areas shall be developed, as appropriate, with the results reported in the Final EIS/EIR. Potentially adverse impacts resulting from construction will be mitigated by appropriate investigation of suspected hazardous materials or petroleum contamination, and removal or other remediation as discussed in section 3-9.2.6. Thus, it is anticipated that impacts would be less than adverse under NEPA and less than significant under CEQA.

The Nu-way Industries property at 145 W. Duarte Rd, Monrovia is the proposed location of parking for the Monrovia Station. This site is rated as having a High potential for hazardous materials that would be encountered during the construction process. There are also nearby sites listed as having a High potential that could produce subsurface contamination on project lands. During Preliminary Engineering, specific testing shall be conducted and necessary and appropriate means for remediation of the Nu-way site shall be developed (including any contaminants arising from nearby sites), as appropriate, with the results reported in the Final EIS/EIR. Potentially adverse impacts resulting from construction will be mitigated by appropriate investigation of suspected hazardous materials or petroleum contamination, and removal or other remediation as discussed in section 3-9.2.6. Thus, it is anticipated that impacts would be less than adverse under NEPA and less than significant under CEQA.

No other properties within Segment 1 that are anticipated to be utilized by the LRT alternatives were identified as having a High or Moderate classification.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair and Upland. The reconnaissance of the rail right-of-way between November 10 and November 24, 2004, in these cities revealed areas of staining, indicating the potential for hazardous materials. During

Preliminary Engineering, specific testing shall be conducted and necessary and appropriate means for remediation of these areas would be developed, as appropriate, with the results reported in the Final EIS/EIR. Potentially adverse impacts resulting from construction will be mitigated by appropriate investigation of suspected hazardous materials or petroleum contamination, and removal or other remediation as discussed in section 3-9.2.6. Thus, it is anticipated that impacts would be less than adverse under NEPA and less than significant under CEQA.

There are two sites in Pomona that were rated as having a High potential for hazardous materials. The Orbital Sciences Group located at 2771 North Garey Avenue in Pomona is adjacent to the proposed parking garage site for the Pomona–Garey station. There are also nearby sites listed as having High potential that could produce subsurface contamination on project lands. During Preliminary Engineering, specific testing would be conducted and necessary and appropriate means for remediation of the proposed parking site would be developed (including any contaminants arising from nearby sites), with the results reported in the Final EIS/EIR. Potentially adverse impacts resulting from construction will be mitigated by appropriate investigation of suspected hazardous materials or petroleum contamination, and removal or other remediation as discussed in section 3-9.2.6. Thus, it is anticipated that impacts would be less than adverse under NEPA and less than significant under CEQA.

The former IBM location at 2710 North Towne Avenue is the proposed parking location for the Pomona–Towne station. It is known that the latter site has been remediated, and is subject to on going monitoring. During Preliminary Engineering, specific testing would be conducted and necessary and appropriate means for any further required remediation of this site would be developed, with the results reported in the Final EIS/EIR. Potentially adverse impacts resulting from construction will be mitigated by appropriate investigation of suspected hazardous materials or petroleum contamination, and removal or other remediation as discussed in section 3-9.2.6. Thus, it is anticipated that impacts would be less than adverse under NEPA and less than significant under CEQA.

No other properties within Segment 2 that are anticipated to be utilized by the LRT alternatives were identified as having a High or Moderate classification.

Summary of Triple Track Impacts for Full Build Alternative

The following potential impacts were identified for Phase I and Phase II, Segments 1 and 2.

- Former agricultural and orchard uses
- Potential oil well located in the City of Duarte
- One location (145 W. Duarte Road, Monrovia) with known or potential subsurface contamination, including areas of soil staining, as well as potential asbestos and building materials potentially containing lead paint.
- Potential subsurface contamination extending onto project sites from nearby contaminated locations in Monrovia and Pomona
- Presence of hazardous materials, drums, trash, debris on project lands
- Since groundwater is anticipated to be encountered during construction activities, testing of the groundwater may be warranted in order to characterize the impacts if dewatering is anticipated.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

The following are potential impacts identified for Phase II, Segment 1:

- Former agricultural and orchard use
- Potential oil well located in the City of Duarte
- One location (145 W. Duarte Road, Monrovia) with known or potential subsurface contamination, including areas of soil staining, as well as potential asbestos and building materials containing lead paint.
- Potential subsurface contamination extending onto project sites from nearby contaminated locations in Monrovia
- Presence of hazardous materials, drums, trash, debris on project lands
- If groundwater is anticipated to be encountered during construction activities, testing of the groundwater may be warranted in order to characterize the impacts if dewatering is anticipated.

d. LRT, Double Track Configurations

Phase I – The Cities Affected and the Effects

There are no elements of the Double Track configurations in Los Angeles, South Pasadena or east of the Sierra Madre Villa Station in Pasadena. Accordingly, there are not anticipated to be any hazardous materials impacts during the construction period.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. The construction-period impacts for the Double Track configurations would be the same as presented for the Triple Track configuration.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair and Upland. The construction-period impacts for the Double Track configurations would be the same as presented for the Triple Track configuration.

Summary of Double Track Impacts for Full Build LRT Alternative

The construction-period impacts for the Double Track Full Build Alternative would be the same as presented for the Triple Track Full Build Alternative.

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

The construction-period impacts for the Double Track Build LRT Alternative to Maintenance Facility would be the same as presented for the Triple Track Build LRT Alternative to Maintenance Facility.

3-9.2.4 Long-Term Impacts

a. No Build Alternative

There are no elements of the No Build Alternative that are anticipated to have long-term hazardous materials impacts. Operation of facilities and services created under the alternative would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts in Phase I, Phase II Segment 1 or Phase II Segment 2 are anticipated.

b. Transportation System Management (TSM) Alternative

There are no elements of the TSM Alternative that are anticipated to have long-term hazardous materials impacts. Operation of services created under the alternative would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts in cities in Phase I, Phase II Segment 1 or Phase II Segment 2 are anticipated.

c. LRT, Triple Track Configuration

Operation of the LRT Triple Track configuration would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts in cities in Phase I, Phase II Segment 1 or Phase II Segment 2 are anticipated as a result of the proposed project. Freight operations would continue on an independent track. It is assumed that freight operations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards.

Summary of Triple Track Impacts for Full Build LRT Alternative

Operation of the LRT Triple Track configuration would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. Freight operations would continue on an independent track. It is assumed that freight operations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts are anticipated.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

Operation of the LRT Triple Track configuration would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. Freight operations would continue on an independent track. It is assumed that freight operations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts are anticipated.

d. LRT, Double Track Configurations

Operation of the LRT Double Track configurations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts in cities in Phase I, Phase II Segment 1, or Phase II Segment 2 are anticipated.

as a result of the proposed project. Freight movements would occur during the hours when the LRT service is not in operation. It is assumed that freight operations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts are anticipated.

Summary of Double Track Impacts for Full Build LRT Alternative

Operation of the LRT Double Track configurations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts in cities in Phase II Segment 1 or Phase II Segment 2 are anticipated as a result of the proposed project. Freight movements would occur during the hours when the LRT service is not in operation. It is assumed that freight operations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts are anticipated.

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

Operation of the LRT Double Track configurations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts in cities in Phase II Segment 1 are anticipated as a result of the proposed project. Freight movements would occur during the hours when the LRT service is not in operation. It is assumed that freight operations would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards. No long-term hazardous material impacts are anticipated.

3-9.2.5 Cumulative Impacts

Construction of either LRT alternative would not affect locations other than those specifically identified in this section. Potential impacts associated with the proposed project would not combine with other potentially hazardous conditions to result in a cumulative impact, since each individual project would be implemented to include provisions for remediation to less than significant levels of any encountered contaminants.

3-9.2.6 Impacts Addressed by Regulatory Compliance

a. Construction-Period Impacts

Impacts that would arise from construction of any of the alternatives were identified in Section 3-9.2.3, above. Elimination or reduction of these construction-period impacts would occur through two steps, as follows: (1) compliance with local, state or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies and (2) implementation of the proposed alternatives with additional construction-period mitigation measures defined in Section 3-9.3.1. Following is a discussion of the construction-period impacts for each of the alternatives that would be addressed by the first step, regulatory compliance.

It is assumed that all projects in all alternatives would be implemented in accordance with all federal and state requirements and permits during the construction process as well as Best Management Practices. During Preliminary Engineering, site-specific investigations for properties to be used for the LRT alternatives would be completed to assess the presence or absence of hazardous materials, its severity, and the control measure that is appropriate under applicable federal and state regulations. For instance, all soil believed to be contaminated would be sampled in accordance with SW-846 sampling protocols.

Depending upon the amount of affected material encountered, the concentrations of hazardous constituents, and the type of hazardous constituents encountered during construction activities, the following measures would typically apply:

- Removal and Disposal –identify, remove, and haul and dispose of materials in the appropriate, licensed Class I, II, or III disposal facility
- Recycling –treat and/or recycle materials at regulated recycling facilities
- Reuse of uncontaminated or treated materials on project lands.

Operations involving the segregation, handling, transportation, and disposal of contaminated soil, hazardous substances, solid waste, USTs, oil and gas wells, and other environmentally related issues encountered during earthwork operations are addressed by federal and state regulation. Excavated soil would be sampled for the purpose of classifying material and determining disposal requirements. If excavated soil is suspected or known to be contaminated, the contractor would be expected to conduct the following:

- Segregate and stockpile the material on visqueen
- Spray the stockpile with water or a South Coast Air Quality Management District (SCAQMD) approved vapor suppressant and over the stockpile with visqueen to prevent exposure to soil
- Provide qualified and trained personnel and personal protective equipment to perform operations that require the disturbance of hazardous substances including, but not limited to excavation, segregation, stockpiling, loading, and hauling

In addition, information regarding Resource Conservation and Recovery Act (RCRA) compliance and other State hazardous waste disposal requirements that apply to this project in the final construction documents would be identified in the Final EIS/EIR.

Summary of Construction-Period Impacts for Full Build Alternative Addressed by Regulatory Compliance

Based on the fact that transportation projects in the area have been successfully build in circumstances with similar hazardous material issues identified for the study corridor, it can be assumed that compliance with federal and state regulations regarding the identification, testing, disposal, handling and transport of hazardous materials would be expected to reduce construction-period impacts to less than adverse under NEPA and less than significant under CEQA for the Full Build Alternative (either Triple Track or Double Track configurations).

Summary of Construction-Period Impacts for Build LRT Alternative to Maintenance Facility Addressed by Regulatory Compliance

Based on the fact that transportation projects in the area have been successfully build in circumstances with similar hazardous material issues identified for the study corridor, it can be assumed that compliance

with federal and state regulations regarding the identification, testing, disposal, handling and transport of hazardous materials would be expected to reduce construction-period impacts to less than adverse under NEPA and less than significant under CEQA for the Full Build Alternative (either Triple Track or Double Track configurations).

b. Long-Term Impacts

Long-term impacts associated with of the alternatives were identified in Section 3-9.2.4, above. Elimination or reduction of these long-term impacts would occur through two steps, as follows: (1) compliance with local, state or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies and (2) implementation of the proposed alternatives with additional mitigation measures defined in Section 3.9-1.3.2. Following is a discussion of the long-term impacts for each of the alternatives that would be addressed by the first step, regulatory compliance.

Long-term impacts could arise from operation of facilities and services created under any of the alternatives. Operations and services would be conducted in accordance with all federal and state regulatory requirements that are intended to prevent or manage hazards and no mitigation measures would be required. No long-term hazardous material impacts in cities in Phase I, Phase II Segment 1 or Phase II Segment 2 are anticipated.

3-9.3 Potential Mitigation

Construction and operation of all alternatives would be conducted in accordance with federal and state regulations that govern the identification, testing, disposal, handling and transport of hazardous materials. Compliance with these regulations and their attendant permits would reduce potential impacts to less to adverse under NEPA and less than significant under CEQA. Accordingly, no mitigation measures are required for the No Build, TSM or LRT alternatives.

3-9.4 Impact Results with Mitigation

The following sections report the result of complying with regulatory requirements and proposed mitigation measures. The intent of this section is to summarize where identified impacts have been eliminated or reduced to less than adverse/less than significant levels, or whether there may be remainder impacts.

3-9.4.1 Construction Period

Based on the fact that transportation projects in the area have been successfully built in circumstances with similar hazardous material issues as identified for the study corridor, it can be assumed that construction-period impacts would be eliminated or reduced to less than adverse/less than significant levels by complying with the federal and state regulatory requirements and/or permits identified in Section 3-9-1.2.6a, and no additional measures to mitigate impacts were identified in Section 3-9.3.1. As a result of these two conditions, construction-period impacts would be not adverse under NEPA and not significant under CEQA for all alternatives.

3-9.4.2 Long Term

Based on the fact that transportation projects in the area have been successfully operated in circumstances with similar hazardous material issues as identified for the study corridor, it can be assumed that long-term impacts would be eliminated or reduced to less than adverse levels under NEPA and less than significant levels under CEQA by complying with the federal and state regulatory requirements and/or permits identified in Section 3-9-1.2.6a, and no additional measures to mitigate impacts were identified in Section 3-9.3.1. As a result of these two conditions, long-term impacts would be not adverse under NEPA and not significant under CEQA for all alternatives.

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3-10 LAND USE AND PLANNING

Summary of Impacts

The No Build and TSM alternatives would not be expected to generate substantive land use changes in any of the cities in Phase I or Phase II because the types of projects are not of sufficient scale to induce such changes, with one exception.

Potential land use impacts under the Double Track configurations are not expected to differ from those expected under the Triple Track configuration (see 3-10.2.4.c, above) because both alternatives propose the same facilities. One difference that may result in potential land use impacts is that freight service along the corridor may cease under the Double Track configurations. The loss of freight service may change the land uses at sites dependent on the service. Currently, the City of Monrovia possesses the westernmost freight customer on the alignment, who receives input by freight and ships product by truck. With the loss of freight service, the customer may continue at that location, using 100 percent truck shipping; or, the customer may relocate – thus enabling a change in land use. Loss of industrial land use at this site would not be considered a significant impact, however, because future development in the underlying land use zone (Planned Development 12a) is encouraged to transition to (a) regional/subregional commercial, (b) office/research & development, (c) support uses, or (d) master-planned mixed-use developments.¹

3-10.1 Existing Conditions

Land use in the corridor covers the range of land use types that are typically found in mature suburban communities. As might be expected in a study corridor that has an existing railroad line as its spine, much of the adjoining land uses are industrial or commercial. In many cases, these land uses were developed in response to the availability of railroad service. However, there are substantial sections of residential land uses that adjoin the existing rail alignment. Only the city of Irwindale has no adjoining residential land use.

Land use planning is conducted by each of the cities, and by Los Angeles County for the two small pockets of unincorporated areas along the corridor (East Pasadena and East Azusa Unincorporated Areas). Each of the cities has an adopted general plan, and in many of the proposed light rail station areas, specific plans guide development. The general plans outline the overall context for planning decisions, while the specific plans set out additional parameters for development in sub-areas of the cities. Each city also has a zoning code, which is the set of legal regulations used to implement the policies and land use map designations outlined in general and specific plans. The following discussion describes existing and planned land uses, as well as the local land use plans, policies and zoning regulations in each of the Phase II cities as they relate to the proposed Gold Line Phase II LRT project.

¹ City of Monrovia, *General Plan Land Use Element*, July 20, 1993, 51.

3-10.1.1 Phase II, Segment 1 Cities

Land uses for the areas near stations in this segment are shown on **Figures 3-10.1, 3-10.2, and 3-10.3.**

a. Pasadena

The Gold Line Phase II project would extend the rail line within Pasadena from the line's current eastern terminus at Sierra Madre Villa Station for approximately one-half mile to the City's eastern boundary at Rosemead Boulevard, continuing within the LACMTA right-of-way in the median of the I-210 freeway.

The City of Pasadena has policies and guidelines in its General Plan that support transit-oriented development and enhanced public transportation. The eastward extension of Gold Line services is consistent with the principals embodied in the City's Vision Statement, especially principal number five, that "Pasadena will be a city where people can circulate without cars." More specifically, the city has established a framework for the General Plan's Mobility Element (2003, draft) that focuses on four major objectives, all of which can be met via further development of the Gold Line. These objectives include the promotion of a livable community, encouragement of non-auto travel, protection of neighborhoods by discouraging auto traffic from passing through local neighborhoods on their way to alternate locations, and management of multi-modal corridors to promote and improve city transportation services.

In both the East Colorado Boulevard Specific Plan (2003) and the East Pasadena Specific Plan (2000), Pasadena strongly supports transit-oriented opportunities to support the city's light rail stations. The existing Sierra Madre Villa Gold Line Station is directly north of the Chihauhuita Sub-Area of the East Colorado Boulevard Specific Plan, which extends eastward to Sycamore Avenue south of the I-210 Freeway along Colorado Boulevard. The area within a quarter-mile radius of the Gold Line Station has been identified in this specific plan as a "transit node," a designation which aims to create a commuter-oriented destination by allowing for mixed-use redevelopment, higher residential densities, parking reductions, and increased height limits.²

The Gold Line Phase II extension also falls within the boundaries of Subarea d2 of the East Pasadena Specific Plan. Subarea d2 includes the properties north of the I-210 Freeway between the Sierra Madre Villa Station and the City's eastern boundary at Rosemead Boulevard. This plan recommended that parcels situated around the Sierra Madre Villa Station be rezoned from Industrial to General Commercial in order to provide more opportunities for development of office space and encourage more research and development activities. The plan also recommended that housing be introduced as a permitted use in the Industrial and General Commercial zones to take advantage of transit access.

Currently, the East Pasadena areas immediately north of the proposed extension are zoned primarily as General Commercial and Industrial zones within the East Colorado Specific Plan, Subarea d-2. Properties north, east, and west of the existing station site are zoned General Commercial, while properties furthest east along the alignment are zoned Industrial. Properties are zoned for General Commercial use directly south of the I-210 Freeway between the Gold Line Station and Pasadena's border with Los Angeles County at Sycamore Avenue. Existing land uses in this area include Auto-Related Use and Parking, in addition to General Commercial uses.³ South of the I-210 Freeway between Sycamore Avenue and Rosemead Boulevard, the Gold Line alignment abuts commercial uses in unincorporated Los Angeles County.

² City of Pasadena, East Colorado Blvd Specific Plan, June 24, 2003, p. II-37.

³ City of Pasadena, East Colorado Blvd Specific Plan, June 24, 2003, Figures 2.4 and 2.10.

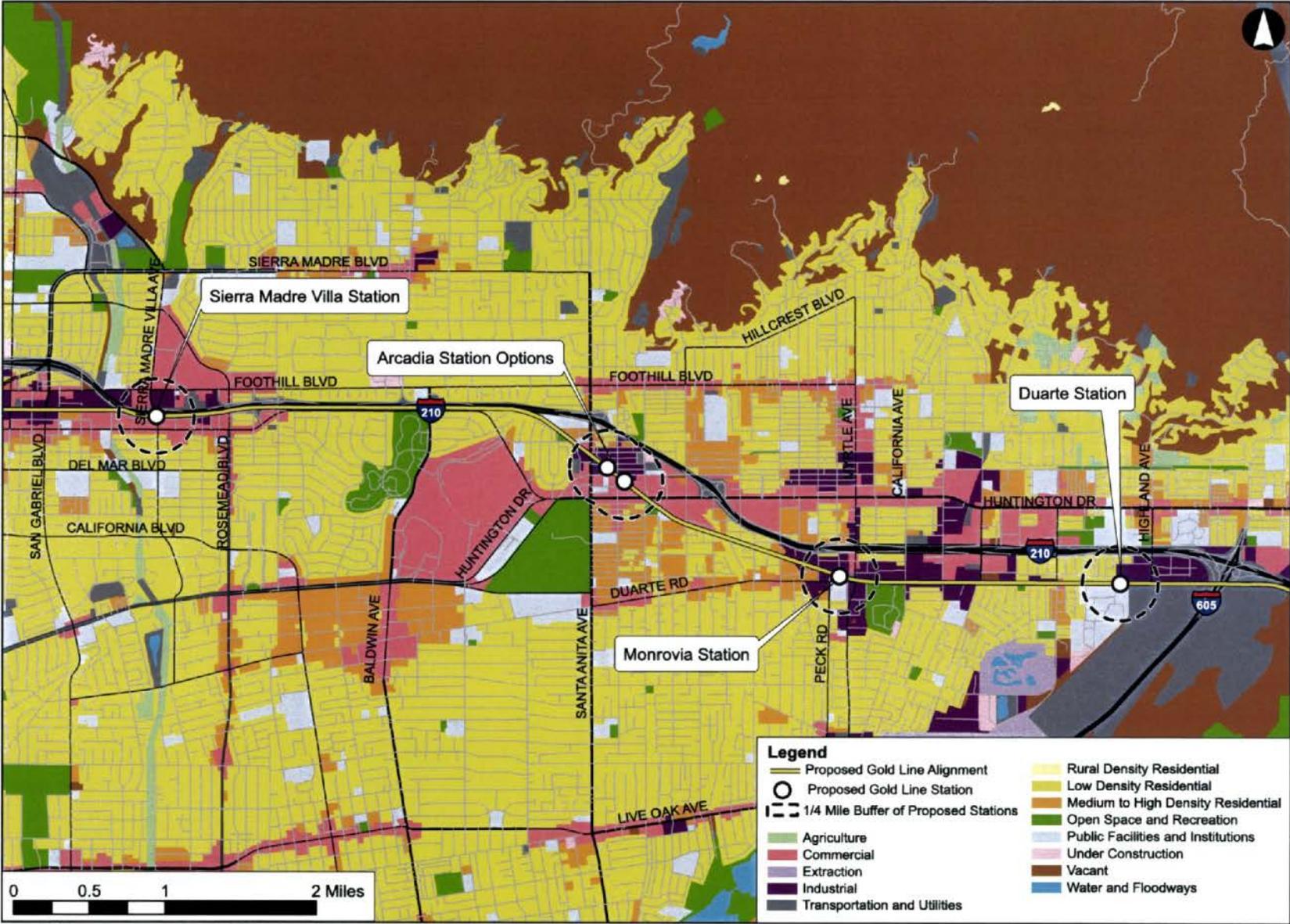
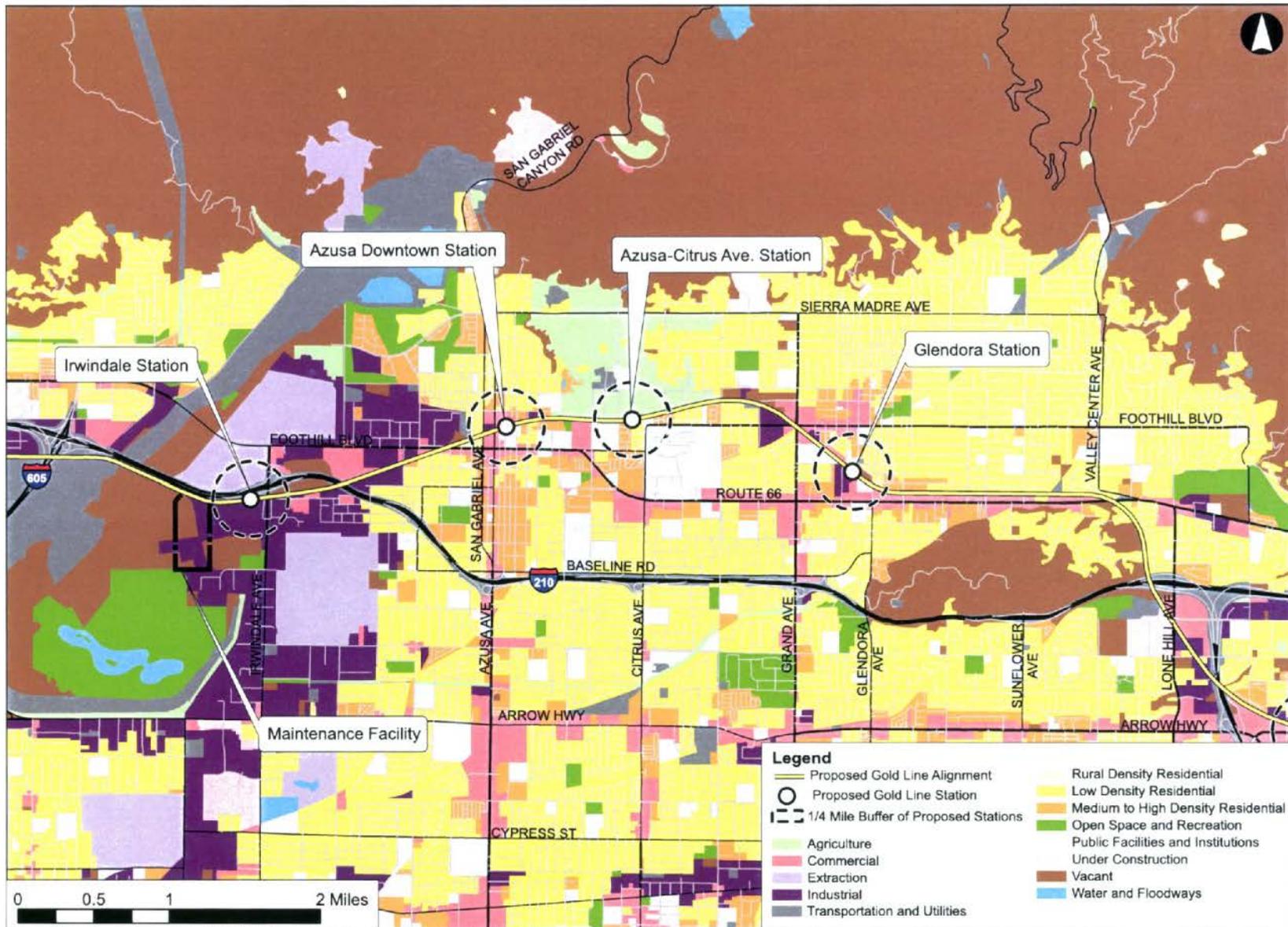
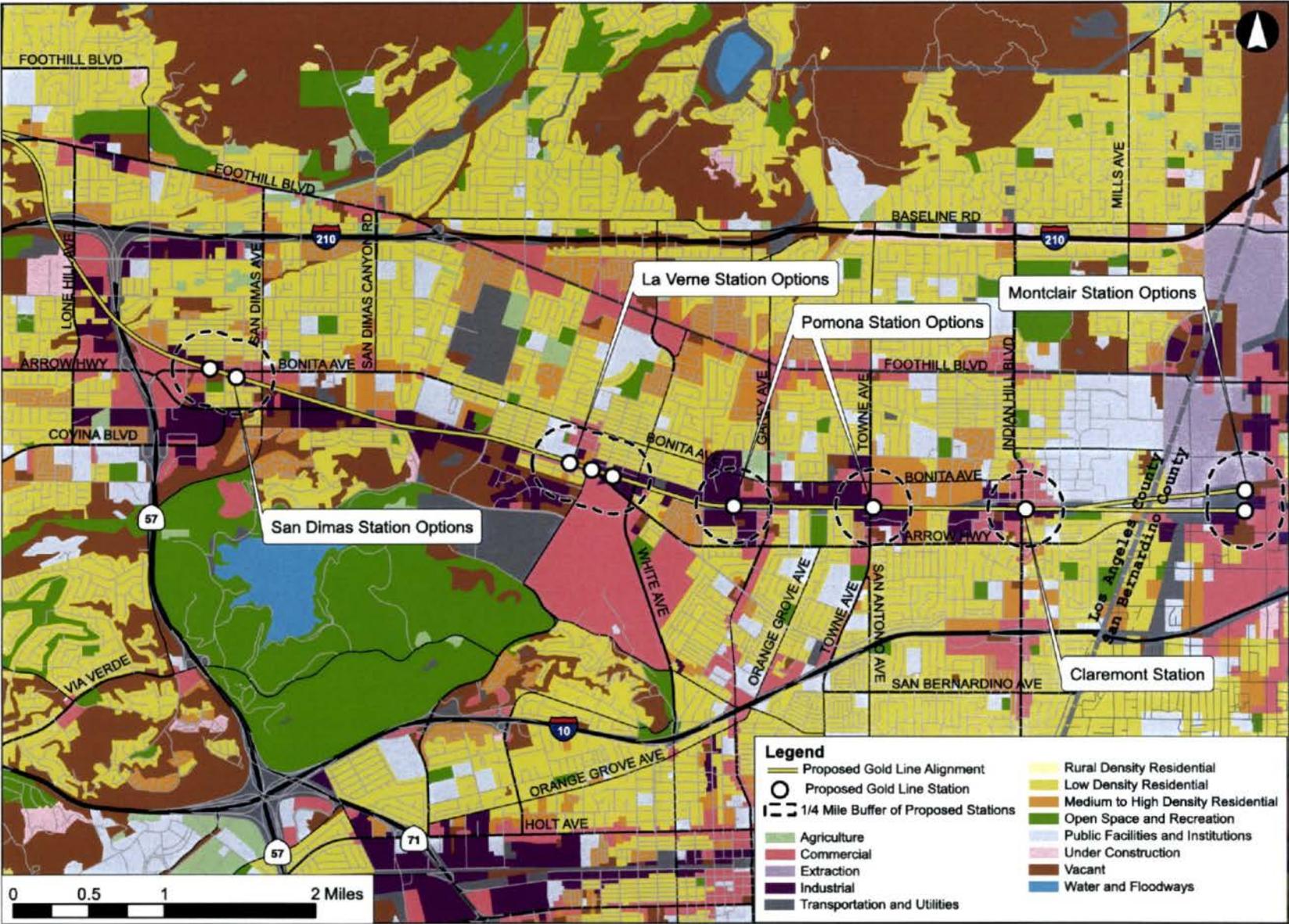


Figure 3-10.1: Area Land Use: Sierra Madre Villa, Arcadia, Monrovia, and Duarte Stations



Sources: ©GDT, Inc. and its licensors, Rel. 10/2002; SCAG Regional Land Use, 2003; Jones & Stokes Associates, 2003.

Figure 3-10.2: Area Land Use: Azusa Downtown, Azusa-Citrus Ave., and Glendora Stations



Sources: ©GDT, Inc. and its licensors, Rel. 10/2002; SCAG Regional Land Use, 2003; Jones & Stokes Associates, 2003.

Figure 3-10.3: Area Land Use: San Dimas, La Verne, Pomona, Claremont, and Montclair Stations

b. Arcadia

Rail transit in general is recognized in Arcadia's General Plan (1996) as an opportunity to help achieve the City's stated goal "to enhance transportation services in Arcadia to residents and business people." The city was rather visionary in their desire for transit service, and acknowledged in their 1996 General Plan that "the City of Arcadia has lobbied the LACMTA to extend rail service into Arcadia, and has identified a station location at First and Front streets along the LACMTA-owned rail line east of Santa Anita Avenue; however, the LACMTA currently has no plans for such an extension of service."⁴ General Plan Strategy FS-13 was to "pursue the establishment of rail service to Arcadia, including a transit stop within the downtown redevelopment area."

The proposed transit stations at First Avenue and Santa Clara/Front Streets or at First Avenue and Wheeler Street are thus highly compatible with Arcadia's general plan strategy to "restore the historic center of Downtown Arcadia as the social and symbolic 'Heart of the City'" (Strategy CD-8). More specifically, the station locations are consistent with the Community Development Element Strategy (CD-12) to "establish First Avenue as the central north-south commercial corridor in the downtown area to enhance the business environment in this corridor by creating a pedestrian oriented environment that will encourage increased economic activity." Arcadia's "Downtown 2000" revitalization program, which included making streetscape improvements to Huntington Drive and First Avenue in 1996, has already been a major step in this direction. The area east of the rail alignment along Santa Clara Street has been identified in the General Plan as a "Land Use Transition Area," where it is envisioned that land use will transition to Mixed Use Commercial/Multiple Family Residential uses. This area is specifically targeted for the development of senior citizen housing or other affordable housing along with commercial development – all uses which would be highly compatible with the development of a transit station.

The proposed station alternatives are located within Arcadia's Central Redevelopment Project Area, where the city desires "to encourage and facilitate the establishment and growth of high quality retail outlets, stores and restaurants, professional office uses and industrial uses ... and to discourage unattractive, incompatible and non-harmonious uses, materials, colors, lights, signs, landscaping, architectural designs, and treatment."⁵ The construction of a light rail facility at either proposed location would be consistent with the redevelopment plan's goal of revitalizing the central business district.

The Gold Line corridor traverses the City of Arcadia for approximately three miles. The proposed alignment within the Foothill Freeway (I-210) is largely surrounded by residential uses. South of the freeway, the proposed alignment is adjacent to residential, planned industrial district, general commercial, commercial manufacturing, central business district, public purpose, and commercial planned development zones. Three parks (Los Angeles County Arboretum, Newcastle Park, and Bonita Park) are adjacent to the proposed alignment, and Forest Avenue Park is within 1,000 feet north of the alignment. The alignment is also adjacent to Rancho Learning Center and Serendipity Early Education Center, located at Third Avenue near the eastern border of Arcadia.

The two proposed Gold Line Station options are in an area of largely commercial and industrial uses (see **Figure 3-10.4**). The first proposed Gold Line Station alternative would be located within the existing LACMTA right-of-way west of First Avenue and north of Front Street. According to the City's zoning map, this property is zoned C-2 or general commercial. Land directly northeast is zoned for commercial-

⁴ City of Arcadia, *Arcadia General Plan*, 1996, 3-7.

⁵ City of Arcadia, *Resolution No. ARA 172, A Resolution of the Arcadia Redevelopment Agency Establishing Use and Design Requirements and Guidelines*, 1993.

manufacturing use, and the land directly southwest is zoned for general commercial use. One block south of the station, properties are zoned central business district; one block north, properties are zoned as a planned industrial district. The second alternative station location is within the LACMTA right-of-way directly east of First Avenue. Zoning at this site is for central business district to the south and west and for light manufacturing to the north and east.⁶ Construction of a light rail station would not be inconsistent with these surrounding uses.

Alternative options for parking facilities include: 1) a parking structure on the property east of Santa Anita Avenue and south of Wheeler Avenue (current use is parking), and 2) closing Front Street and using the property directly south of the proposed station north of Santa Clara Street for surface parking (currently office/light industrial use and parking). Property in the first alternative is zoned central business district, and property in the latter alternative is zoned general commercial.

c. Monrovia

Several land use policies within Monrovia's General Plan (1993) support the development of light rail transit service in Monrovia and the reuse of the Santa Fe Depot as a light rail station.⁷ Goal 4 within the the Circulation Element is to "support the use of the public transportation, including [a] light rail system to provide mobility to all City residents and encourage use of public transportation as an alternate to automobile travel." Within the Circulation Element, the City also states that "regional public transportation will be significantly improved with the completion of the proposed light-rail transit line connecting Monrovia with the City of Los Angeles and other cities in the region," and that the City should cooperate with regional agencies to enhance development of transit in Monrovia. Several policies within the Circulation Element address planning for light rail service and transit-oriented development in Monrovia.⁸

Monrovia's Central Redevelopment Project Area No. 1 lies adjacent and east of the proposed transit station site. South of the rail alignment, the redevelopment area consists of properties fronting the east side of Myrtle Avenue; north of the rail alignment, the redevelopment area consists of properties on both sides of Myrtle Avenue. The City has already developed a site plan for a Multi-Modal Transit Center for the Santa Fe Depot property and for the adjacent properties south of Pomona Avenue fronting the western side of Myrtle Avenue.

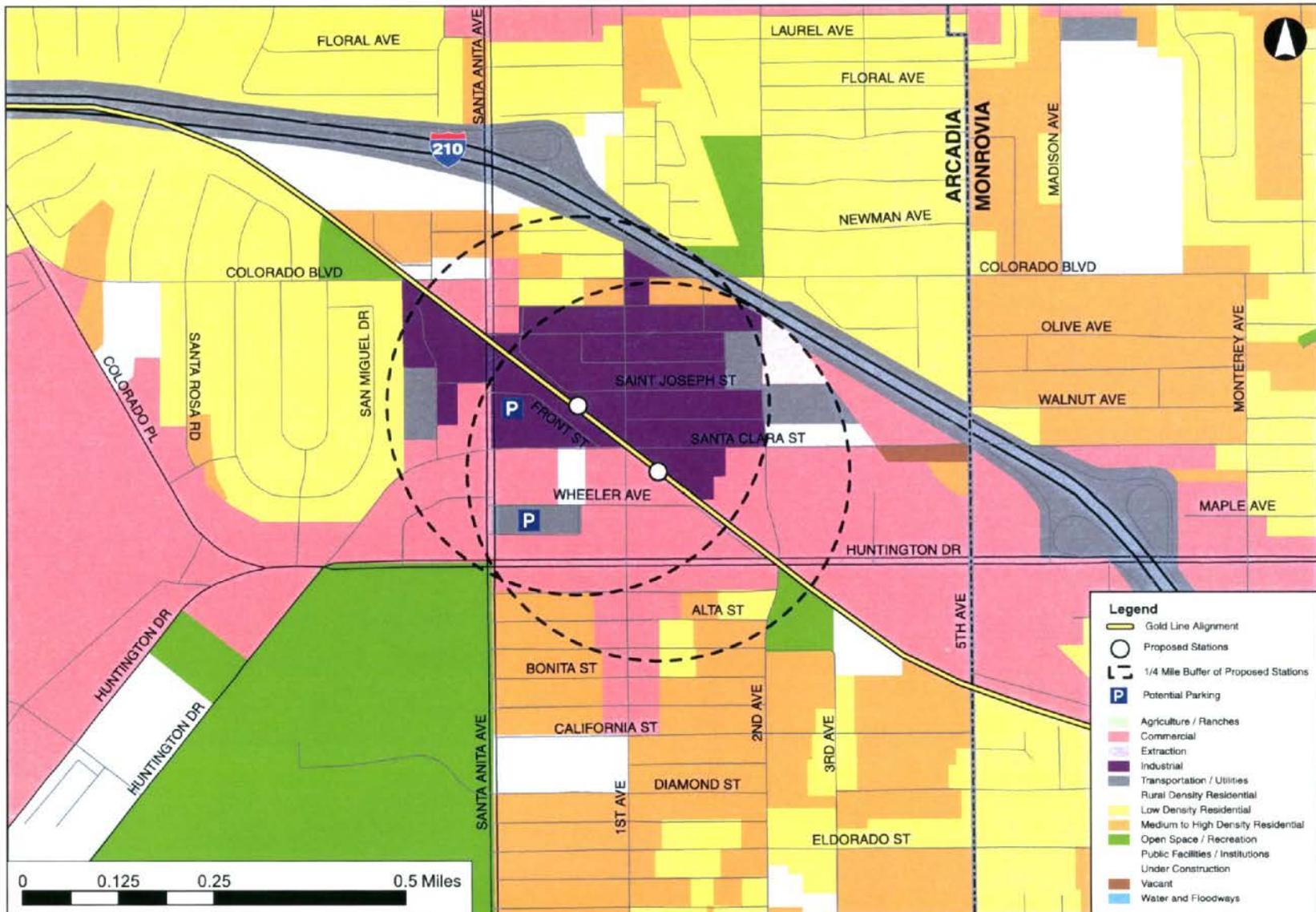
The proposed Gold Line corridor runs approximately three miles through the City of Monrovia, south of and parallel to the Foothill Freeway (I-210). Zoning along the corridor consists of low to medium/high density residential, manufacturing, public/quasi-public (Live Oak Cemetery), business enterprise, and planned development zones.⁹ The proposed station and parking facility locations are in areas of current industrial and commercial use (see **Figure 3-10.5**), and the Planned Development 12A zone (PD-12A). The PD-12A zone is bounded by Magnolia Avenue on the west, Duarte Road on the south, Myrtle Avenue and its frontage properties on the east, and the Foothill Freeway on the north. In the Land Use Element of Monrovia's General Plan (1993), this area is identified as having "great potential to develop into a viable mixed-use complex if the existing vacant Santa Fe Depot site...is utilized as a light rail stop." The General Plan states that this area should begin to transition to regional commercial, office, and restaurant uses, as well as master-planned mixed-use developments.

⁶ City of Arcadia, *City of Arcadia Zoning Map*, Revision Date 4/23/02.

⁷ Policies 1.4, 1.5, 5.2, 6.3, 7.6, 8.2, 9.5, and 15.2. City of Monrovia, *Land Use Element, General Plan*, 1993.

⁸ Policies 4.7, 4.12, 4.13, 4.14, 4.16, 4.17, 9.4, and 9.5. City of Monrovia, *Circulation Element, General Plan*, 1993.

⁹ City of Monrovia, *Zoning Map*, Revised 11/93.



Source: ©2003 GDT, Inc. and its licensors. Rel. 10/2002. SCAG Regional Land Use, 2003; U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2003.

Figure 3-10.4: Arcadia Station - Area Land Use

The planned development Area 12B, east of PD-12A, also aims to encourage transit-oriented development consistent with a transit center located at the Santa Fe Depot. Although a transit station at this location is consistent with the General Plan vision for the area, all new construction in the planned development zone would require a conditional use permit from the Monrovia Planning Commission.

The City recognizes the need to reserve ample area for parking facilities to accommodate commuter demand. The parking options being considered include a four-level structure south of the alignment and east of Peck Road – an area of current industrial use, and sharing a proposed municipal surface parking facility south of Pomona Avenue and west of Myrtle Avenue – an area of current residential, office, and industrial uses. Both options are located within Planned Development 12A, whose development guidelines state that “public parking facilities shall be encouraged to serve freeway and light rail commuters.”

d. Duarte

The City of Duarte does not specifically recognize the development of rail transit in the Land Use or Transportation Elements of the General Plan. However, Policy 1.6 in Section 4.2 (Goal and Policies) of the Transportation Element states the City’s intent to “support the development of a regional mass transit system as provided for in Proposition A.”¹⁰

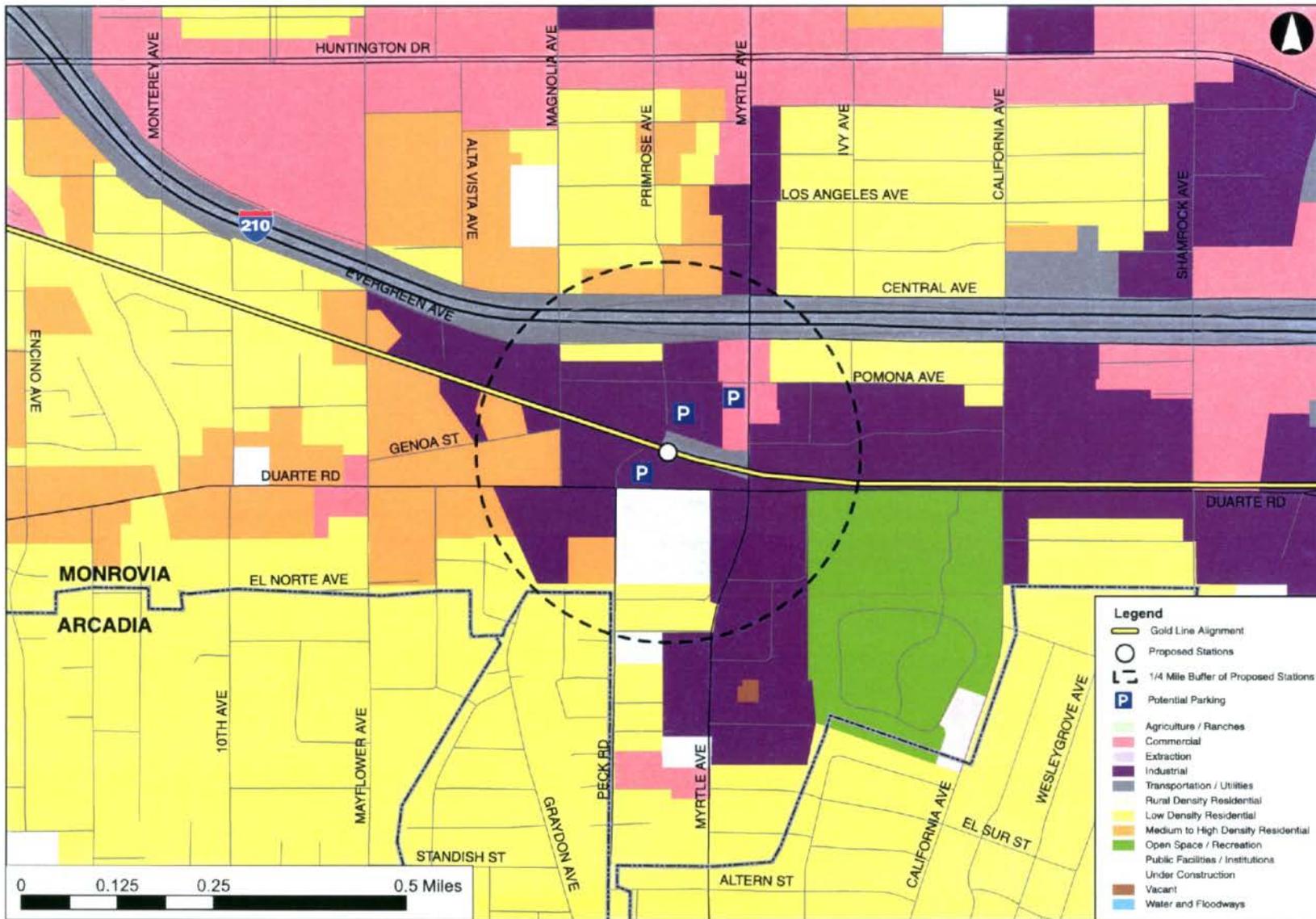
The proposed Gold Line corridor extends through the City of Duarte for approximately one and a half miles parallel to Duarte Road, south of the Foothill Freeway (I-210). Land uses along this section of the alignment are zoned primarily as light manufacturing, single-family residential, and hospital.¹¹ Land uses along Duarte Road also include parkland and commercial uses (see **Figure 3-10.6**). The proposed LRT platforms are located, within the alignment, along the north side of Duarte Road directly across from the main entrance to The City of Hope Hospital. To date, the proposed platform area is zoned for Light Manufacturing use, with warehouse uses occupying the 15-acre parcel immediately to the north. A single-family neighborhood is immediately northwest of the proposed station.

A parking structure is proposed on the site of the current surface parking lot for the City of Hope Hospital, in an area zoned as Hospital. Such a structure has the potential to provide medical offices at ground level for the City of Hope, as well as parking for Hospital employees and Gold Line commuters on an upper level of the structure.

The proposed station location additionally falls within the Rancho Duarte Phase I redevelopment project area, established 1980. This project initially focused on promoting the growth of commercial, industrial, and residential development within the project area.

¹⁰ City of Duarte, *General Plan 2010*, 1989, p. 4-2.

¹¹ City of Duarte, *Zoning Map*, Revised 03/00.



Source: ©2003 GDT, Inc. and its licensors, Rel. 10/2002; SCAG Regional Land Use, 2003; U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2003.

Figure 3-10.5: Monrovia Station - Area Land Use

e. Irwindale

The City of Irwindale is currently updating its General Plan, last updated in 1975. A preliminary general plan land use map shows the alignment running entirely through open space and industrial districts. More specifically, the rail alignment runs adjacent to the I-210 freeway, the Santa Fe Dam Recreation Area, and the Miller Brewing plant. The station would be located within the LACMTA right-of-way at the northernmost point of the Miller Brewing site adjacent to the I-210, in an area of industrial land use (see **Figure 3-10.7**). In addition, a Gold Line maintenance facility would be located in Irwindale, also in an industrial land use zone. In the General Plan update, the City is considering changing the land use designation north of the freeway in the project vicinity from industrial to regional commercial.¹²

A large (500-car) parking structure has been proposed for the property south of the proposed Gold Line platform site. This five-acre field is currently owned by the Miller Brewing Company and used for seasonal employee activities. The proposed maintenance yard is also located on property owned by Miller Brewing Company, bordered to the north by the I-210, to the west by Santa Fe Dam Recreation Area, and to the southeast by light industrial uses. The proposed station area, parking facility, and maintenance yard would be located within an area zoned for Heavy Manufacturing (M-2). According to the city's zoning code, section 17.56.010, any use permitted in an area zoned for Light Manufacturing (M-1) is also a permitted use in an area zoned M-2. Storage space for transit and transportation equipment is a permitted use in an M-1 zone. Medium and low intensity industrial uses are located across North Irwindale Avenue from the station and parking site.

The proposed project would be located within the boundaries of the city's Redevelopment Plan for the City Industrial Development Project, established to eliminate and prevent the continued spread of blight. As such, the Redevelopment Agency in Irwindale has encouraged agreement between land-owners and the Agency to facilitate development to more beneficial and economic land uses. Strategies include the acquisition of property, demolition or removal of buildings, installation, construction or reconstruction of streets, utilities and other public improvements, and disposition of any property acquired for uses in accordance with this plan. Although not specifically listed, the proposed rail project could be understood to be a public improvement as stated in Sections 316 and 406 of the plan. Both sections give the city the power to construct public improvements necessary for carrying out the plan.

¹² Correspondence from Camille Diaz, Assistant City Manager, City of Irwindale to Ms. Stephanie Roberts, Parsons Brinkerhoff Quade & Douglas, October 16, 2003.

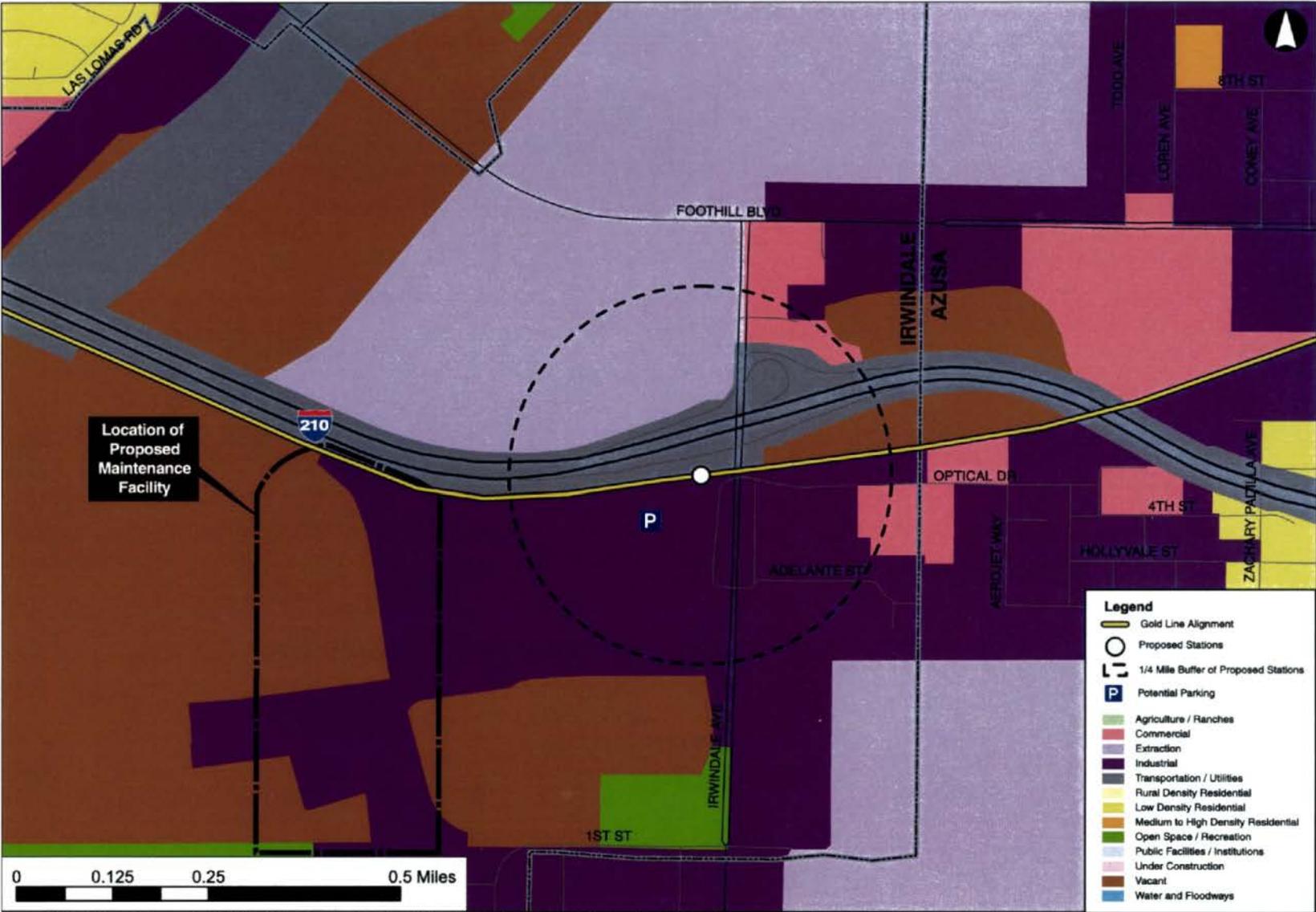


Figure 3-10.7: Irwindale Station - Area Land Use

3-10.1.2 Phase II, Segment 2 Cities

a. Azusa

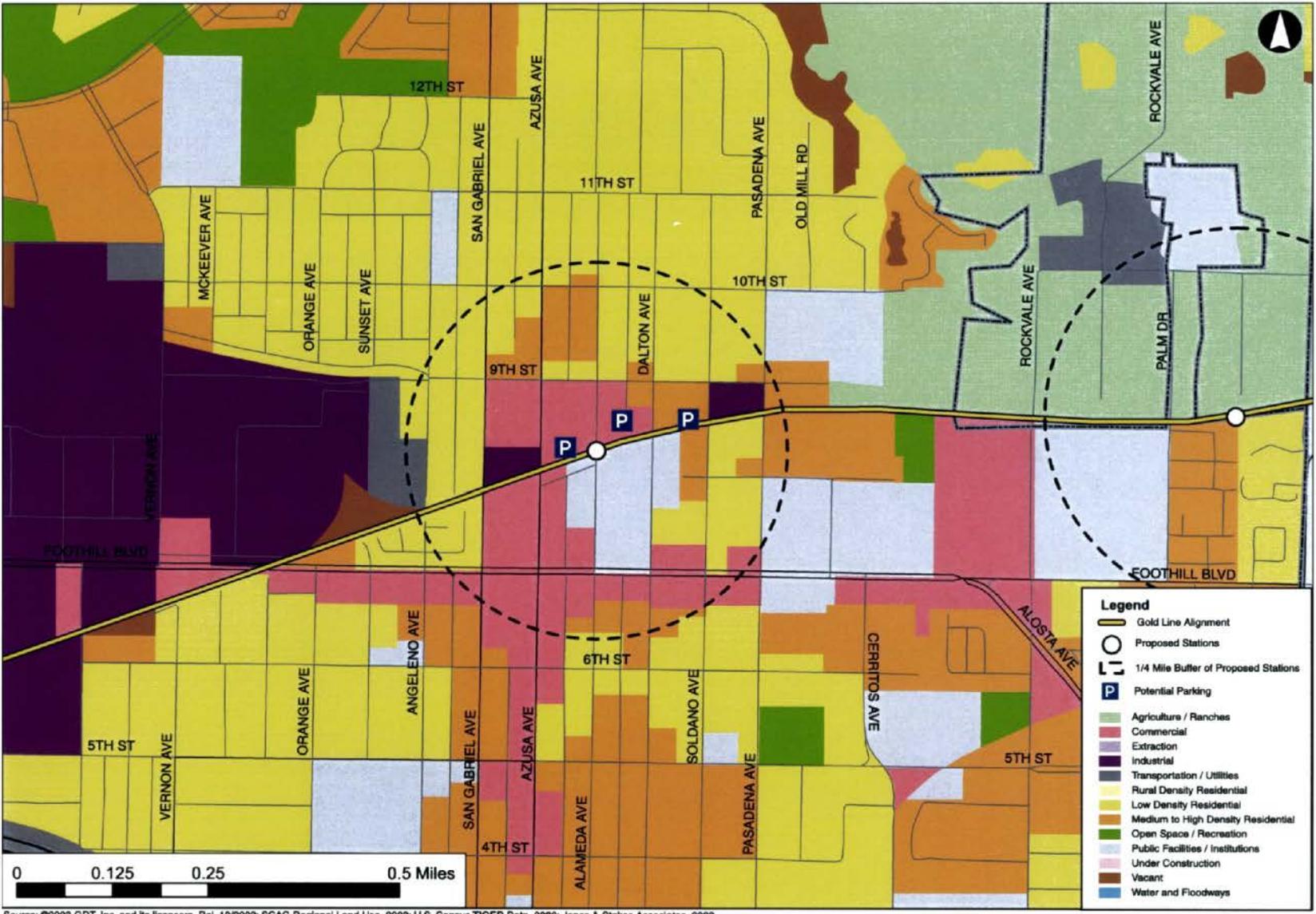
Azusa is currently updating its General Plan from 1983. In the 1983 document, two of the City's stated objectives related to transportation and land use were to provide access to major regional transportation systems, but also to adequately buffer sensitive land uses from the adverse effects of circulation elements, including railroads. The City of Azusa is considering two station locations: a downtown site at Alameda Avenue, and a Monrovia Nursery site west of Citrus Avenue. According to the City's Draft Land Use Diagram (2003), both proposed station locations are identified as "transit center." Creation of a transit station downtown would be consistent with the City's existing general plan goal to revitalize Azusa's downtown central business district. Land uses in the vicinity of the downtown site envisioned in the General Plan include General Commercial, Community Facilities, and High Density Residential. In the Draft Land Use Diagram, land uses south of the proposed platform at Alameda Avenue are classified as public/civic, and land uses to the north are classified as commercial/residential mixed-use to the northeast and transit center to the northwest. General Plan-designated land uses in the vicinity of the Citrus Avenue site include Rural Density Residential, Planned Industrial Development, and Medium Density Residential; however, these designations may be superseded by the Monrovia Nursery Specific Plan, which is scheduled for public review in spring 2004.

The Gold Line project is also consistent with the Circulation Element of the General Plan, and helps achieve the City's objective "to encourage the continuance of a public transportation system that will (1) provide a viable alternative to the automobile, (2) satisfy the transportation needs of commuters, the economically disadvantaged, the aged, the young, and the handicapped, and (3) promote service at a reasonable and equitable cost to both the users and the general community."

For a distance of approximately 2.3 miles within the City of Azusa, the Gold Line corridor traverses areas zoned for General Manufacturing, Light Manufacturing, Single-, Two-, and Multiple-Family Residential, Restricted Commercial, Central Business District, Community Facilities, General Commercial, and Specific Plan. Specific Plan areas adjacent to the alignment include the Azusa Pacific University and the Monrovia Nursery Specific Plans. Additionally, in the vicinity of the Monrovia Nursery site, two elementary schools are located within 500 feet of the rail alignment.

The proposed downtown station is located within the LACMTA right-of-way at Alameda Avenue, between Azusa Avenue and Dalton Avenue. Existing land uses in this vicinity are generally commercial and civic (see **Figure 3-10.8**). The site and abutting properties to the south are zoned for Community Facilities, and properties to the north are zoned for Light Manufacturing. This station alternative is located within the boundaries of Azusa's Central Business District Redevelopment Project.

Parking facility alternatives for the downtown light rail station include surface parking on the north side of the rail right-of-way between Azusa Avenue and Dalton Avenue, and surface parking within the rail right-of-way further east between Dalton Avenue and Soldano Avenue. The surface parking alternatives would abut Restricted Commercial and Light Manufacturing uses to the north and Community Facility and Residential uses to the south. A parking structure is also being considered for the property north of the railroad right-of-way bounded by Alameda Avenue to the west, Ninth Street to the north, and Dalton Avenue to the east. This area is currently occupied by buildings zoned for Light Manufacturing use directly north of the alignment, and for Multiple- and Single-Family Residential use directly south of Ninth Street.



Source: ©2003 GDT, Inc. and its licensors, Rel. 10/2002; SCAG Regional Land Use, 2003; U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2003.

Figure 3-10.8: Azusa - Alameda Avenue Station - Area Land Use

The proposed station at the Monrovia Nursery Site would be located within the rail alignment east of Palm Drive. Current land uses at this site include nursery uses north of the alignment and university and residential uses south of the alignment (see **Figure 3-10.9**). Zoning directly south of the station site is for Multiple-Family Residential (3,000 sq.ft./d.u.) use. A parking structure to serve this station would be provided as part of the Monrovia Nursery redevelopment plan. A specific site has not been identified, but would be close to the LRT station site.

b. Glendora

Glendora's General Plan is currently being updated. However, various policies throughout Glendora's General Plan from 1992 endorse the development of light rail transit service and the use of the historic Glendora Rail Depot site for a light rail station. The Transportation Element broadly supports the proposed light rail project through its goal to reduce vehicle miles traveled (Goal 2). Within the Land Use Element, the site of the historic Glendora Rail Depot is identified as a Planned Redevelopment area. In addition to the Rail Depot site, Planned Redevelopment is envisioned for the area south of the alignment between Vermont Avenue on the west, Pasadena Avenue on the east, and Alosta Avenue (Route 66) on the south.¹³

The General Plan identifies four redevelopment plans adopted by the Glendora Community Redevelopment Agency, two of which are adjacent to the proposed light rail project. The first redevelopment project, known as Project Area Two, is designed to promote growth in the central business district (located within a ½ mile distance north of the proposed site). Project Area Three is the second redevelopment project in the vicinity of the station, located along the Alosta Avenue (Route 66) corridor, south of the alignment. The objectives of this redevelopment plan include "the elimination of blight, strengthening and upgrading existing residential uses, and the provision of site improvements."¹⁴ The City encourages mixed-use development that would allow for high-density residential units in this area; such development could be expected to provide the density and diversity needed to generate ridership levels for the proposed Gold Line station.

Glendora's Route 66 Corridor Specific Plan (2003) supports the development of the proposed Gold Line alignment and the Glendora light rail station. The proposed station is located within the Specific Plan's Town Center Mixed Use District, which "is intended to provide for complementary mix of land use and development types that are compatible with and reinforce pedestrian activity and transit utilization."¹⁵ The plan includes incentives for mixed-use development, and indicates that a light rail passenger terminal would require an Administrative Use Permit.¹⁶

Approximately 4 miles of the proposed Gold Line alignment runs through the City of Glendora. Surrounding land uses include low- and medium-density residential, limited industrial, retail and commercial, commercial manufacturing, mobile home park, and an industrial park. The proposed station at the site of the historic Glendora Rail Depot is located adjacent to the southwestern corner of the City's Historic District, in an area of industrial and commercial uses (see **Figure 3-10.10**).

¹³ City of Glendora, *General Plan*, February 11, 1992.

¹⁴ City of Glendora, *General Plan*, 1992, 55.

¹⁵ City of Glendora, *Route 66 Corridor Specific Plan*, 2003, p. 2-6.

¹⁶ City of Glendora, *Route 66 Corridor Specific Plan*, 2003, p. 6-6.

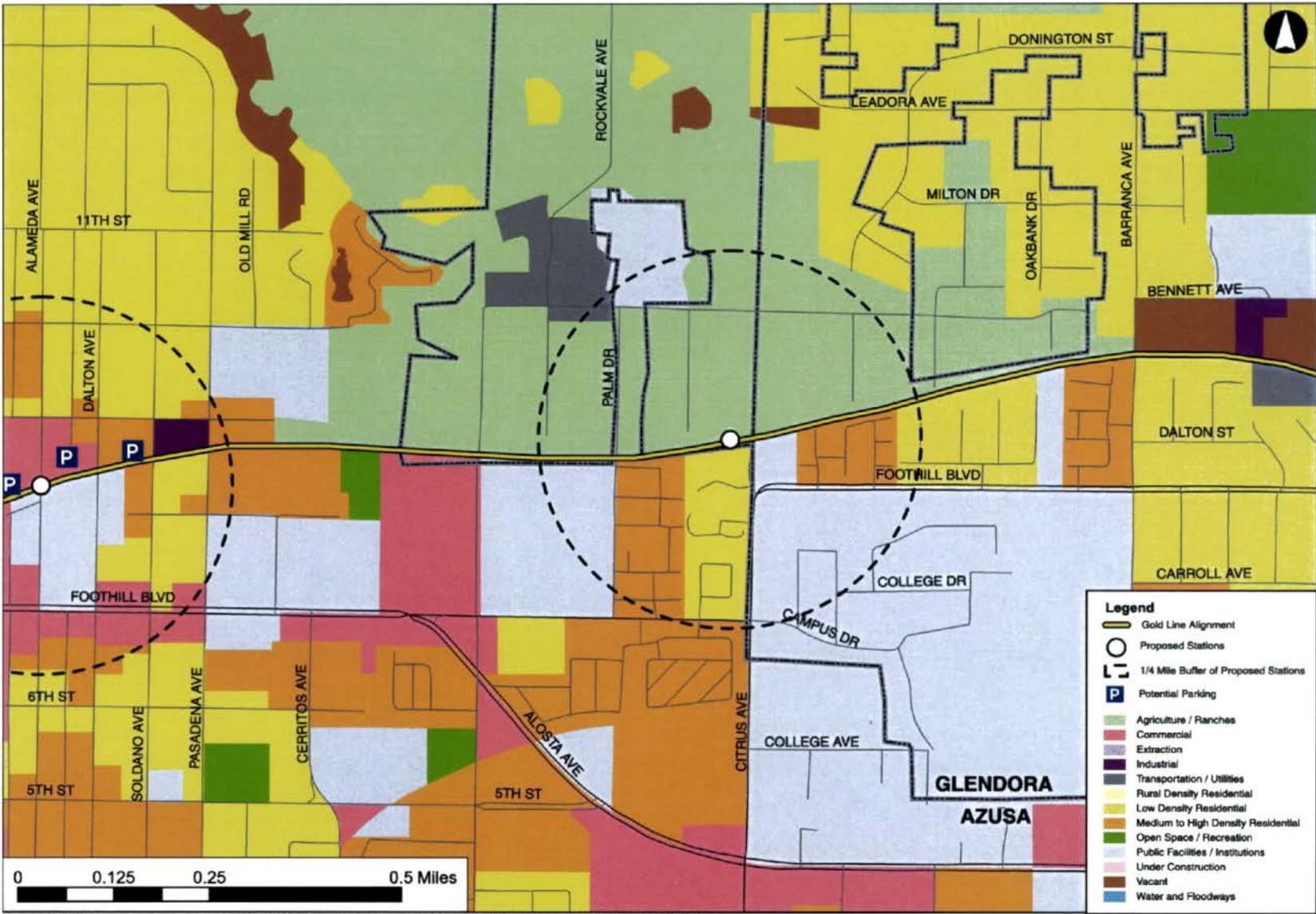
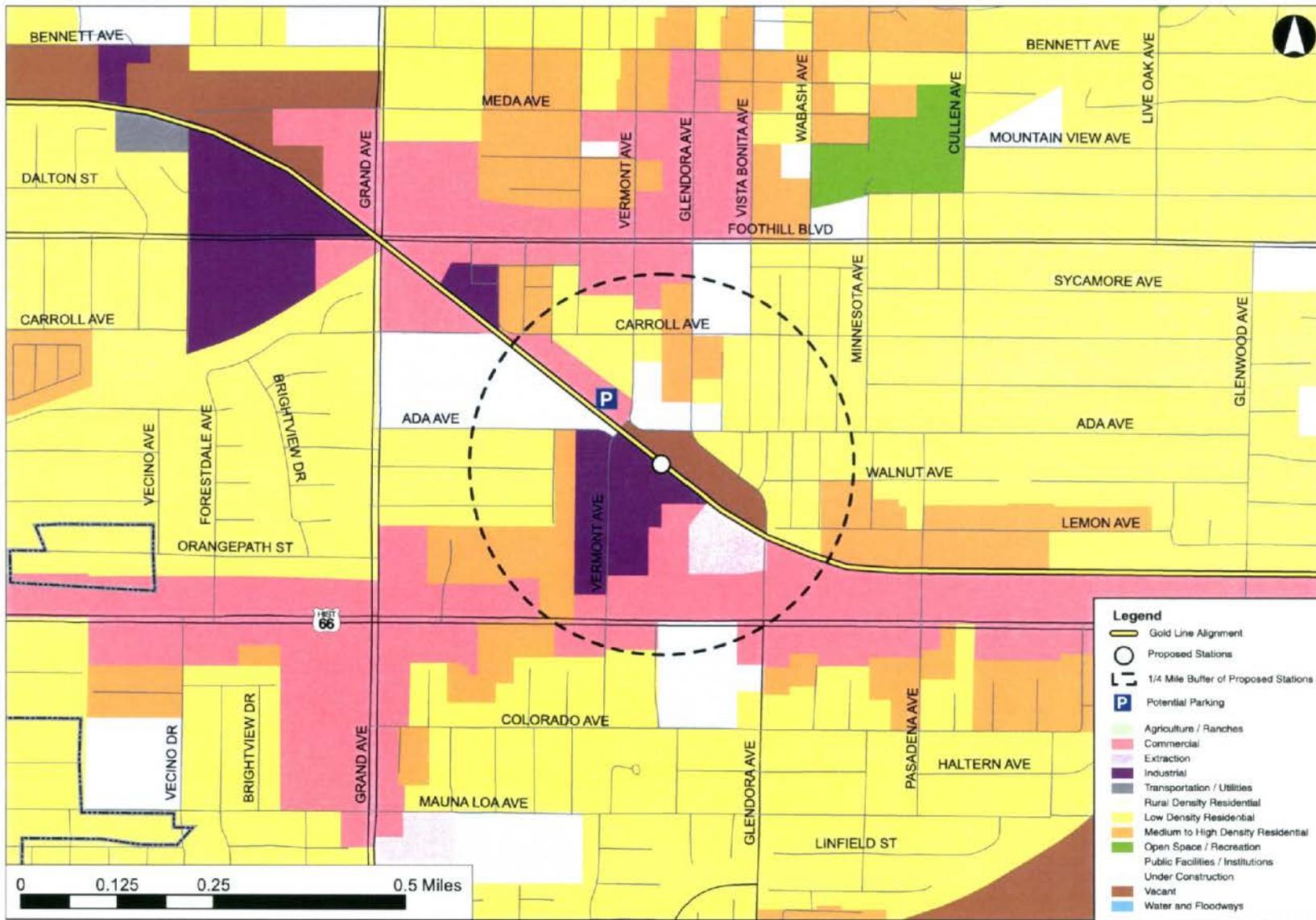


Figure 3-10.9: Azusa - Citrus Avenue Station - Area Land Use



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Figure 3-10.10: Glendora Station - Area Land Use

The LRT platforms would be located within the LACMTA alignment, south of Ada Avenue between Vermont and Glendora Avenues. The railroad right-of-way is zoned R-4 (Railroad zone), where permitted uses are limited to railroad purposes, including passenger and freight facilities.¹⁷ The parcels adjacent to the proposed station area are zoned for planned redevelopment, light manufacturing, commercial manufacturing, hospital, and multi-family residential.¹⁸ Current abutting uses include an outdoor storage facility and a commercial center anchored by Albertson's grocery store to the south.

Two alternative locations have been selected for accommodating Gold Line station parking facilities at the station, both located within the Town Center Mixed Use District of the Route 66 Corridor Specific Plan (2003). The primary parking alternative would be the construction of surface parking on the undeveloped LACMTA-owned property along the alignment between Vermont and Glendora Avenues. A second proposed parking alternative is to construct a parking structure north of the alignment, on privately-owned property zoned M1 (light manufacturing), just west of Vermont Avenue. The site is currently occupied by a parking lot and a warehouse housing light industrial and commercial uses. According to current municipal code, conditional use permits are required for "parking facilities where fees are charged" and for "transportation facilities" in the light manufacturing zone.¹⁹ According to the Route 66 Corridor Specific Plan, public parking lots or structures within the Town Center Mixed Used District are permitted uses.²⁰

c. San Dimas

The Gold Line project is highly compatible with the Land Use Element of San Dimas's General Plan (1991). The rail line would help create an urban form that efficiently utilizes urban infrastructure and services (Goals Statement L-4). The rail extension also furthers the City's goal of discouraging "strip" commercial development (Goals Statement L-5), by promoting infill development in and around activity centers, transportation node corridors, underutilized infrastructure systems, and areas in need of redevelopment. The project is also consistent with Goals Statement L-6 to revitalize the downtown area. Policies for achieving this goal include the encouragement of office and mixed-use development downtown (Policy 6.1.2), and the establishment of a transit station in the downtown area (Policy 6.2.1). More specifically, adaptive reuse of the San Dimas Lemon Association Packing House, tied together with development of a light rail transit stop, is identified within the Land Use Element as a Plan Proposal to help implement General Plan land use goals (Plan Proposal K).

The proposed Gold Line extension also meets City goals expressed in the General Plan Circulation Element, such as Goals Statement C-2, to promote a public transportation system that is safe, convenient, and meets the identified needs of San Dimas. Designation of a commuter rail station is listed as one of the policy solutions to help achieve this goal (Policy 2.1.1). Within the Land Use Element, the City identified seven potential transit nodes along the AT&SF and Southern Pacific Railroad alignments. This list includes the currently proposed Gold Line station sites, within the LACMTA alignment directly northwest and southeast of the intersection of Cataract Avenue and Bonita Avenue. Specific Plan Proposals within the Circulation Element consistent with the proposed project include the identification of candidate transit stops (Plan Proposal A) and the designation of the Packing House as a potential transit stop (Plan Proposal B).

¹⁷ Glendora Municipal Code, Section 21.06.040.

¹⁸ City of Glendora, *Official Zoning Map*, Revised 03/96.

¹⁹ Glendora Municipal Code, Section 21, Appendix, Table C.

²⁰ City of Glendora, *Route 66 Corridor Specific Plan*, 2003, p. 6-12.

Land uses immediately surrounding the proposed LRT station sites are light industrial and commercial, with residential uses further north and south, adjacent to proposed parking facility locations (see **Figure 3-10.11**). The city zoning map shows the proposed rail alignment traversing areas zoned for single- and multi-family residential, light manufacturing, and public uses, as well as for Creative Growth (a redevelopment area zone) and two specific planning areas (SP-23 adjacent to the northwestern station site and SP-24 west of State Route 57). The Creative Growth Zone, with four subareas, is the largest zoning category within San Dimas's single large redevelopment project area. The proposed Gold Line stations are located within Creative Growth Area 2 – Frontier Village, where transit facilities are a conditionally permitted use.²¹ Frontier Village includes the city's historic downtown core, and underwent façade upgrades in the 1970s to reflect a "Frontier" theme. Encouraged uses in this area are neighborhood commercial and service businesses "which service the day-to-day-living needs of nearby neighborhoods or a larger section of the city."²² Two additional Creative Growth subareas adjacent to the alignment include: Creative Growth Area 1 – Regional Commercial, located south of the alignment between State Route 57 and Eucla Avenue at the confluence of Bonita Avenue, Arrow Highway, and SR-57; and Creative Growth Area 3 – General Commercial, located south of the alignment along San Dimas Avenue and ending at the Southern Pacific Railroad line.

Currently in the City of San Dimas four parking locations are proposed for the light rail station. The first includes surface parking south of the historic depot and proposed LRT station east of Cataract Avenue. A second parking option entails construction of a parking structure at the existing park-and-ride lot located east of Monte Vista Avenue and south of the right-of-way. Both of these options are located within the Frontier Village redevelopment area. Additionally, surface parking is proposed for the two blocks east and west of Eucla Avenue north of the railroad near the historic San Dimas Lemon Association Packing House. This area is zoned as Planning Area I (Business Park District) of Specific Plan Area 23 (Town Core Business Park). Transit stations which provide transportation facilities for rail, bus and automobile services are not explicitly permitted within this planning area, but are permitted in Planning Area II of Specific Plan Area 23, on the block containing the historic Packing House, adjacent to the northwestern station alternative.²³ The parking sites currently contain buildings in commercial and light industrial use, and are adjacent to a single-family residential neighborhood referred to as the San Dimas "town core." The specific plan notes that one of its purposes includes the minimization of any "negative adverse impact of traffic generated by any development by directing traffic away from the residential neighborhood."

d. La Verne

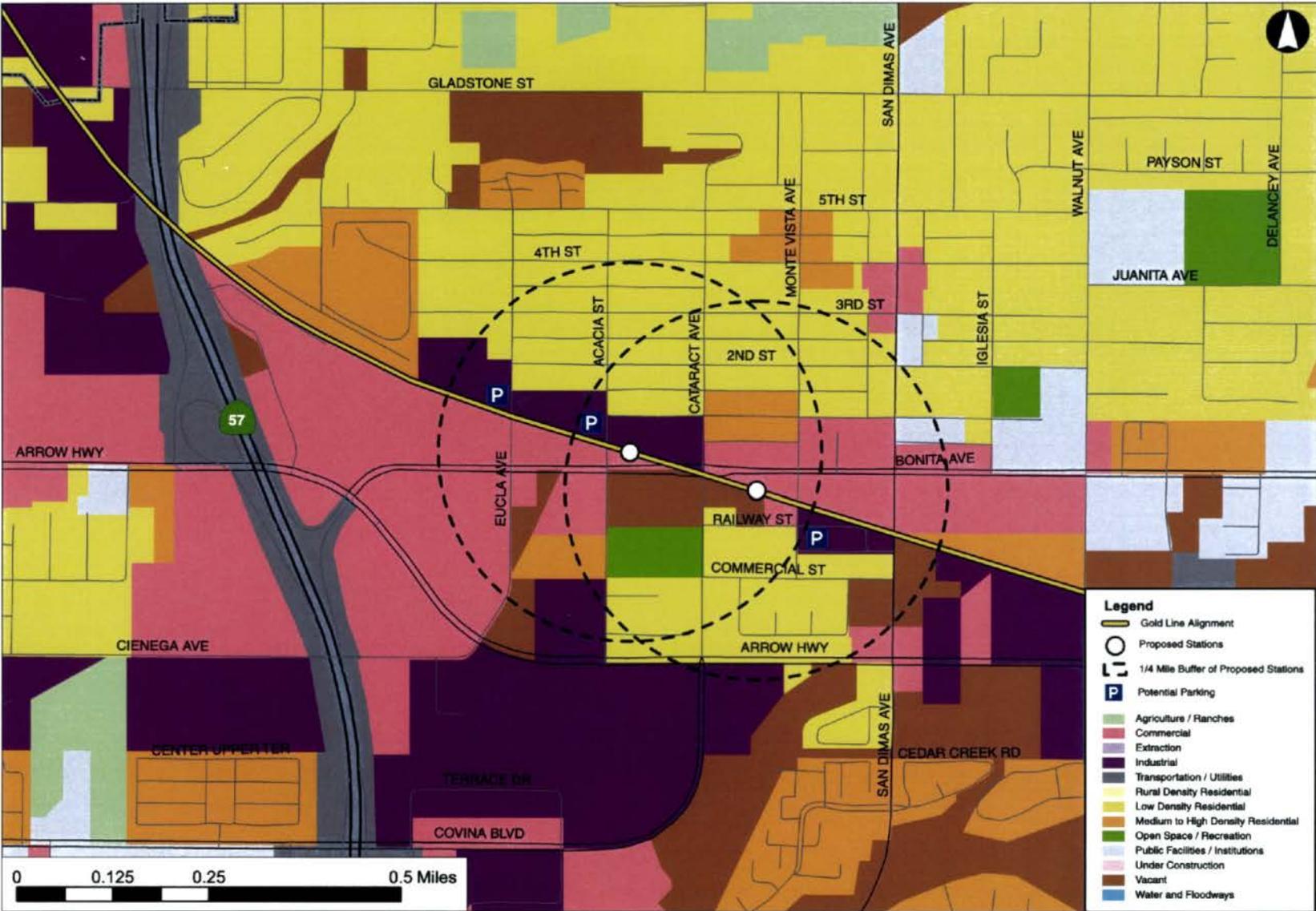
The Gold Line project is consistent with La Verne's "big picture" general plan focus on solving regional problems such as congestion and air pollution.²⁴ Goal 6 of the General Plan's Transportation Element is to "contribute toward a comprehensive public transportation system," in part by encouraging the development of additional commuter rail systems along available rights of way. In the Land Use Element, the City states a desire to "promote design that incorporates concentrated densities, mixed uses and housing types, mass transit, narrow landscaped streets, greenbelts, downtown revitalization and adaptive re-use, civic centers" (Implementation Measure 3.5.e). The Gold Line project would also support La Verne's goal of creating a functional downtown (Land Use Element Goal 10). However, the City expresses concern in their General Plan that low density residential land use designations should be protected (Implementation Measure 1.2.h).

²¹ San Dimas Municipal Code, Section 18.140.090 (B.2.j).

²² San Dimas Municipal Code, Section 18.140.090 (B).

²³ San Dimas Municipal Code, Sections 18.538.110 and 18.538.120.

²⁴ City of La Verne, *General Plan – Small Town Big Picture*, Resolution No. 98-722 adopted December 7, 1998.



Source: ©2003 GDT, Inc. and its licensors. Ref. 10/2002; SCAG Regional Land Use, 2003; U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2003.

Figure 3-10.11: San Dimas Station - Area Land Use

The Walnut neighborhood south of the alignment should be protected from encroaching commerce and industry (Implementation Measure 11.4). The Land Use Policy Map of the General Plan shows a range of land uses along the alignment, including industrial, community facility, medium density residential, open space, low density residential, and commercial/business park. Land uses at the proposed station locations are community facility at D Street and industrial at the E Street and Fairplex sites.

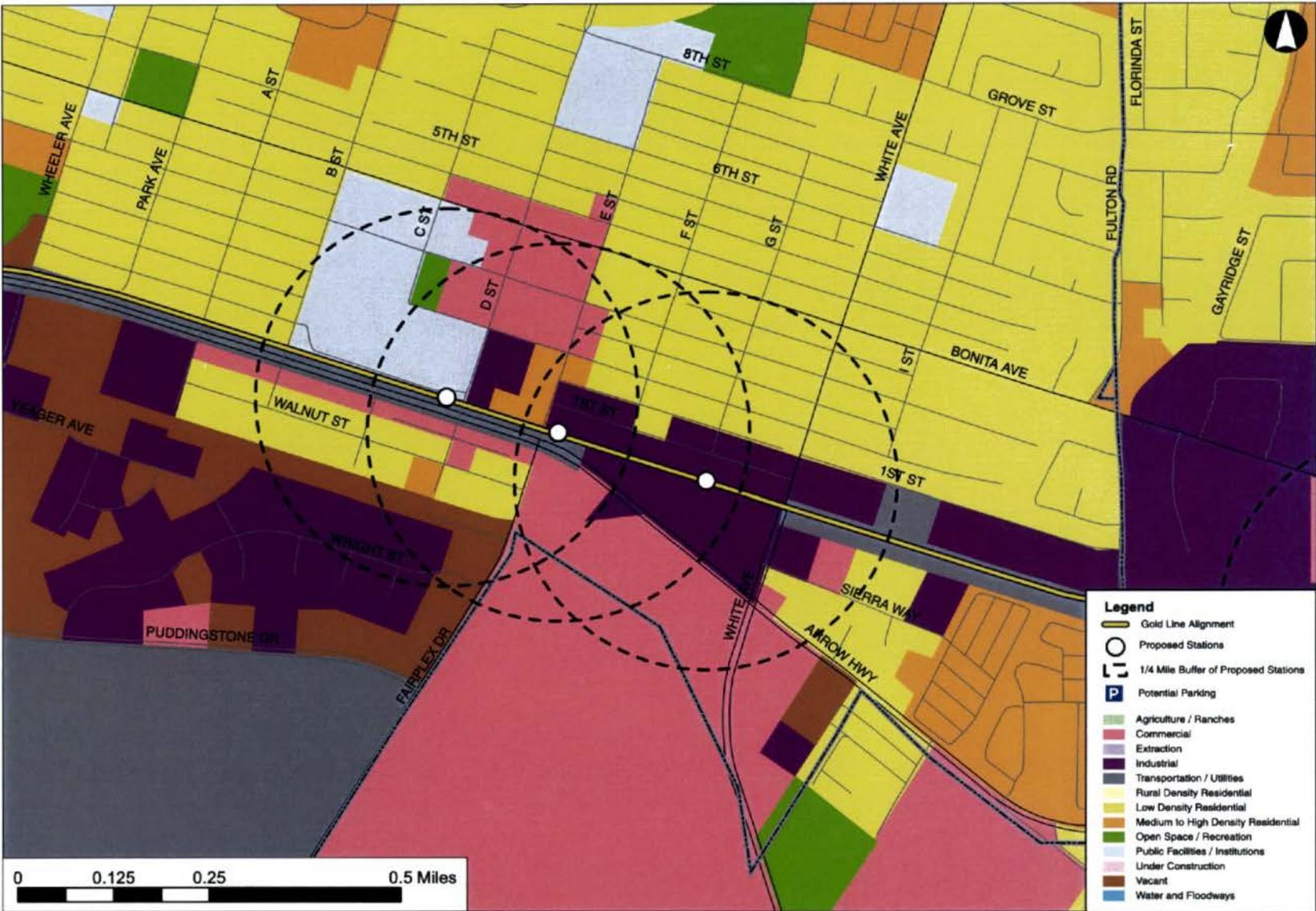
The Gold Line alignment traverses the southern part of the City of La Verne, north of and roughly parallel to Arrow Highway. Zoning along the alignment in this plan area is largely industrial, with small zones of commercial/manufacturing at the western end of the corridor south of Arrow Highway and towards the eastern end of the alignment, south of Arrow Highway at E Street. Zoning along the alignment is largely guided by specific plans, namely, SP84-12 (Arrow Corridor) in the west and to the south throughout the entire alignment, SP91-26 (Lordsburg) to the north of the alignment between Wheeler Avenue and Fulton Road, and SP81-2 (Walnut) approximately one block south of the alignment, between A and E Streets. Other zoning adjacent to the alignment includes Planned Residential (15 dwelling unit [d.u.]/acre), Official (Wheeler Avenue Park) and Mobile Home Park north of the alignment west of Wheeler Avenue. A Planned Residential (4.5 d.u./acre) zone also exists north of the alignment west of Fulton Road.

The City of La Verne is considering three potential light rail station locations and the provision of LRT parking at the Pomona Fairplex. Land uses immediately surrounding station sites include university, commercial, and industrial uses (see **Figure 3-10.12**). The preferred alternative is a station at E Street, which is located within the Arrow Corridor Specific Plan area. The alternative located near the Fairplex west of White Avenue is also located within the Arrow Corridor Specific Plan area, and the D Street station alternative is located within the Lordsburg Specific Plan area. According to the Lordsburg Specific Plan, zoning along the alignment is Residential between Wheeler Avenue and B Street, and Institutional east of B Street and west of E Street. A station at D Street would be located in the Lordsburg Institutional Zone, where governmental/public uses are permitted uses. Zoning is Industrial at the E Street and Fairplex sites, where the development of a light rail station is identified as requiring a conditional use permit.²⁵

The Gold Line alignment roughly separates the Lordsburg Specific Plan area in the north from the Arrow Corridor (formerly Industrial) Specific Plan area in the south. The Arrow Corridor Specific Plan recognizes the light rail proposal as an important project, and states that the City is working to have a station close to downtown and University of La Verne, with connections to the Pomona Fairplex. The Lordsburg Specific Plan acknowledges that a potential light rail station at E Street would require the provision of substantial parking, which could also serve the downtown.²⁶ A light rail station at D or E Streets would generally support the specific plan goal to revitalize downtown La Verne, and would be consistent with the plan's recommendation to develop mass transit opportunities in the Arrow Highway corridor. The plan also calls the LACMTA (old AT&SF) alignment "the most significant and visually displeasing edge within the Lordsburg area." The plan recommends fencing or landscaping along rear yard boundaries, because "visual and sound barriers are generally absent from the rear property lines of homes located on First Street backing onto the AT&SF tracks." Another plan within the Lordsburg Specific Plan area affecting the proposed Gold Line project is the University of La Verne Master Plan (1997). University of La Verne properties currently extend from B Street to east of E Street north of the alignment, and the proposed stations at D Street would abut University property. The Master Plan does not specifically acknowledge the proposed light rail project but recognizes a general need for improved transit.

²⁵ City of La Verne, *Arrow Corridor Specific Plan*, Adopting Ordinance No. 950, 2002.

²⁶ City of La Verne, *A Specific Plan for Lordsburg*, September 1992, p. 16.



Source: ©2003 GDT, Inc. and its licensors, Rel. 10/2002; SCAG Regional Land Use, 2003; U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2003.

Figure 3-10.12: La Verne Station - Area Land Use

Additionally, the plan foresees purchasing Metropolitan Water District property southeast of the university and moving athletic facilities there – potentially making space for a university parking structure adjacent to the tracks and west of D Street. As in the Lordsburg Specific Plan, the University Master Plan sees a need to buffer the railroad track to create a more attractive edge. Recommended buffers include landscaping and parking structures.

The proposed Gold Line stations and most of the alignment are also located within the boundaries of the Amended and Restated Redevelopment Plan for the Central City Redevelopment Project, adopted by Ordinance No. 857. The Gold Line project would support the redevelopment plan’s general goal of enhancing the role of the City’s downtown area. Within the plan, the city states its commitment to future improvements in the development of Metrolink and other commuter rail lines, including stations, platforms, and crossings.

e. Pomona

According to the City’s website, Pomona is currently in the middle of updating their General Plan and re-codifying the Municipal Code. Discussion of rail transit in the city’s General Plan (1976) is outdated, but does highlight negative environmental effects of rail lines such as noise, dust, vibration and visual pollution. Traffic safety at rail crossings is another highlighted concern requiring mitigation. The proposed project is nevertheless consistent with Pomona’s basic land use and circulation goals “to develop a safe, efficient and coherent system of circulation; to expand the choices of available travel modes which will effectively increase the freedom of movement for Pomona’s residents; and, to strengthen Pomona’s position as an important regional center through transportation planning.”²⁷ The project is also consistent with the City’s stated policy in its Circulation/Transportation Element “to encourage the development of a northern traffic-carrying facility within the east-west corridor to better serve the needs of Pomona and the [Pomona] Valley residents by increasing access to the City and to further decrease the use of local City streets as carriers of inter-city traffic.”²⁸ The rail alignment passes north of the Pomona Fairplex through La Verne and crosses northern Pomona for a distance of approximately two miles. Zoning along the alignment in Pomona is largely Special and Light Industrial, although adjacent residential zoning includes High Density Multiple Family south of the alignment around Garey Avenue, Single Family Residential south of the alignment between Garey and Towne Avenues, and Medium Density Multiple Family north of the alignment, east of Carnegie Avenue. Within one-quarter mile south of the alignment there is also Publicly Owned Land.

There are two proposed Gold Line station alternatives in Pomona – at the existing Metrolink station²⁹ and at Towne Avenue. Existing land uses surrounding the Metrolink station are industrial (see **Figure 3-10.13**). Use of the existing Metrolink station would include the development of a parking structure between the alignment and Bonita Avenue on a currently vacant parcel zoned for Special Industrial use. Zoning for the proposed Towne Avenue station location is also Special Industrial, and the station and on-site parking would replace the currently vacant site of a remediated industrial facility (IBM site). Zoning and land use south of the IBM site, on the eastern side of Towne Avenue, is Light Industrial (see **Figure 3-10.14**). These zoning classifications are consistent with the development of a light rail transit station at either Towne Avenue or the existing Metrolink station at Garey Avenue and Santa Fe Street.

²⁷ City of Pomona, *Comprehensive General Plan*, March 1976, 5.

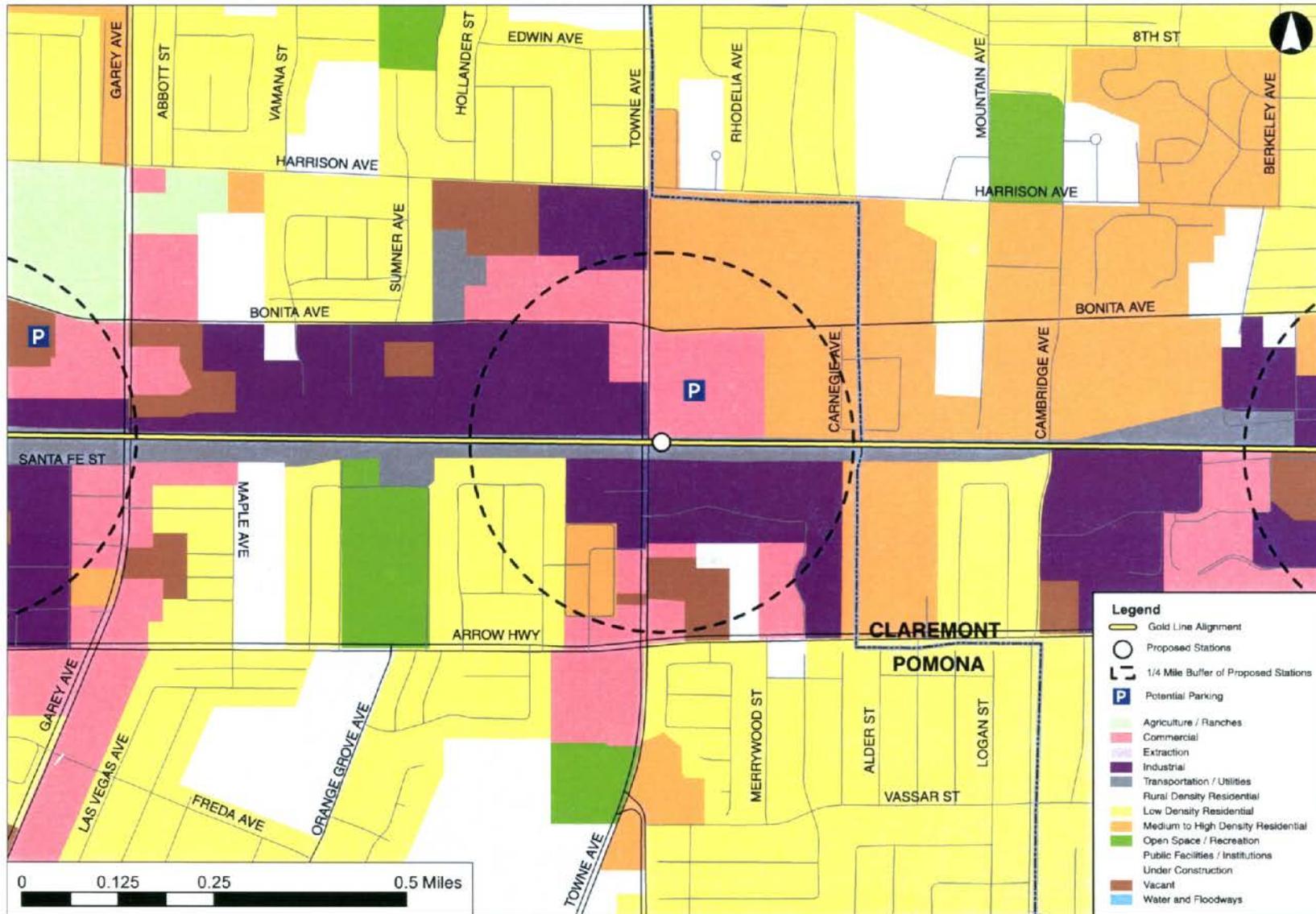
²⁸ City of Pomona, *Comprehensive General Plan*, March 1976, 49.

²⁹ The Pomona (North) Station serves Metrolink’s San Bernardino Line. The Downtown Pomona Station, further south, serves Metrolink’s Riverside County Line.



Source: ©2003 GDT, Inc. and its licensors, Rel. 10/2002; SCAG Regional Land Use, 2003; U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2003.

Figure 3-10.13: Pomona - Garey Avenue Station - Area Land Use



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Figure 3-10.14: Pomona - Towne Avenue Station - Area Land Use

According to the City's draft Redevelopment Project Areas Map (1999), the proposed Gold Line station location east of Towne Avenue is north of and adjacent to the Arrow/Towne redevelopment area. This plan, approved in 1981, envisioned medium density residential use for the project area south of the LACMTA alignment and east of Towne Avenue. Both this location and the proposed station at the existing Pomona (North) Metrolink station are located within an area where the City has considered implementing new zoning that would catalyze transit-oriented, mixed-use development. The City of Pomona aimed to implement the new zoning through the Bonita Avenue Corridor Development Program, and successfully applied to LACMTA for partial funding in 1999.

f. Claremont

Claremont is beginning the general plan update process in Spring 2004. Claremont's General Plan was last comprehensively updated in 1981, and its Circulation Element updated in 1992. The Gold Line project is nevertheless supported throughout the existing plan. The City supports regional solutions to mobility and air quality problems, and has a stated policy to support the development of both commuter and light rail service to Claremont. The City also has a policy of promoting "convenient, clean, safe and efficient public transit not only to serve transit dependent riders, but also to attract discretionary riders as an alternative to reliance on single occupant automobiles."³⁰ Metrolink currently occupies the old AT&SF alignment in Claremont, with service from San Bernardino to Los Angeles Union Station.

The Gold Line corridor through the City of Claremont is zoned for a variety of uses, including professional commercial, industrial, single- and multiple-family residential, and special district uses such as educational and Claremont Village Redevelopment Area. The alignment and historic Santa Fe Railroad depot are presently in full operation via the Metrolink San Bernardino Line. Platforms for Gold Line light rail services would be located within the LACMTA right-of-way directly east of Indian Hill Boulevard, in an area zoned as Claremont Village, adjacent to existing office use to the north and multiple-family residential use to the south (see **Figure 3-10.15**). Currently, a park-and-ride facility east of College Avenue between the alignment and First Street provides surface parking for both Metrolink and bus commuters. It is proposed that the Gold Line station share this parking. Additionally, a parking structure is proposed on the vacant parcel west of Indian Hill Boulevard between First Street and the alignment. This property is located within the Village Expansion Specific Plan (Specific Plan #8). The recently adopted Village Expansion Specific Plan is consistent with the Gold Line project because it provides for transit-oriented mixed-use development. Development of a parking structure at the proposed location would be guided by the specific plan, which states that "Parking structures, if built, should be located in the interior of blocks or along the Metrolink tracks. They should have retail uses on the first floor."³¹

g. Montclair

Gold Line facilities in Montclair would be located at the existing Montclair TransCenter, a regional transit hub with approximately 1,600 parking spaces that currently serves Metrolink's San Bernardino Line in addition to Omnitrans and Foothill Transit bus services. General Plan land use designations along the alignment include Business Park, Public/Quasi Public, Low Density Residential (in the City's northwest corner), and Planned Development (south of the TransCenter).

³⁰ City of Claremont, *Claremont General Plan Circulation Element*, 1992, IV/1-16.

³¹ City of Claremont, *Claremont Village Expansion Area Specific Plan*, 2001, 2-12.

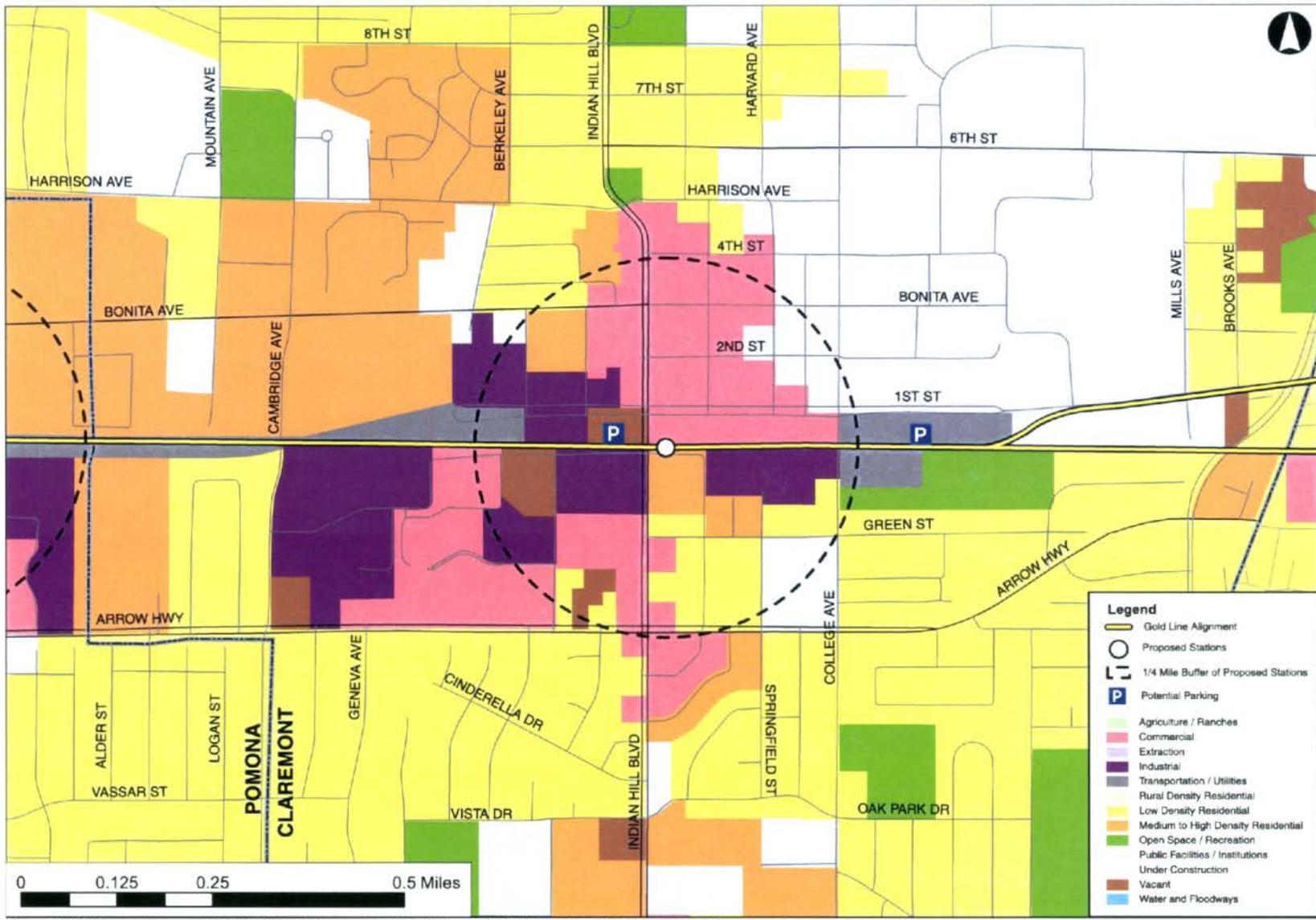


Figure 3-10.15: Claremont Station - Area Land Use

Adding a light rail stop to the existing TransCenter is consistent with Montclair's stated policy in the Circulation Element of their 1999 General Plan to "promote the provision of public modes of transportation between strategic locations such as the Montclair Plaza Shopping Center, and other traffic generators, such as the Montclair TransCenter and potential Metrolink station on the Riverside Line."³²

Two alternative alignments are proposed: that would extend light rail services approximately one-half mile into the northwestern corner of Montclair, terminating at the Montclair TransCenter. The northern alignment uses the abandoned UP right-of-way, picked up in the City of Claremont, east of College Avenue. Existing land uses along the UP right-of-way are residential and extraction (see **Figure 3-10.16**). The southern alignment would continue the use of the Metrolink right-of-way. Zoning along this corridor is largely Industrial Park Manufacturing and General Commercial, although a Small Lot Single Family Residential Zone exists in the most northwestern corner of the city (part of a neighborhood along the county line referred to by its residents as "El Barrio"). The proposed light rail stations and associated parking would be located completely within the boundary of the existing TransCenter.

The proposed light rail stations at the Montclair TransCenter fall within the boundaries of the North Montclair Specific Plan³³ area, as well as the city's Redevelopment Plan for Project Area No. III. The TransCenter was developed in the mid-1990s by the City and SANBAG, and includes the area bounded by the UP right-of-way (also the Upland border), the Metrolink corridor, Monte Vista Avenue, and Central Avenue.

The North Montclair Specific Plan (1998) is a land use policy guidance document that proposes transit-related uses within and adjacent to the Montclair TransCenter, and a pedestrian connection along Fremont Street between the TransCenter and Montclair Plaza. Establishing a light rail station at the TransCenter is consistent with the plan's goal of ensuring that the TransCenter play a key role in the long term development of the North Montclair commercial district.

h. Upland

The City of Upland, located directly north of the Montclair TransCenter, has a number of housing and commercial developments in the planning stages for the land adjacent to the north side of the TransCenter.

3-10.1.3 Regional Land Use Plans

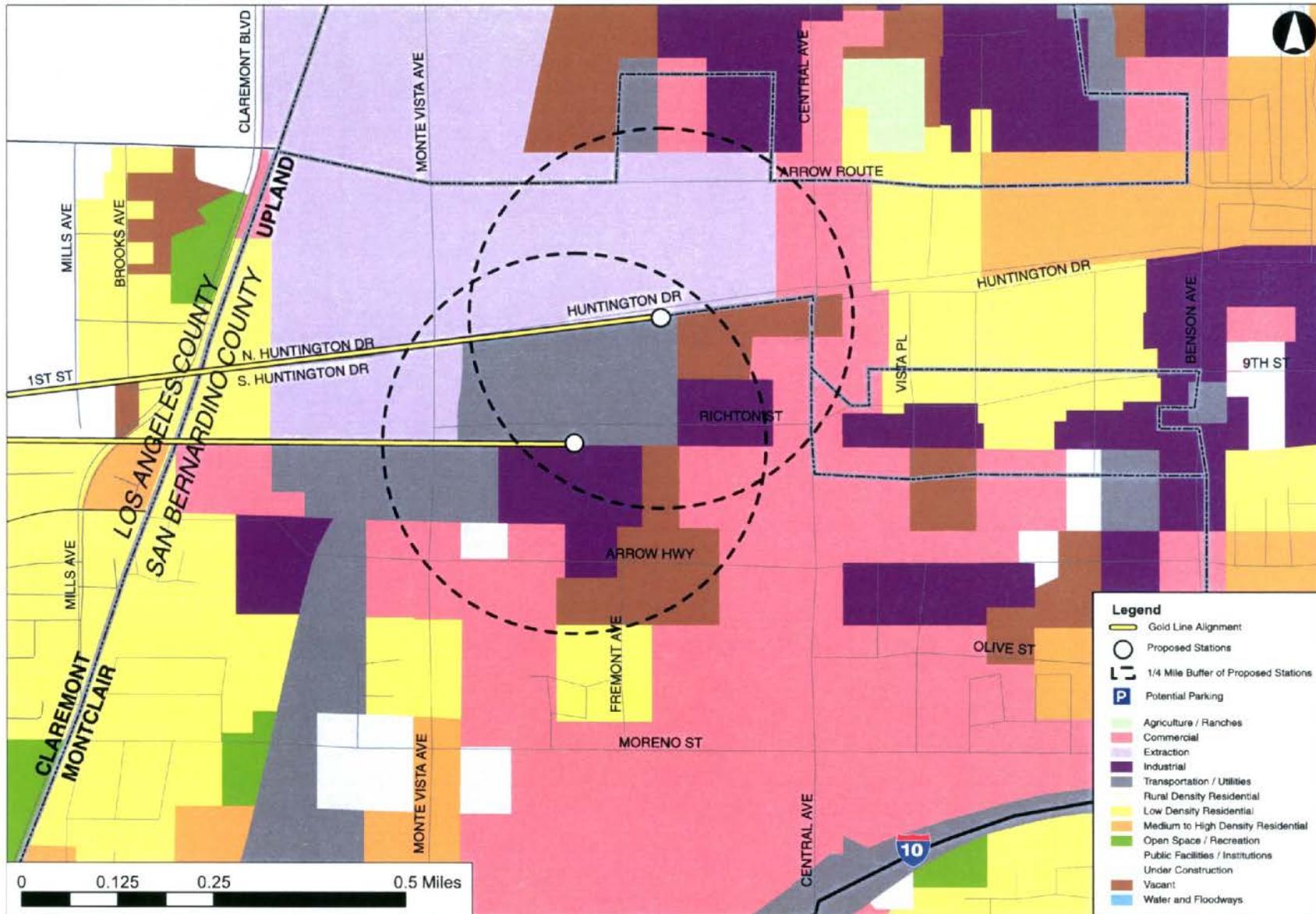
Several regional land-use plans and policies are applicable to the proposed Gold Line Phase II project.

a. SCAG Regional Comprehensive Plan and Guide

The Southern California Association of Governments (SCAG) is designated by the federal government as the Southern California region's Metropolitan Planning Organization (MPO) and Regional Transportation Planning Agency (RTPA). SCAG has sought to address regional planning concerns through various documents, including the 1996 Regional Comprehensive Plan and Guide (RCPG) and the CommunityLink21 - 2001 Regional Transportation Plan Update (2001 RTP Update).

³² City of Montclair, *1999 General Plan*, 1999, 41.

³³ City of Montclair, *North Montclair Specific Plan* (Specific Plan No. 97-1), 1998.



Source: ©2003 GDT, Inc. and its licensors, Rel. 10/2002; SCAG Regional Land Use, 2003; U.S. Census TIGER Data, 2000; Jones & Stokes Associates, 2003.

Figure 3-10.16: Montclair Station - Area Land Use

The RCPG “[i]s intended to serve the region as a framework for decision making with respect to the growth and changes that can be anticipated during the next 20 years and beyond.” In addition, the RCPG “describes how the Southern California region will meet certain federal and state requirements with respect to Transportation, Growth Management, Air Quality, Housing, Hazardous Waste Management, and Water Quality Management.”

The RCPG discusses regional growth and infrastructure issues in its Growth Management Chapter (GMC). The following policies in the GMC have been cited by SCAG staff as being potentially relevant to the proposed project:

- Policy 3.01: The population, housing, and jobs forecasts, which are adopted by SCAG’s Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.
- Policy 3.03: The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region’s growth policies.
- Policy 3.05: Encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities.
- Policy 3.09: Support local jurisdictions’ efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.
- Policy 3.10: Support local jurisdictions’ actions to minimize the red tape and expedite the permitting process to maintain economic vitality and competitiveness.
- Policy 3.18: Encourage planned development in locations least likely to cause environmental impact.
- Policy 3.20: Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.
- Policy 3.21: Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.
- Policy 3.22: Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.
- Policy 3.23: Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards and minimize earthquake damage, and development of emergency response and recovery plans.
- Policy 3.27: Support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection.

- The Air Quality Chapter of the RCPG sets policy contexts in which SCAG coordinates the efforts of counties and cities to meet the requirements of air plans within the region. The Air Quality Chapter core actions relevant to the proposed project are:
- Policy 5.07: Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle miles traveled –emission fees) so that options to command and control regulations can be assessed.
- Policy 5.11: Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.

b. SCAG Regional Transportation Plan

The SCAG CommunityLink21 - 2001 Regional Transportation Plan Update (2001 RTP Update) serves as the primary transportation planning document for the Southern California region. It describes local and regional trends that affect the transportation system and recommends transportation investments to improve mobility and accessibility. SCAG staff have indicated that the following goals, objectives, policies, and/or actions in the 2001 RTP Update may be potentially relevant to the proposed project:

- Policy 4.01: Transportation investments shall be based on SCAG's adopted Regional Performance Indicators (i.e., mobility, accessibility, environment, reliability, safety, equity/environmental justice, and cost-effectiveness).
- Policy 4.02: Transportation investments shall mitigate environmental impacts to an acceptable level.
- Policy 4.04: Transportation Control Measures shall be a priority.
- Policy 4.09: All existing and new public transit services, facilities and/or systems shall be fully accessible to persons with disabilities as required by applicable sections of the 1990 Americans with Disabilities Act.
- Policy 4.10: All existing and new public transit services shall be provided in a manner consistent with Title VI of the 1964 Civil Rights Act and Executive Order 12898 on Environmental Justice, including the prohibition of intentional discrimination and adverse disparate impact with regard to race, ethnicity, or national origin.
- Policy 4.11: All existing and new public transit services, facilities and/or systems shall evaluate the potential for private sector participation through the use of competitive procurement and feasible institutional arrangements.
- Policy 4.16: Maintaining and operating the existing transportation system will be a priority over expanding capacity.

3-10.2 Environmental Impacts

3-10.2.1 Evaluation Methodology

Potential land use and planning impacts were evaluated by examining existing land uses along the alignment and in proposed station areas, in addition to the adopted and draft plans and zoning ordinances in each of the jurisdictions along the corridor. Land use impacts would be considered significant if

implementation of the proposed project would create incompatible land uses or result in conflicts with applicable land use plans, policies, or regulations.

Existing land uses were observed in an August 2003 field visit and in aerial photography taken in July 2003. Existing land use data derived from aerial photography were also provided in GIS format from the Southern California Association of Governments (SCAG).

In a few Phase II cities, adopted plans and zoning regulations are over twenty years old and outdated in their discussion of transportation and land use. Many of the Phase II corridor cities are currently updating their general plans and/or municipal codes (including Pasadena, Arcadia, Irwindale, Azusa, Glendora, Pomona, Claremont, and Montclair). Both existing and draft plans, where available, were analyzed for land use consistency with the proposed project.

3-10.2.2 Impact Criteria

a. NEPA Impact Criteria

NEPA regulations require federal agencies to study a proposed action's direct, indirect, and cumulative effects on the quality of the human environment. In regards to land use and planning, the EIS must discuss project-related conflicts with federal, state, regional, tribal, or local land use plans, policies, or controls. There are no NEPA-specific or FTA-specific criteria for determining adverse land use impacts, so the same criteria utilized for assessing impacts and whether those impacts are significant under CEQA have been used.

b. CEQA Impact Criteria

Under CEQA, direct and indirect impacts must be clearly identified and described, giving due attention to both short-term (i.e., during project construction) and long-term effects. According to the 2003 CEQA Guidelines (Environmental Checklist, Appendix G), land use and planning impacts may occur when:

- A proposed project conflicts with jurisdictional land use plans, policies, or regulations that have been adopted for the purpose of avoiding or mitigating environmental effects;
- A proposed project physically divides an established community; or
- A proposed project conflicts with applicable habitat or natural community conservation plans.

For the purposes of analyzing Gold Line Phase II project alternatives, only the first category of land use impact listed in the CEQA Guidelines is applicable. The proposed project would not conflict with habitat or natural community conservation plans, because there are currently no conservation plans in the project vicinity. Additionally, the proposed project would not divide established communities, because the Gold Line corridor is an existing railroad and transportation route along which the corridor communities have historically developed.

Significance of land use impact is related to the consistency of the proposed project with applicable land use plans, policies and regulations. If the proposed project is consistent with both the local general plan and zoning code, it can be determined to have a less than significant impact on the land use of the area, so long as its design is compatible with the surrounding community. If the project requires a zone change and/or general plan amendment, potential impacts to surrounding land uses may occur. Significance would be a function of the surrounding land uses, buildings, general or specific plan designations, zoning, and parcel sizes.

Indirect land use-related environmental impacts are discussed in other sections of this chapter. Impacts to sensitive adjacent uses such as schools and parks are discussed in Section 3-4 (Community Facilities and Services); noise impacts are discussed in Section 3-11 (Noise and Vibration); safety impacts are discussed in Section 3-13 (Safety and Security); and traffic impacts are discussed in Section 3-15 (Traffic and Transportation) of this document.

3-10.2.3 Construction-Period Impacts

a. No Build Alternative

The No Build Alternative includes extension of I-210 from I-15 to I-215; implementation of increased service on Phase I of the Gold Line LRT, completion and service on the Eastside LRT Extension, and countywide bus service improvements which would include the San Gabriel Valley. Construction-period impacts would be greatest for the I-210 extension and Eastside LRT Extension due to the scope and magnitude of construction activities. The I-210 extension would be about 10 miles in length, and is more than 5 miles east of the Phase II study area. The Eastside LRT Extension is approximately 6 miles in length and connects to the south end of the Phase I LRT service. Construction needed to implement increased service on Phase I of the Gold Line would be limited to areas where traction power substations (TPSSs) would be added. Construction impacts to implement increases in countywide bus service are likely to be limited to modifications to or additional bus stops.

Phase I – The Cities Affected and the Effects

The cities in Phase I are Los Angeles, South Pasadena and Pasadena. The No Build projects that could affect the cities are implementation of increased service on Phase I of the Gold Line LRT, completion and service on the Eastside LRT Extension, and countywide bus service improvements.

Construction of the Eastside LRT Extension would result in potential construction-period impacts along and adjacent to the LRT alignment in the city of Los Angeles. The construction-period impacts and mitigation measures of this project are described in the Draft Supplemental Environmental Impact Statement/ Draft Subsequent Environmental Impact Report (FTA and LACMTA, 2001). No construction-period land use impacts are foreseen or identified within the DSEIS/DSEIR.

County-wide bus service improvements that may occur within the Phase I cities (Los Angeles, South Pasadena and Pasadena) between now and 2025 are not expected to include substantial amounts of construction. The planned service improvements would be likely to include upgraded or additional bus stops. Due to the very limited areas of construction of such facilities, effects would be expected to be less than adverse under NEPA and less than significant under CEQA. Land use impacts in particular are not anticipated for the construction phase; however, if they exist, they would be addressed in the environmental document for that project.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. The No Build projects affecting these cities are implementation of increased service on Phase I of the Gold Line LRT and countywide bus service improvements.

The implementation of increased service on Phase I of the Gold Line LRT would only affect the Phase II City of Pasadena. Land use impacts are not expected because no new facilities would be constructed.

Countywide bus service improvements would affect all Phase II, Segment 1 cities. Nevertheless, land use impacts are not anticipated for the construction phase, because construction activities would be limited and temporary, and typical construction mitigation measures would be applied. If short-term land use impacts related to bus service improvements were to be identified, they would be addressed in the project environmental document.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. The only No Build project affecting these cities would be countywide bus service improvements.

Los Angeles County-wide bus improvements would affect the Phase II, Segment 2 cities located within Los Angeles County (Azusa, Glendora, San Dimas, La Verne, Pomona, and Claremont). Land use impacts are not anticipated for the construction phase, however, because construction activities would be limited and temporary, and typical construction mitigation measures would be applied. Temporary impacts would not be of sufficient magnitude or duration to create short-term land use impacts. Short-term land use impacts related to bus service improvements are not anticipated, but would be addressed in the project environmental documents prepared by LACMTA for specific service increases.

b. Transportation System Management (TSM) Alternative

The TSM Alternative would enhance bus service in the Phase II Study Area corridor by providing or improving connecting service to the Phase I Gold Line station at Sierra Madre Villa, as well as by increasing peak period and off-peak period service frequencies to Downtown Pasadena (the Study Area's largest employment center) and among the cities and major activity centers within the Study Area. The TSM alternative would substantively increase arterial bus and express bus services to the Study Area. To the areas east of Duarte the peak period bus service would go from 8 buses per hour in each direction to 17 buses per hour. The areas west of Duarte would have service increased from 11 buses per hour in each direction to 24 buses per hour. An increase in frequency of service would not require additional bus shelters along routes.

Phase I – The Cities Affected and the Effects

The cities in Phase I are Los Angeles, South Pasadena and Pasadena. Because the TSM alternative would increase the frequencies of existing bus routes, and would not involve the construction of new transportation facilities, no construction-period land use impacts are expected.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. Because the TSM alternative would increase the frequencies of existing bus routes, and would not involve the construction of new transportation facilities, no construction-period land use impacts are expected.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. Because the TSM alternative would increase the frequencies of existing bus

routes, and would not involve the construction of new transportation facilities, no construction-period land use impacts are expected.

c. LRT, Triple Track Configuration

The LRT Triple Track configuration would extend Gold Line Phase I LRT services from their current terminus at the Sierra Madre Villa Station in Pasadena eastward to the Montclair TransCenter in Montclair (approximately 24 miles). Two tracks would be utilized for LRT and the third for existing freight operations along the LACMTA corridor. The Triple Track configuration would entail the construction of 12 LRT stations and associated parking facilities in the cities of Arcadia, Monrovia, Duarte, Irwindale, Azusa (two stations), Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair. This alternative also entails the construction of a LRT maintenance facility in Irwindale.

Land use impacts are generally not expected during the construction phase of the Triple Track configuration except for parcels that may need to be acquired and buildings demolished. Demolition would not affect surrounding land uses because demolition activities would be contained within the parcel. Construction activities would be temporary and access to surrounding land uses would be maintained during construction. For more detailed information on potential construction impacts, if any, as they may indirectly affect land uses in the proposed project area, the reader is referred to the following sections of this EIR/EIS: 3-1 Acquisitions and Displacements; 3-2 Air Quality; 3-4 Community Facilities and Services; 3-11 Noise and Vibration; 3-13 Safety and Security.

Phase I – The Cities Affected and the Effects

The cities in Phase I are Los Angeles, South Pasadena, and Pasadena. Because construction of the Triple Track configuration would take place entirely within Phase II cities, no construction-period elements of the proposed Phase II Triple Track configuration would adversely affect land uses in the Phase I cities of Los Angeles and South Pasadena.

In the City of Pasadena, existing LRT services would be extended from the existing station at Sierra Madre Villa for approximately one-half mile within the median of the I-210 Freeway. Land use impacts are not anticipated for the construction phase, however, because construction activities would be temporary and limited to the freeway median. Access to surrounding uses would be maintained, and the entire length of the alignment is buffered by freeway use.

Phase II, Segment 1 – The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte and Irwindale. Land use impacts are not anticipated for the construction phase of the Triple Track configuration because construction activities would be temporary and access to surrounding uses would be maintained. Construction activities would not be likely to generate activities that would affect the planning or zoning designations of adjoining or nearby properties.

Phase II, Segment 2 – The Cities Affected and the Effects

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. Land use impacts are not anticipated for the construction phase of the Triple Track configuration because construction activities would be temporary and access to surrounding uses

would be maintained. Construction activities would not be likely to generate activities that would affect the planning or zoning designations of adjoining or nearby properties.

Summary of Triple Track Impacts for Full Build Alternative

Because construction activities would be temporary and access to surrounding uses would be maintained, construction-period land use impacts are not expected for Phase I and Phase II, Segments 1 and 2. Construction activities would not be likely to generate activities that would affect the planning or zoning designations of adjoining or nearby properties.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

Because construction activities would be temporary and access to surrounding uses would be maintained, construction-period land use impacts are not expected for Phase I and Phase II, Segment 1. Construction activities would not be likely to generate activities that would affect the planning or zoning designations of adjoining or nearby properties.

d. LRT, Double Track Configurations

The LRT Double Track configurations would extend Gold Line Phase I LRT services from their current terminus at the Sierra Madre Villa Station in Pasadena eastward to the Montclair TransCenter in Montclair (approximately 24 miles). The two tracks would be utilized for LRT and may potentially also be used for maintaining existing freight operations along the LACMTA corridor. The Double Track configurations would entail the construction of 12 LRT stations and associated parking facilities in the cities of Arcadia, Monrovia, Duarte, Irwindale, Azusa (two stations), Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair. This alternative also entails the construction of a LRT maintenance facility in Irwindale.

Land use impacts are generally not expected during the construction phase of the Double Track configurations because construction activities would be temporary and access to surrounding uses would be maintained. Construction activities would not be likely to generate activities that would affect the planning or zoning designations of adjoining or nearby properties. For more detailed information on potential construction impacts, if any, as they may indirectly affect land uses in the proposed project area, the reader is referred to the following sections of this EIR/EIS: 3-1 Acquisitions and Displacements; 3-2 Air Quality; 3-4 Community Facilities and Services; 3-11 Noise and Vibration; 3-13 Safety and Security.

Phase I – The Cities Affected and the Effects

Same as described under 3-10.2.3.c (Construction Period Impacts - LRT, Triple Track configuration).

Phase II, Segment 1 – The Cities Affected and the Effects

Same as described under 3-10.2.3.c (Construction Period Impacts - LRT, Triple Track configuration).

Phase II, Segment 2 – The Cities Affected and the Effects

Same as described under 3-10.2.3.c (Construction Period Impacts - LRT, Triple Track configuration).

Summary of Double Track Impacts for Full Build LRT Alternative

Same as described under 3-10.2.3.c (Construction Period Impacts - LRT, Triple Track configuration).

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

Same as described under 3-10.2.3.c (Construction Period Impacts - LRT, Triple Track configuration).

3-10.2.4 Long-Term Impacts

The proposed project alternatives would generate long-term land use impacts if the actions proposed were inconsistent with applicable land use plans, policies, or regulations. Additionally, long-term land use impacts would result if the proposed project physically divides an established community.

a. No Build Alternative

The No Build Alternative is described above in Section 3-10.2.3.a of this chapter. The No Build Alternative would not result in significant or adverse long-term land use impacts, because it would maintain existing conditions. Environmental impacts and mitigation measures for projects that would be undertaken in lieu of Full Build LRT Alternatives are discussed in the environmental documents for those projects.

Phase I – The Cities Affected and the Effects

Phase I cities include Los Angeles, South Pasadena, and Pasadena. The No Build projects that may potentially affect these cities include the Eastside LRT Extension, implementation of increased service frequency on the Phase I Gold Line LRT, and implementation of countywide bus improvements. Impacts and mitigation measures for the Eastside LRT extension project are described in the Draft Supplemental Environmental Impact Statement/ Draft Subsequent Environmental Impact Report (FTA and LACMTA, 2001). This report found that the Eastside LRT Extension Build Alternative is generally compatible with local and regional plans and land use policies. Implementation of countywide bus improvements would entail increasing frequency of service on existing bus routes and no new construction of bus facilities. Land use impacts are therefore not expected; however, potential land use-related impacts, if they exist, would be discussed in the environmental document for that project.

Phase II, Segment 1 – The Cities Affected and the Effects

Phase II, Segment 1 cities include Pasadena, Arcadia, Monrovia, Duarte and Irwindale. There would be no long-term land use impacts in these cities under the No Build Alternative because there would be no change in existing conditions. A project occurring under the No Build Alternative for which there may be potential land use impacts includes implementation of countywide bus improvements. The potential land use impacts, if any, related to this project would be discussed in the project's environmental document.

However, while the No Build Alternative would not create significant or adverse land use impacts, it would not fulfill transit-related land use objectives articulated by the Phase II, Segment 1 cities of Arcadia and Monrovia. In Arcadia, the No Build Alternative would defeat General Plan Strategy FS-13, to "pursue the establishment of rail service to Arcadia, including a transit stop within the downtown

redevelopment area.” Similarly in Monrovia, the No Build Alternative would defeat General Plan goals to develop light rail and to utilize the vacant Santa Fe Depot site as a light rail station.

Phase II, Segment 2 – The Cities Affected and the Effects

Phase II, Segment 2 cities include Azusa, Glendora, San Dimas, La Verne, Pomona, Montclair, and Upland. There would be no long-term land use impacts in these cities under the No Build Alternative because there would be no change in existing conditions. Potential land use impacts, if any, related to the implementation of countywide bus improvements would be discussed in the environmental document for that project.

Although the No Build Alternative would not create significant or adverse land use impacts, it would not fulfill transit-related land use objectives articulated by the City of San Dimas in their General Plan Land Use Element. In particular, the No Build Alternative would defeat the City’s Plan Proposal K to develop a light rail transit stop near the San Dimas Lemon Packing House.

b. Transportation System Management (TSM) Alternative

The TSM Alternative is described above in Section 3-10.2.3.b of this chapter. No new transportation facilities are planned under this alternative. Service frequencies on targeted bus routes in the Phase II study area would approximately double. The TSM Alternative would not result in significant or adverse long-term land use impacts, however, because it would largely maintain existing conditions.

Phase I – The Cities Affected and the Effects

Phase I cities include Los Angeles, South Pasadena, and Pasadena. The TSM Alternative would create less than significant land use impacts in these cities, because ridership at the LRT stations in these cities would not be significantly different than under the No Build Alternative.

Phase II, Segment 1 – The Cities Affected and the Effects

Phase II, Segment 1 cities include Pasadena, Arcadia, Monrovia, Duarte and Irwindale. The TSM Alternative would create less than significant land use impacts in these cities, because no new facilities would be constructed, and increased bus frequencies would not be likely to generate changes in land use.

Phase II, Segment 2 – The Cities Affected and the Effects

Phase II, Segment 2 cities include Azusa, Glendora, San Dimas, La Verne, Pomona, Montclair, and Upland. The TSM Alternative would create less than significant land use impacts in these cities, because no new facilities would be constructed, and increased bus frequencies would not be likely to generate changes in land use.

c. LRT, Triple Track Configuration

The LRT Triple Track configuration is described above in Section 3-10.2.3. Potential long-term direct land use impacts related to this proposed alternative include the removal of existing uses to accommodate new transportation facilities, such as transit stations and parking garages. Potential indirect or secondary

long-term land use impacts would include changes in the overall development and growth of station areas. Chapter 4-6 (Growth Inducement) discusses impacts related to growth in greater detail.

Direct land use impacts generally would be not adverse/less than significant, because the LACMTA right-of-way is an existing railroad corridor, within which many of the Gold Line stations would be constructed – not replacing other uses. Additionally, many of the proposed parking facilities would replace either vacant property or current parking uses. However, in the cities of Arcadia, Monrovia, Azusa, Glendora, San Dimas, and Pomona, buildings in largely industrial use would be demolished and replaced with parking facilities, thus changing the land uses at those sites. Chapter 3-1 (Acquisitions and Displacements) discusses impacts related to acquisitions in greater detail.

Indirectly, the LRT Triple Track configuration could result in increased redevelopment of vacant and/or underdeveloped properties near future station locations. Any such redevelopment that occurs, however, would be consistent with adopted land use plans and zoning. Additionally, many Phase II cities have already planned for transit use and transit-oriented development at the proposed station sites within their General and Specific Plans. Overall, it is anticipated that land use impacts associated with the Triple Track LRT Alternative would be positive – resulting in less traffic congestion and better circulation.

Table 3-10.1 summarizes the zoning classifications for proposed station and parking facility locations in each of the Phase II cities, and notes whether existing land use plans support transit-oriented development at those sites. Zoning classifications at most proposed sites do not generally explicitly permit LRT; Phase II cities which explicitly reference light rail transit development in their zoning codes are limited to Monrovia, Glendora, San Dimas, and La Verne. Nevertheless, the development of LRT in all Phase II cities is broadly supported by local general, specific, and redevelopment plans.

As described above in section 3-10.1.3, several regional land use plans and policies are applicable to the study area and proposed project. The consistency of the proposed project with these plans can be generally assessed. **Table 3-10.2** summarizes the consistency of the proposed project with the applicable regional land use plans and policies. In every case, the proposed project would be consistent. Thus, no adverse effects (under NEPA)/significant impacts (under CEQA) would result.

**TABLE 3-10.1
ZONING AND ADOPTED PLANS AT PROPOSED PHASE II STATION SITES**

| Phase II City | Proposed LRT Station Zoning/Permitted Use | Proposed Parking Facility Zoning/Permitted Use | Adopted Plans at the Proposed Sites |
|---------------|--|---|---|
| Pasadena | No new Phase II LRT Station | No new Phase II LRT Parking Facility | East Pasadena and East Colorado Blvd Specific Plans encourage transit-oriented development at Sierra Madre Villa LRT Sta. |
| Arcadia | C-2 (General Commercial)/ LRT use not expressly permitted | C-2 (General Commercial) & CBD (Central Bus. Dist.)/ Parking use expressly permitted (1) | Proposed LRT station site explicitly identified in General Plan |
| Monrovia | Planned Development 12A/ Conditional Use Permit (CUP) | Planned Development 12A/ Conditional Use Permit (CUP) | Multi-Modal Transit Center plan; site explicitly identified in General Plan |
| Duarte | Light Manufacturing/ LRT use not expressly permitted | Hospital/ LRT parking use not expressly permitted (1) | None |
| Irwindale | M-2 (Heavy Manufacturing)/ Permits storage space for transit and transportation equipment | M-2 (Heavy Manufacturing)/ Permits storage space for transit and transportation equipment | Redevelopment Plan for the City Industrial Development Project |
| Azusa | CF (Community Facilities)/ LRT use not expressly permitted; Monrovia Nursery Specific Plan designations not yet released | M-1 (Light Manufacturing)/ Parking Garages and Surface Lots permitted by right; R1 & R3/ parking use prohibited | Central Business District Redevelopment Project; Monrovia Nursery Specific Plan (not yet released) |
| Glendora | R-4 (Railroad)/ Permitted; Town Center Mixed Use (TCMU)/ Administrative Use Permit | TCMU/ Public parking permitted; Light Manufacturing/ CUP | Route 66 Corridor Specific Plan supports transit-oriented development |
| San Dimas | Frontier Village Redevelopment Area/ Conditional Use Permit; SP23/ LRT Facilities permitted in Planning Area II | Frontier Village/ CUP; SP23/ LRT facilities permitted use in Planning Area II, not permitted in Planning Area I | Proposed LRT station site explicitly identified in General Plan |
| La Verne | Lordsburg Institutional/ Governmental-public uses permitted; Arrow Corridor Industrial/ CUP | F (Fairgrounds)/ Governmental and sponsored uses permitted, Off-street parking permitted | Lordsburg and Arrow Corridor Specific Plans recognize LRT project |
| Pomona | M (Light Industrial)/ LRT use not expressly permitted | M (Special Industrial)/ LRT parking use not expressly permitted (1) | Bonita Ave. Corridor Development Program (never implemented) |

| TABLE 3-10.1 <i>continued</i> | | | |
|--|---|---|--|
| ZONING AND ADOPTED PLANS AT PROPOSED PHASE II STATION SITES | | | |
| Phase II City | Proposed LRT Station Zoning/Permitted Use | Proposed Parking Facility Zoning/Permitted Use | Adopted Plans at the Proposed Sites |
| Claremont | Claremont Village/ LRT use not expressly permitted | Claremont Village or SP8/ LRT parking use not expressly permitted (1) | Village Expansion Specific Plan (SP8) for transit-oriented development |
| Montclair | Specific Plan (TransCenter)/ Zoning Code does not reference transit use | Specific Plan (TransCenter)/ Zoning Code does not reference transit use | North Montclair Specific Plan supports transit-oriented development |
| <p>Note:</p> <p>1. Where parking is not expressly permitted, it is assumed that a condition use permit would be issued by the city, based on the support for LRT service reported by the cities in the corridor.</p> <p>Sources: Local General Plans, Specific Plans, Zoning Maps, and Zoning Codes. Myra L. Frank & Associates, 2003.</p> | | | |

**TABLE 3-10.2
PROJECT CONSISTENCY WITH REGIONAL LAND USE PLANS AND POLICIES**

| Plan/Policy | Project Consistent With Plan/Policy? | Remarks |
|--|--------------------------------------|---|
| <i>SCAG Regional Comprehensive Plan & Guide – Growth Management Chapter (GMC), Air Quality Chapter (AQC)</i> | | |
| GMC Policy 3.01: The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review. | Neutral | Policy is to be implemented by SCAG. |
| GMC Policy 3.03: The timing, financing, and location of public facilities, utility systems, transportation systems shall be used by SCAG to implement the region's growth policies. | Neutral | Policy is to be implemented by SCAG. |
| GMC Policy 3.05: Encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities. | Yes | Project would be constructed within an existing rail corridor. |
| GMC Policy 3.09: Support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services. | Neutral | Policy is to be implemented by SCAG. |
| GMC Policy 3.10: Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness. | Neutral | Policy is to be implemented by SCAG. |
| GMC Policy 3.18: Encourage planned development in locations least likely to cause environmental impact. | Yes | Project would be constructed in an urbanized area. |
| GMC Policy 3.20: Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered species. | Yes | Project would, if necessary, include measures to avoid or minimize adverse effects any sensitive natural resources. See section 3-3 of this document. |

TABLE 3-10.2 *continued (page 2 of 3)*
PROJECT CONSISTENCY WITH REGIONAL LAND USE PLANS AND POLICIES

| Plan/Policy | Project Consistent With Plan/Policy? | Remarks |
|---|--------------------------------------|---|
| GMC Policy 3.21: Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites. | Yes | Project would, if necessary, include measures to avoid or minimize adverse effects on cultural resources. See section 3-5 of this document. |
| GMC Policy 3.22: Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards. | Yes | Project would be constructed in accordance with all applicable safety and design standards. |
| GMC Policy 3.23 Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans. | Yes | This environmental document has identified mitigation measures where necessary to address adverse effects of the project. |
| GMC Policy 3.27: Support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection. | Yes | Project would provide improved transit service to all members of the Southern California community. |
| AQC Policy 5.07: Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle miles traveled –emission fees) so that options to command and control regulations can be assessed. | Neutral | Policy is not relevant to the proposed project. |
| AQC Policy 5.11: Through the environmental document review process, ensure that plans all levels of government consider air quality, land use, transportation, and economic relationships to ensure consistency and minimize conflicts. | Yes | This environmental document has addressed consistency of project with applicable plans and policies. |

TABLE 3-10.2 *continued (page 3 of 3)*
PROJECT CONSISTENCY WITH REGIONAL LAND USE PLANS AND POLICIES

| Plan/Policy | Project Consistent With Plan/Policy? | Remarks |
|--|--------------------------------------|---|
| <i>SCAG Regional Transportation Plan 2001 Update (RTP)</i> | | |
| RTP Policy 4.01: Transportation investments shall be based on SCAG's adopted Regional Performance Indicators (i.e., mobility, accessibility, environment, reliability, safety, equity/environmental justice, and cost-effectiveness). | Neutral | Policy to be implemented by SCAG. |
| RTP Policy 4.02: Transportation investments shall mitigate environmental impacts to an acceptable level. | Yes | This environmental document has identified mitigation measures where necessary to address adverse effects of the project. |
| RTP Policy 4.04: Transportation Control Measures shall be a priority. | Neutral | Project considers Transportation System Management (TSM) as an alternative to Full-Build Light Rail Transit alternatives. |
| RTP Policy 4.09: All existing and new public transit services, facilities and/or systems shall be fully accessible to persons with disabilities as required by applicable sections of the 1990 Americans with Disabilities Act. | Yes | Project would comply with the 1990 Americans with Disabilities Act. |
| RTP Policy 4.10: All existing and new public transit services shall be provided in a manner consistent with Title VI of the 1964 Civil Rights Act and Executive Order 12898 on Environmental Justice, including the prohibition of intentional discrimination and adverse disparate impact with regard to race, ethnicity, or national origin. | Yes | Project would be comply with Title VI of the 1964 Civil Rights Act and Executive Order 12898 on Environmental Justice. |
| RTP Policy 4.11: All existing and new public transit services, facilities and/or systems shall evaluate the potential for private sector participation through the use of competitive procurement and feasible institutional arrangements. | Neutral | Policy would be implemented by other parties. |
| RTP Policy 4.16: Maintaining and operating the existing transportation system will be a priority over expanding capacity. | Yes | Proposed project would improve an existing transportation corridor in order to meet planned levels of regional rail transit growth. |

Phase I – The Cities Affected and the Effects

Phase I cities include Los Angeles, South Pasadena, and Pasadena. The Triple Track LRT Alternative would not create significant land use impacts in Phase I Cities, because no new facilities will be constructed in the Phase I study area. The extension of LRT services is expected to increase ridership at stations in Phase I cities. However, daily boardings at existing Phase I stations would not significantly increase such that land uses surrounding stations would change (see **Table 3-15.26**).

Phase II, Segment 1 – The Cities Affected and the Effects

Phase II, Segment 1 cities include Pasadena, Arcadia, Monrovia, Duarte and Irwindale. Significant or adverse impacts to land use are not expected under the Triple Track LRT Alternative because the proposed project and station sites are consistent with the land use objectives of Segment 1 cities. However, parking facility alternatives considered in Arcadia and Monrovia would require building demolition and the replacement of existing land uses. Land use impacts related to the replacement of these land uses would be less than significant because the proposed parking uses would be consistent with local plans in Arcadia and Monrovia.

Pasadena

In Pasadena, the LRT extension would be located within the LACMTA right-of-way in the median of the I-210 Freeway – thus, non-transportation land uses would not be displaced. Because the railway would be buffered on both sides by existing freeway use, there would be less than significant impacts to adjacent land uses. Additionally, policies within Pasadena’s General Plan, East Colorado Specific Plan, and East Pasadena Specific Plan, support the development of LRT and transit-oriented development at the existing Sierra Madre Villa Station.

Arcadia

In Arcadia, the LRT extension would be consistent with several general plan goals, including the extension of rail service to Arcadia, the development of a light rail station at First and Front streets, and the creation of a pedestrian-oriented environment along the First Avenue corridor. Parking facility alternatives mostly involve the use of property that is currently being used for parking. One alternative, however, would close Front Street to accommodate LRT parking, displacing commercial-light industrial buildings. Land use impacts under this alternative would be less than significant, however, because few structures would be removed and the proposed project would be highly consistent with adjacent zoning of Central Business District to the south. Section 3-1 discusses impacts related to acquisitions and displacements in greater detail.

Monrovia

In Monrovia, the LRT extension is consistent with general plan goals to develop LRT, to use the historic Santa Fe Depot as a light rail station, and to encourage transit-oriented and mixed-use development in the vicinity of the depot. While development of the LRT station would not directly change the nature of land uses in the vicinity, development of parking structures north or south of the station would displace office buildings or buildings in light industrial use, respectively. Land use impacts would be less than significant, however, because zoning in this area is for planned development that envisions both a need for commuter parking facilities and a transition of land uses to master-planned mixed use developments. Section 3-1 discusses impacts related to acquisitions and displacements in greater detail. The Gold Line

corridor also traverses areas residential development from the City's western border to Magnolia Avenue, which may require buffering from railroad noise and vibration (see Section 3-11, Noise and Vibration).

Duarte

In Duarte, the LRT extension is consistent with general plan goals to support the development of regional mass transit. The proposed project would not displace non-transportation land uses. The station would be located within the railroad right-of-way across Duarte Road from the City of Hope Hospital, and the proposed parking facility would be located at the site of the hospital's existing parking lot. North of the LRT corridor, from approximately Buena Vista Street to Hope Drive, the railroad abuts residential neighborhoods which may require buffering from noise and vibration (see Section 3-11, Noise and Vibration).

Irwindale

In Irwindale, the LRT corridor would traverse areas of industrial land use, including vacant lands and extraction pits. The proposed station platforms would be located within the railroad right-of-way north of the Miller Brewing Plant; the proposed parking facility would be located south of the platforms on Miller property that is currently a landscaped lawn. The proposed maintenance facility would also be located on Miller property to the west, which is vacant in part and paved to the south for outdoor storage use. The location of a LRT maintenance yard at this site is highly consistent with the surrounding industrial land uses.

Phase II, Segment 2 – The Cities Affected and the Effects

Phase II, Segment 2 cities include Azusa, Glendora, San Dimas, La Verne, Pomona, Montclair, and Upland. No significant or adverse impacts to land use are expected under the Triple Track LRT Alternative because the proposed project and station sites are consistent with the land use objectives of Segment 2 cities. However, parking facility alternatives considered in Azusa, Glendora, and San Dimas would require building demolition and the replacement of existing land uses. Land use impacts related to the replacement of these land uses would be less than significant because the proposed parking uses would be consistent with local plans in these cities.

Azusa

In Azusa, the proposed project is consistent with the draft General Plan (2003) land use goal to provide for the development of a Gold Line transit station and transit-oriented uses in the Downtown District and in the Promenade area of the Monrovia Nursery site. In downtown Azusa, the proposed platform and surface parking alternatives would not create adverse or significant land use impacts because the platforms are located within the railroad right-of-way, and the surface parking alternatives are located within the right-of-way or on vacant adjacent property. Abutting land uses, such as Azusa's civic center to the south and central business district to the southwest, are highly compatible with the proposed transit station location. Residences south of the alignment between Dalton and Pasadena Avenues, however, may require buffering from LRT noise and vibration. The station, including most of the surface parking, appears to be zoned for Community Facilities, where surface lots are not a permitted use, according to Chapter 88 (Zoning), Appendix A, of Azusa's Municipal Code.

Potentially significant (adverse) land use impacts may result from implementation of the downtown Azusa parking structure alternative encompassing the block bounded by Alameda Avenue, Ninth Street, Dalton Avenue, and the railroad corridor. This proposed site contains buildings in light manufacturing

use to the south, and single- and multiple-family residences to the north. If the above site were to include, in addition to a parking structure, development pursuant to the residential/commercial mixed-use concept envisioned in the draft General Plan land use diagram (2003), land use impacts would be less than significant. Chapter 3-1 contains more detailed discussion regarding acquisition impacts.

Glendora

In Glendora, the Triple Track LRT Alternative would be consistent with land use objectives detailed in the City's General Plan and Route 66 Corridor Specific Plan. The station platform and proposed parking locations would be located within the Town Center Mixed Use (TCMU) district of the Route 66 Corridor Specific Plan (2003), where mixed uses that support transit utilization are encouraged. While a passenger terminal would require an Administrative Use Permit in this district, public parking lots or structures are permitted uses. Although the parking alternative considered northwest of the station site would require the demolition of a warehouse in light industrial use, impacts would be less than significant because the Specific Plan for this area encourages development to support transit utilization. Residential uses abut the LRT alignment to the north, from Glendora Avenue (east of the proposed station) to the City's eastern boundary with San Dimas. Residences along this length of the alignment may require buffering from LRT noise and vibration (see Chapter 3-11 for detailed discussion of impacts related to noise and vibration).

San Dimas

In San Dimas, the Triple Track build alternative is consistent with general plan land use policies and goals. The proposed LRT platforms would be located within the LACMTA alignment, either directly west or east of Cataract Avenue, adjacent to sites identified in the San Dimas General Plan as potential transit station locations. The proposed parking areas north of the alignment west of Acacia Street would be located within Specific Plan Area 23 (SP-23); and the proposed parking areas south of the alignment east of Cataract Avenue would be located within the "Frontier Village" creative growth area. Use of these sites would not result in significant land use impacts. However, it must be noted that the western parking alternatives are located within a Planning Area (II) of SP-23 that does not permit LRT facilities. Adjacent Planning Area I of SP-23, the site of the historic Lemon Packing House, permits LRT facilities. However, the proposed LRT parking facilities would be more consistent with general plan goals than existing industrial uses at Planning Area II. At the Frontier Village sites, the proposed LRT parking alternatives would replace vacant land or continue existing parking use, better accomplishing the creative growth area goal of serving the needs of nearby neighborhoods. Few residential uses abut the LACMTA alignment in the City of San Dimas. However, residences abutting the LACMTA alignment east of Route 57 and in between San Dimas Avenue and Walnut Avenue may require buffering from LRT noise and vibration (see Chapter 3-11 for detailed discussion of impacts related to noise and vibration).

La Verne

In La Verne, the Triple Track configuration is consistent with general plan goals to solve regional problems such as congestion and air pollution, to encourage development of additional commuter rail systems along available rights of way, and to promote design incorporating mixed uses, mass transit, and downtown revitalization. Specific plan zoning designations for the proposed LRT station sites would permit development of LRT: at the Lordsburg Institutional-designated site at D Street, governmental or public uses are permitted; and at the Arrow Corridor Industrial-designated sites at E Street, White Avenue, and the property in between, LRT stations are conditionally permitted. The proposed Triple Track configuration would not create significant land use impacts, because adjacent uses are largely industrial, with important institutional uses (University of La Verne) and commercial uses (Downtown La

Verne, Pomona Fairplex) located near proposed station locations. Residences in the Lordsburg neighborhood abutting the north side of the LACMTA alignment between Wheeler Avenue and B Street may require buffering from LRT noise and vibration (see Chapter 3-11 for detailed discussion of impacts related to noise and vibration).

Pomona

In Pomona, the Triple Track configuration is consistent with general plan goals of expanding travel mode options and of developing an east-west traffic-carrying facility in the northern part of the city. The project is also highly consistent with the Bonita Avenue Corridor Development Program – a plan to implement new zoning that would catalyze transit-oriented, mixed-use development along Bonita Avenue, one block north of the alignment.³⁴ Proposed LRT station sites at the existing Metrolink station or the vacant former IBM site would be consistent with a plan to catalyze transit-oriented uses in the Bonita Avenue Corridor. The proposed parking structure near the existing Metrolink station would be replacing a vacant parcel adjacent to commercial and industrial uses south of Bonita Avenue; thus, no adverse or significant impacts are expected. The LACMTA alignment is largely adjacent to industrial land uses in Pomona; however, residences around Palomares Park, south of the alignment between Garey Avenue and Towne Avenue may require buffering from LRT noise and vibration (see Chapter 3-11 for detailed discussion of impacts related to noise and vibration).

Claremont

In Claremont, the Triple Track configuration along the Metrolink/LACMTA right-of-way would not create significant land use impacts because the proposed project is consistent with general plan goals and the Village Expansion Specific Plan, which encourages transit-oriented mixed-use development. The proposed LRT platforms would be located adjacent to the specific plan area, and an LRT parking facility is proposed within the plan area. Location of an LRT garage in this location is consistent with the plan's policy that parking structures be located along the Metrolink tracks. Use of the second proposed location for an LRT parking facility, the park-and-ride lot east of College Avenue, would also not create adverse or significant land use impacts because such an action would be continuing an existing permitted use. The multi-family residential development adjacent to the proposed platform site to the south may require buffering from LRT noise and vibration (see Chapter 3-11 for detailed discussion of impacts related to noise and vibration).

Montclair

In Montclair, the Triple Track configuration would not result in adverse or significant land use impacts, because the alignment and proposed station location are already in transportation use. Adding an LRT station to the Montclair TransCenter would be consistent with goals outlined in the North Montclair Specific Plan to develop transit-related uses within and adjacent to the TransCenter. Residences on South Huntington Drive, adjacent to the northern alignment alternative (the abandoned UP right-of-way), may require buffering from LRT noise and vibration (see Chapter 3-11 for detailed discussion of impacts related to noise and vibration).

³⁴ The City of Pomona was awarded a grant by LACMTA for this program but did not implement the program because of a lack of matching funds from the city (Correspondence from C. Neal, Planning Manager to L. Myers, City Manager, October 21, 2003).

Upland

In Upland, no significant land use impacts are expected because the proposed alignment generally traverses industrial land uses. Residences on North Huntington Drive adjacent to the presently abandoned UP right-of-way may require buffering from LRT noise and vibration (see Chapter 3-11 for detailed discussion of impacts related to noise and vibration).

Summary of Triple Track Impacts for Full Build LRT Alternative

There would be no long-term land use impacts to Phase II, Segment 1 or 2 cities under the Triple Track Full Build LRT Alternative.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

There would be no long-term land use impacts in Phase I or Phase II, Segment 1 cities under the Triple Track Full Build LRT Alternative.

d. LRT, Double Track Configurations

The LRT Double Track configurations is described above in Section 3-10.2.3.d of this chapter. Potential land use impacts under the Double Track configurations are not expected to differ from those expected under the Triple Track configuration (see 3-10.2.4.c, above) because both alternatives propose the same facilities. One difference that may result in potential land use impacts is that freight service along the corridor may cease under the Double Track configurations. The loss of freight service may change the land uses at sites dependent on the service. Currently, the City of Monrovia possesses the westernmost freight customer on the alignment, who receives input by freight and ships product by truck. With the loss of freight service, the customer may continue at that location, using 100 percent truck shipping; or, the customer may relocate – thus enabling a change in land use. Loss of industrial land use at this site would not be considered a significant impact, however, because future development in the underlying land use zone (Planned Development 12a) is encouraged to transition to (a) regional/subregional commercial, (b) office/research & development, (c) support uses, or (d) master-planned mixed-use developments.³⁵

Phase I – The Cities Affected and the Effects

Phase I cities include Los Angeles, South Pasadena, and Pasadena. The Double Track LRT Alternative would not create significant land use impacts in Phase I Cities, because no new facilities will be constructed in the Phase I study area. The extension of LRT services is expected to increase ridership at stations in Phase I cities. However, daily boardings at existing Phase I stations would not significantly increase such that land uses surrounding stations would change (see **Table 3-15.26**).

³⁵ City of Monrovia, *General Plan Land Use Element*, July 20, 1993, 51.

Phase II, Segment 1 – The Cities Affected and the Effects

Phase II, Segment 1 cities include Pasadena, Arcadia, Monrovia, Duarte and Irwindale. No significant or adverse impacts to land use are expected under the Double Track LRT Alternative because the proposed project and station sites are consistent with the land use objectives of Segment 1 cities. Refer to the discussion of long-term impacts under the LRT Triple Track configuration (Section 3-10.2.4.c, above).

Currently, the City of Monrovia possesses the westernmost freight customer on the alignment, located west of the proposed LRT station and east of Magnolia Avenue. This customer currently receives input grain by freight and ships product out by truck. With the loss of freight service, the customer may continue at that location, using 100 percent truck shipping; or, the customer may relocate – thus enabling a change in land use. Loss of industrial land use at this site would not be considered a significant impact, however, because future development in the underlying land use zone (Planned Development 12a) is encouraged to transition to (a) regional/subregional commercial, (b) office/research & development, (c) support uses, or (d) master-planned mixed-use developments.

Phase II, Segment 2 – The Cities Affected and the Effects

Phase II, Segment 2 cities include Azusa, Glendora, San Dimas, La Verne, Pomona, Montclair, and Upland. No significant or adverse impacts to land use are expected under the Double Track LRT Alternative because the proposed project and station sites are consistent with the land use objectives of Segment 2 cities. Refer to the discussion of long-term impacts under the LRT Triple Track configuration (Section 3-10.2.4.c, above).

Summary of Double Track Impacts for Full Build LRT Alternative

There would be no land use impacts to Phase II, Segment 1 or 2 cities under the Double Track Full Build LRT Alternative.

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

There would be no land use impacts in Phase I or Phase II, Segment 1 cities under the Double Track Full Build LRT Alternative.

3-10.2.5 Cumulative Impacts

Cumulative land use impacts would consist of changes in development patterns related to the No Build, TSM, Full Build, and Build LRT to Maintenance Facility alternatives. The LRT Build Alternatives may induce the redevelopment of under-utilized parcels or result in transit-oriented development in the vicinity of LRT stations. Conversely, cumulative impacts of the No Build and TSM alternatives may entail continued reliance on automobile-oriented development and the inability to achieve redevelopment goals. These impacts would be less than significant however, because existing local plans and zoning already guide development in station areas.

3-10.2.6 Impacts Addressed by Regulatory Compliance

a. Construction Period Impacts

There would be no construction-period land use impacts for any of the proposed project alternatives.

b. Long Term Impacts

No long term impacts were identified which would need to be addressed by compliance with local, state and federal regulations.

3-10.3 Potential Mitigation

3-10.3.1 Construction Period Mitigation Measures

There would be no construction-period land use impacts for any of the proposed project alternatives.

a. No Build Alternative

The No Build Alternative does not require construction-period mitigation measures because there are no impacts.

b. Transportation Systems Management (TSM) Alternative Construction Period Mitigation

The TSM Alternative does not require construction-period mitigation measures because there are no impacts.

Phase I – The Cities Affected and Proposed Measures

There would be no land use impacts in Phase I cities under the TSM Alternative, thus no mitigation is necessary.

Phase II, Segment 1 – The Cities Affected and Proposed Measures

There would be no land use impacts in Phase II, Segment 1 cities under the TSM Alternative, thus no mitigation is necessary.

Phase II, Segment 2 – The Cities Affected and Proposed Measures

There would be no land use impacts in Phase II, Segment 2 cities under the TSM Alternative, thus no mitigation is necessary.

c. LRT, Triple Track Configuration Construction Period Mitigation

Phase I – The Cities Affected and Proposed Measures

There would be no construction-period land use impacts to Phase I cities under the Triple Track LRT Alternative, thus no mitigation is necessary.

Phase II, Segment 1 – The Cities Affected and Proposed Measures

There would be no construction-period land use impacts to Phase II, Segment 1 cities under the Triple Track LRT Alternative, thus no mitigation is necessary.

Phase II, Segment 2 – The Cities Affected and Proposed Measures

There would be no construction-period land use impacts to Phase II, Segment 2 cities under the Triple Track LRT Alternative, thus no mitigation is necessary.

Summary of Construction Period Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

No construction-period mitigation measures are proposed for Phase I and Phase II, Segments 1 and 2.

Summary of Construction Period Mitigation Measures for Build LRT Alternative to Maintenance Facility, Triple Track Configuration

No construction-period mitigation measures are proposed for Phase I and Phase II, Segment 1 cities.

d. LRT, Double Track Configurations Construction Period Mitigation

Phase I – The Cities Affected and Proposed Measures

There would be no construction-period land use impacts to Phase I cities under the Double Track LRT Alternative, thus no mitigation is necessary.

Phase II, Segment 1 – The Cities Affected and Proposed Measures

There would be no construction-period land use impacts to Phase II, Segment 1 cities under the Double Track LRT Alternative, thus no mitigation is necessary.

Phase II, Segment 2 – The Cities Affected and Proposed Measures

There would be no construction-period land use impacts to Phase II, Segment 2 cities under the Double Track LRT Alternative, thus no mitigation is necessary.

Summary of Construction Period Mitigation Measures for Full Build LRT Alternative, Double Track Configurations

No construction-period mitigation measures are proposed for Phase I and Phase II, Segments 1 and 2.

Summary of Construction Period Mitigation Measures for Build LRT Alternative to Maintenance Facility, Double Track Configurations

No construction-period mitigation measures are proposed for Phase I and Phase II, Segment 1 cities.

3-10.3.2 Long Term Mitigation

The following sections identify whether potential mitigation measures that would need to be implemented in order to address any remainder impacts (i.e., impacts that would still exist after regulatory compliance). The combination of regulatory compliance and these mitigation measures would result in the reduction of long term impacts to levels that would be not adverse under NEPA and less than significant under CEQA.

a. No Build Alternative

The No Build Alternative does not require long-term mitigation measures because there are no long-term impacts.

b. Transportation Systems Management (TSM) Alternative

There would be no long-term land use impacts to Phase I or Phase II cities under the TSM Alternative, thus no mitigation is necessary.

c. LRT, Triple Track Configuration

There would be no long-term land use impacts to Phase I or Phase II cities under the LRT Triple Track configuration, thus no mitigation is necessary.

Summary of Long Term Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

There would be no long-term land use impacts to Phase I and Phase II, Segment 1 and 2 cities under the Triple Track LRT Alternative, thus no mitigation measures are proposed.

Summary of Long Term Mitigation Measures for Build LRT Alternative to Maintenance Facility, Triple Track Configuration

There would be no long-term land use impacts to Phase I and Phase II, Segment 1 cities under the Triple Track LRT Alternative, thus no mitigation measures are proposed.

d. LRT, Double Track Configurations

There would be no long-term land use impacts to Phase I or Phase II cities under the LRT Double Track configurations, thus no mitigation is necessary.

Summary of Long Term Mitigation Measures for Full Build LRT Alternative, Double Track Configurations

No long-term mitigation measures are required for Phase II cities in Segments 1 and 2 because there would be no long-term land use impacts under the Double Track LRT Alternative.

Summary of Long Term Mitigation Measures for Build LRT Alternative to Maintenance Facility, Double Track Configurations

There would be no long-term land use impacts to Phase I and Phase II, Segment 1 cities under the Double Track LRT Alternative, thus no mitigation measures are proposed.

3-10.4 Impact Results with Mitigation

Compliance with proposed mitigation measures would minimize identified impacts to less than adverse/less than significant levels.

3-10.4.1 Construction Period

No construction period land use impacts are anticipated. Therefore, no mitigation measures are proposed.

a. No Build Alternative

Construction impacts for the No Build Alternative would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

b. TSM Alternative

Construction impacts for the TSM Alternative would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

c. LRT, Triple Track Configuration

Construction impacts for the LRT Triple Track configuration would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Construction Period Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

Construction impacts for the LRT Triple Track configuration would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Construction Period Mitigation Measures for Build LRT Alternative to Maintenance Facility, Triple Track Configurations

Construction impacts for the LRT Triple Track configuration would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

d. LRT, Double Track Configurations

Construction impacts for the LRT Double Track configurations would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Construction Period Mitigation Measures for Full Build LRT Alternative, Double Track Configurations

Construction impacts for the LRT Double Track configurations would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Construction Period Mitigation Measures for Build LRT Alternative to Maintenance Facility, Double Track Configurations

Construction impacts for the LRT Double Track configurations would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

3-10.4.2 Long Term

Long-term impacts would be eliminated or reduced to less than adverse/less than significant levels by complying with the measures to mitigate impacts identified in Sections 3-10.3.2.c and 3-10.3.2.d. As a result, long-term impacts would be not adverse under NEPA and not significant under CEQA.

a. No Build Alternative

Long-term impacts for the No Build Alternative would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

b. TSM Alternative

Long-term impacts for the TSM Alternative would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

c. LRT, Triple Track Configuration

Long-term impacts for the LRT Triple Track Configuration would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Long Term Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

Long-term impacts for the LRT Triple Track configuration would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Long Term Period Mitigation Measures for Build LRT Alternative to Maintenance Facility, Triple Track Configuration

Long-term impacts for the LRT Triple Track configuration would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

d. LRT, Double Track Configurations

Long-term impacts for the LRT Double Track configurations would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Long Term Mitigation Measures for Full Build LRT Alternative, Double Track Configurations

Long-term impacts for the LRT Double Track configurations would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

Summary of Results of Long Term Mitigation Measures for Build LRT Alternative to Maintenance Facility, Double Track Configurations

For Phase I and Phase II, Segment 1 cities, long-term impacts for the LRT Double Track configurations would not change from the level of impact initially identified since no mitigation measures would be required or implemented.

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3-11 NOISE AND VIBRATION

Summary of Impacts

No noise and vibration impacts have been identified for the No Build or TSM Alternatives.

For the LRT alternatives, it is estimated that residential land uses within 125 feet of the alignment would have the potential for temporary construction noise impacts. Mitigation measures, including limited work to the period 7 am to 6 pm, would help reduce impacts.

For the Full Build LRT alternative, Triple Track configuration, a total of 1,266 residences over the 24 mile length (Segments 1 and 2) would be exposed to noise impacts. Mitigation measures, including soundwalls and sound insulation of some residences, is expected to reduce impacts to below impact thresholds. Potential vibration impacts were identified for 1,575 residences; mitigation measures are expected to reduce impacts to below impact thresholds.

For the Build Alternative to Maintenance Facility, Triple Track configuration, a total of 309 residences over the 9 mile length (Segment 1 only) would be exposed to noise impacts. Mitigation measures, including soundwalls and sound insulation of some residences, is expected to reduce impacts to below impact thresholds. Potential vibration impacts were identified for 575 residences; mitigation measures are expected to reduce impacts to below impact thresholds.

For the Full Build LRT alternative, Double Track configuration, a total of 1,202 residences over the 24 mile length (Segments 1 and 2) would be exposed to noise impacts. Mitigation measures, including soundwalls and sound insulation of some residences, is expected to reduce impacts to below impact thresholds. Potential vibration impacts were identified for 1,575 residences; mitigation measures are expected to reduce impacts to below impact thresholds.

For the Build Alternative to Maintenance Facility, Double Track configuration, a total of 309 residences over the 9 mile length (Segment 1 only) would be exposed to noise impacts. Mitigation measures, including soundwalls and sound insulation of some residences, is expected to reduce impacts to below impact thresholds. Potential vibration impacts were identified for 575 residences; mitigation measures are expected to reduce impacts to below impact thresholds.

During Preliminary Engineering, more detailed studies would be conducted to account for the final location of tracks and would include an evaluation of whether existing property walls along some parts of the rail alignment are sufficient to mitigate noise, or whether they would need to be replaced. Final mitigation would be described in the FEIS/FEIR.

3-11.1 Existing Conditions

a. Noise Basics

Noise is typically defined as unwanted or undesirable sound, where sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human subjective response are (1) intensity or level, (2) frequency content and (3) variation with time. The first parameter is determined by how greatly the sound pressure fluctuates

above and below the atmospheric pressure, and is expressed on a compressed scale in units of decibels. By using this scale, the range of normally encountered sound can be expressed by values between 0 and 120 decibels. On a relative basis, a 3-decibel change in sound level generally represents a barely-noticeable change outside the laboratory, whereas a 10-decibel change in sound level would typically be perceived as a doubling (or halving) in the loudness of a sound.

The frequency content of noise is related to the tone or pitch of the sound, and is expressed based on the rate of the air pressure fluctuation in terms of cycles per second (called Hertz and abbreviated as Hz). The human ear can detect a wide range of frequencies from about 20 Hz to 17,000 Hz. However, because the sensitivity of human hearing varies with frequency, the A-weighting system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with human subjective response. Sound levels measured using this weighting system are called "A-weighted" sound levels, and are expressed in decibel notation as "dBA." The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental noise.

Because environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number, called the "equivalent" sound level (Leq). Leq can be thought of as the steady sound level that represents the same sound energy as the varying sound levels over a specified time period (typically 1 hour or 24 hours). Often the Leq values over a 24-hour period are used to calculate cumulative noise exposure in terms of the Day-Night Sound Level (Ldn). Ldn is the A-weighted Leq for a 24-hour period with an added 10-decibel penalty imposed on noise that occurs during the nighttime hours (between 10 P.M. and 7 A.M.). Many surveys have shown that Ldn is well correlated with human annoyance, and therefore this descriptor is widely used for environmental noise impact assessment. **Figure 3-11.1** provides examples of typical noise environments and criteria in terms of Ldn. While the extremes of Ldn are shown to range from 35 dBA in a wilderness environment to 85 dBA in noisy urban environments, Ldn is generally found to range between 55 dBA and 75 dBA in most communities. This range was found to be true for the Phase II corridor, based upon actual noise measurements where Ldns ranged from 55 dBA to 65 dBA. As shown in Figure 3-11.1, this spans the range between an "ideal" residential environment and the threshold for an unacceptable residential environment according to U.S. Federal agency criteria.

b. Existing Noise Conditions

Noise-sensitive land uses along the project corridor and near the proposed maintenance facility were first identified based on preliminary alignment drawings, aerial photographs, and visual surveys. Areas adjacent to the proposed Gold Line Phase II alignment include single-family residences along with some non-residential (commercial) and institutional land uses. Adjacent uses are currently exposed to noise from traffic (I-210 and other local streets), freight trains, and Metrolink commuter trains.

Existing ambient noise levels along the corridor were characterized through direct measurements at 26 sites along the proposed alignment made during the period from October 6 through October 10, 2003. Estimating existing noise exposure is an important step in the noise impact assessment since, as indicated below, the thresholds for noise impact are based on the existing levels of noise exposure. The measurements included both long-term (typically 24-hour) and short-term (1-hour) monitoring of the A-weighted sound level at representative noise-sensitive locations.

All of the measurement sites were located in noise-sensitive areas, and were selected to represent a range of existing noise conditions along the corridor. **Figures 3-11.2 through 3-11.4** show the general location of the 18 long-term monitoring sites along the Gold Line Phase II Extension Project (LT-1 through LT-18)

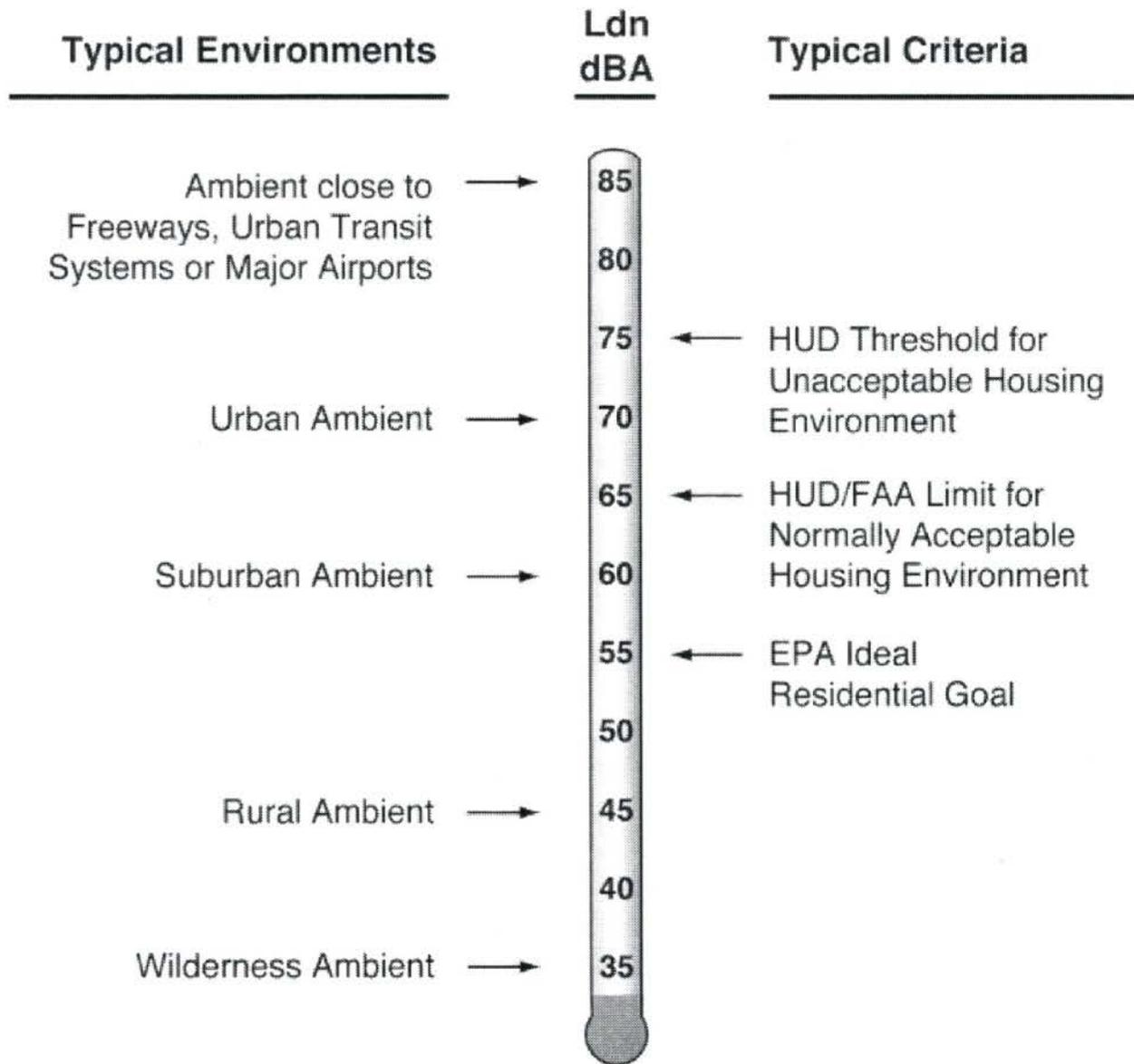


Figure 3-11.1: Examples of Typical Outdoor Noise Exposure

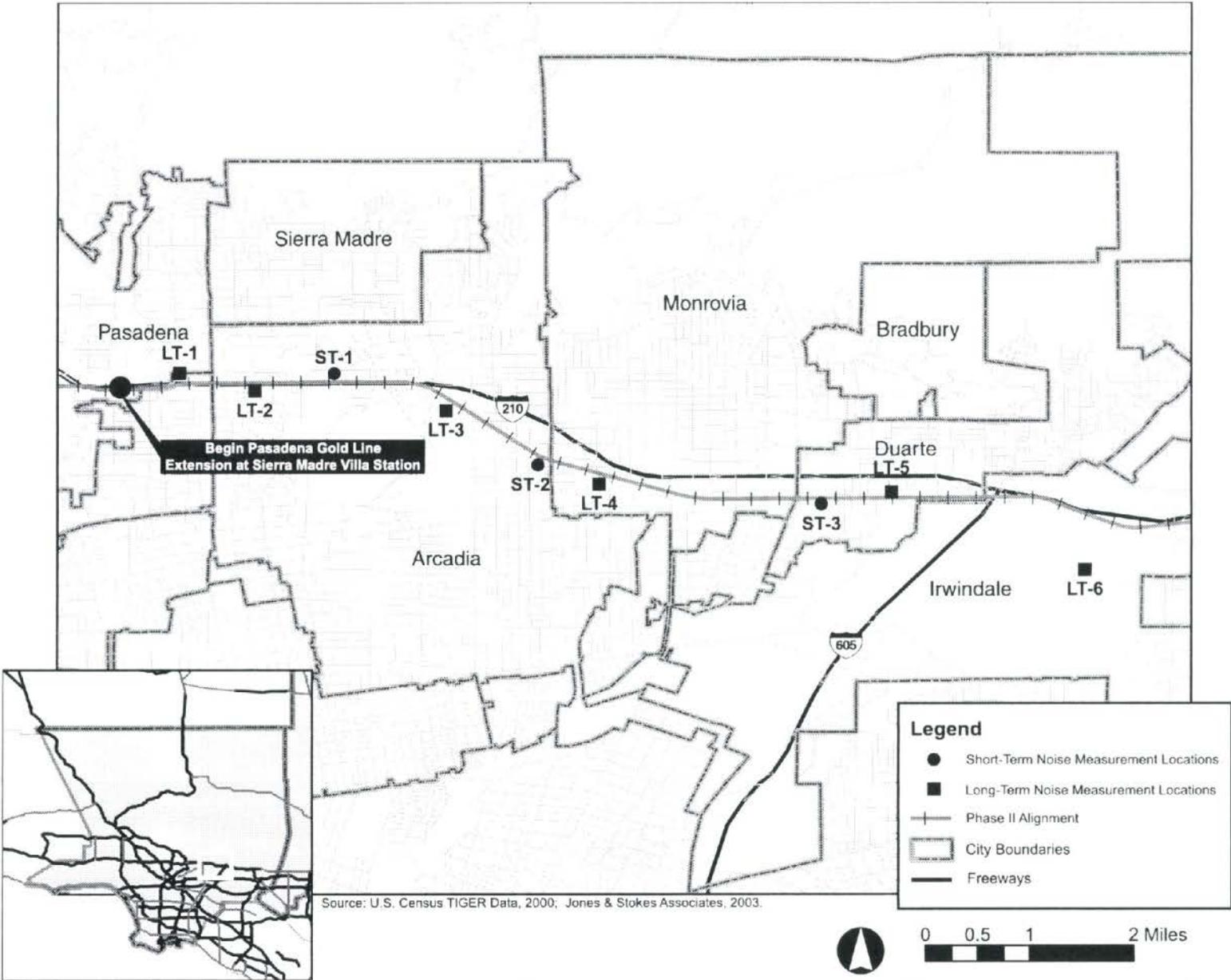


Figure 3-11.2: Ambient Noise Monitoring Locations Segment 1

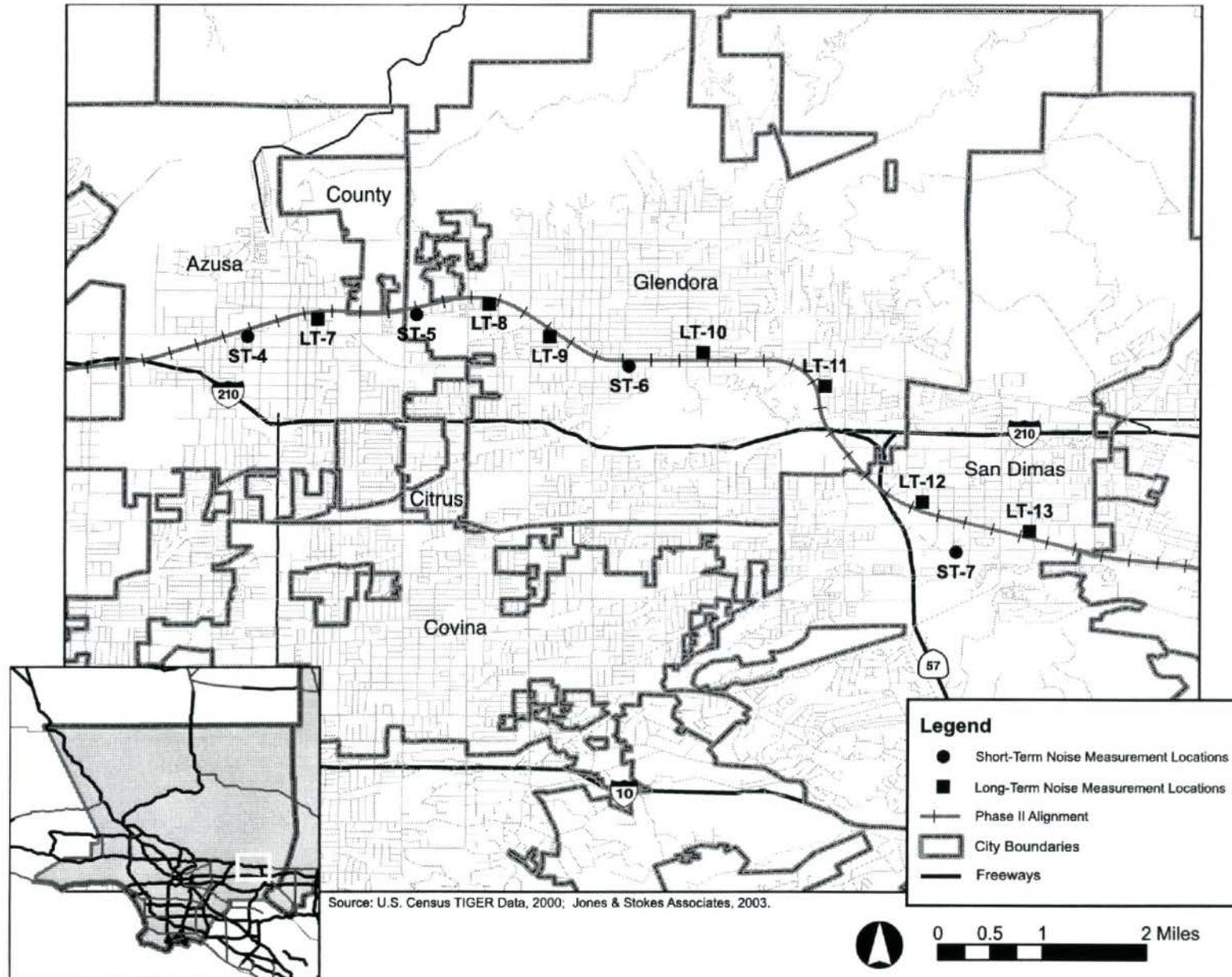


Figure 3-11.3: Ambient Noise Monitoring Locations Segment 2a

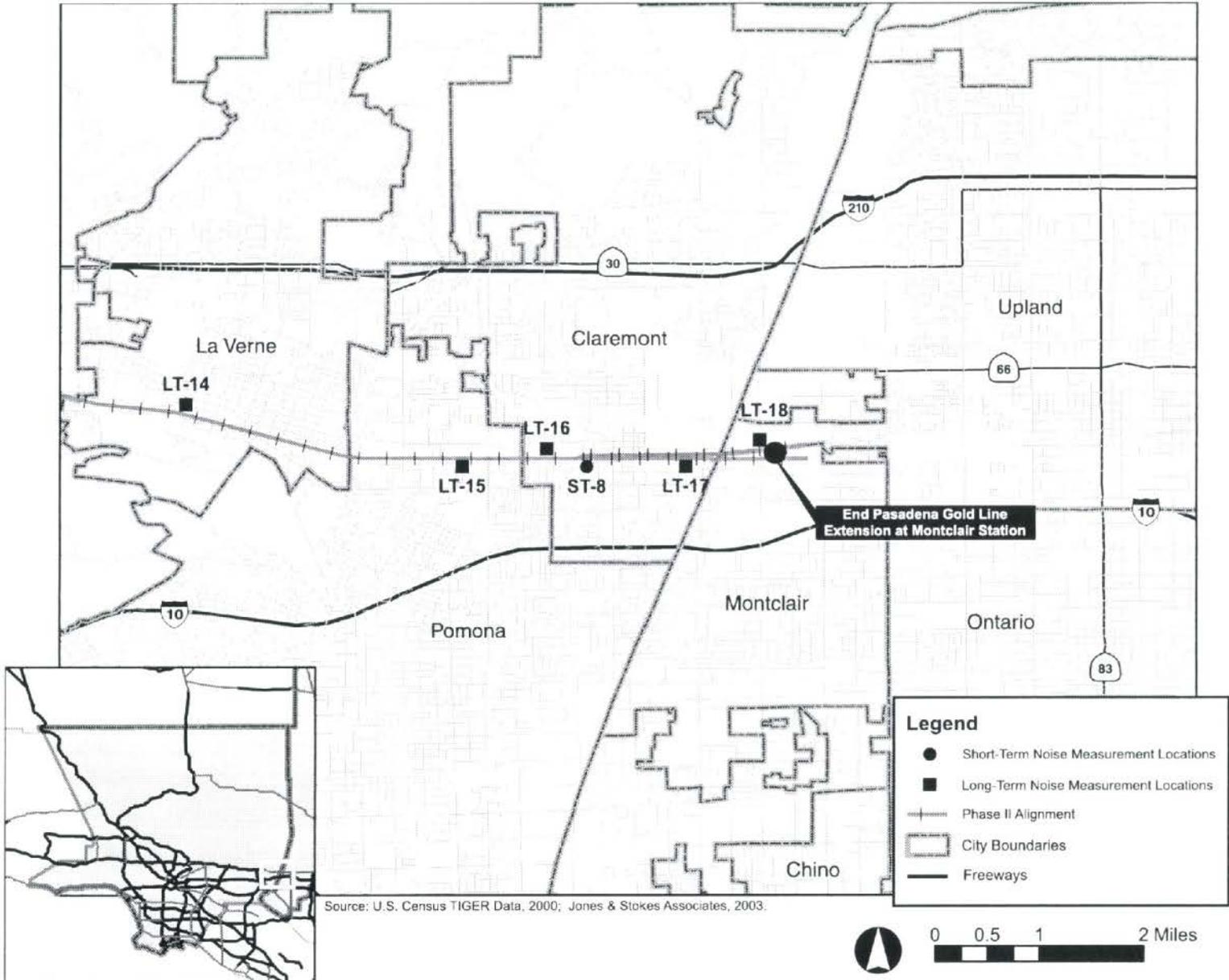


Figure 3-11.4: Ambient Noise Monitoring Locations Segment 2b

**TABLE 3-11.1
SUMMARY OF EXISTING AMBIENT NOISE MEASUREMENTS**

| Site No. | Measurement Location Description | City | Start of Measurement | | Meas. Time (hrs) | Noise Exposure (dBA) | |
|----------|--|------------------|----------------------|-------|------------------|----------------------|-----|
| | | | Date | Time | | Ldn | Leq |
| LT-1 | 3740 Arbeleda Street | Pasadena | 10/6/03 | 10:00 | 24 | 64 | -- |
| LT-2 | 1025 Catalpa Road | Arcadia | 10/6/03 | 10:00 | 24 | 65 | -- |
| LT-3 | 107 Santa Ynez Drive | Arcadia | 10/6/03 | 12:00 | 24 | 60 | -- |
| LT-4 | 1525 Alamitas Avenue | Monrovia | 10/6/03 | 12:00 | 24 | 60 | -- |
| LT-5 | 1480 Three Ranch Road | Duarte | 10/6/03 | 13:00 | 24 | 57 | -- |
| LT-6 | Proposed Maintenance Facility | Irwindale | 10/6/03 | 14:00 | 24 | 59 | -- |
| LT-7 | Azusa Senior Center | Azusa | 10/7/03 | 11:00 | 24 | 65 | -- |
| LT-8 | 167 Lowell Avenue | Glendora | 10/7/03 | 11:00 | 24 | 55 | -- |
| LT-9 | Presbyterian Hospital | Glendora | 10/7/03 | 15:00 | 24 | 58 | -- |
| LT-10 | 948 Lemon Avenue | Glendora | 10/7/03 | 13:00 | 24 | 55 | -- |
| LT-11 | 655 Remuda Drive | Glendora | 10/7/03 | 13:00 | 24 | 60 | -- |
| LT-12 | The Lakes at Raintree Village Apartments | San Dimas | 10/7/03 | 15:00 | 24 | 60 | -- |
| LT-13 | Sunnyside Senior Apartments | San Dimas | 10/8/03 | 12:00 | 24 | 65 | -- |
| LT-14 | 1638 1 st Street | La Verne | 10/8/03 | 14:00 | 24 | 65 | -- |
| LT-15 | 2655 Deodar Road | Pomona | 10/8/03 | 13:00 | 24 | 62 | -- |
| LT-16 | Mountain Village Senior Apartments | Claremont | 10/8/03 | 14:00 | 24 | 62 | -- |
| LT-17 | 417 Elder Drive | Claremont | 10/9/03 | 14:00 | 24 | 65 | -- |
| LT-18 | Montclair Park-n-Ride Facility | Upland/Montclair | 10/9/03 | 14:00 | 24 | 63 | -- |
| ST-1 | Latter Day Saints Church | Arcadia | 10/9/03 | 6:16 | 1 | -- | 73 |
| ST-2 | Bonita Park/ Serendipity School | Arcadia | 10/9/03 | 7:43 | 1 | -- | 53 |
| ST-3 | Aloysia Moore Park | Duarte | 10/10/03 | 7:54 | 1 | -- | 61 |
| ST-4 | St. Augustine Medical Center | Azusa | 10/10/03 | 8:01 | 1 | -- | 66 |
| ST-5 | Calvary Lutheran Church | Glendora | 10/9/03 | 16:43 | 1 | -- | 51 |
| ST-6 | Foothill Christian Preschool | Glendora | 10/9/03 | 15:32 | 1 | -- | 52 |
| ST-7 | Pioneer Park | San Dimas | 10/9/03 | 16:23 | 1 | -- | 56 |
| ST-8 | Keck Graduate Institute | Claremont | 10/9/03 | 15:03 | 1 | -- | 58 |

LT – Long-term noise measurement (24 hours) at residential locations, Ldn
 ST – Short-term noise measurement (1hour) at institutional locations, Leq
 Source: Harris, Miller, Miller & Hanson, 2003

and eight short-term monitoring sites (ST-1 through ST-8). Measurements were conducted within each city along the proposed alignment, except for Montclair. Data for Montclair was derived from nearby measurements in Claremont and Upland. As seen in Figures 3-11.2 through 3-11.4, the measurement sites were spaced approximately 1 mile apart.

At each site, the measurement microphone was positioned to characterize the exposure of the site to the dominant noise sources in the area. For example, microphones were located at the approximate setback lines of the receptors from adjacent roads or rail lines, and were positioned to avoid acoustic shielding by landscaping, fences or other obstructions. The results of the existing ambient noise measurements are summarized below in Table 3-11.1 and the measurement sites are described below. Detailed noise data are included in the Noise and Vibration Technical Report in the Appendices. Site LT-1 was located north of the proposed alignment, at 3740 Arbeleda Street, in Pasadena. The microphone was located in the backyard of the single-family residence. Traffic on I-210 was the dominant source of noise at this site. The measured Ldn at this site was 64 dBA.

Site LT-2 was located south of the proposed alignment, at 1025 Catalpa Road, in Arcadia. The microphone was located in the backyard of the single-family residence. Dominant sources of noise at this site included traffic on I-210 and Colorado Boulevard. The measured Ldn at this site was 65 dBA.

Site LT-3 was located south of the proposed alignment, at 107 Santa Ynez Drive, in Arcadia. The microphone was located in the backyard of the single-family residence. Traffic on I-210, local traffic on Colorado Boulevard, and aircraft activity all contributed to the noise environment at this location. The measured Ldn at this site was 60 dBA.

Site LT-4 was located south of the proposed alignment at 1525 Alamitas Avenue, in Monrovia. The microphone was placed in the backyard of a single-family residence. Traffic on I-210 and other local roads contributed to the noise environment. The measured Ldn at this site was 60 dBA.

Site LT-5 was located north of the proposed alignment at 1480 Three Ranch Road, Duarte. The microphone was located in the backyard of the single-family residence. Noise sources at this site included distant traffic on I-210 and local traffic on Duarte Avenue. The measured Ldn at this site was 57 dBA.

Site LT-6 was located south of the proposed alignment at the Miller Brewing Company Facility, in Irwindale. The microphone was located near the proposed maintenance facility site. Activities at the brewing facility and aircraft contributed to the noise environment. The measured Ldn at this site was 59 dBA.

Site LT-7 was located south of the proposed alignment at the Azusa Senior Center, in Azusa. The microphone was located at the edge of the parking lot, next to the rail corridor. Local traffic, aircraft, and activities at the Senior Center contributed to the noise environment. The measured Ldn at this site was 65 dBA.

Site LT-8 was located south of the proposed alignment at 167 Lowell Avenue, in Glendora. The microphone was located in the backyard of the single-family residence. Aircraft, local activities, and local street traffic contributed to the noise environment. The measured Ldn at this site was 55 dBA.

Site LT-9 was located south of the proposed alignment at the Presbyterian Hospital, in Glendora. The microphone was placed next to the Medical Arts Building. Local traffic, aircraft, and hospital activities contributed to the noise environment at this site. The measured Ldn at this site was 58 dBA.

Site LT-10 was located south of the proposed alignment at 948 Lemon Avenue, in Glendora. The microphone was located in the backyard of a single-family residence. Traffic on local streets and aircraft contributed to the noise environment at this site. The measured Ldn at this site was 55 dBA.

Site LT-11 was located south of the proposed alignment at 655 Remuda Drive, in Glendora. The microphone was located in the yard of the residence. Local traffic, aircraft and distant highway noise contributed to the noise environment at this site. The measured Ldn at this site was 60 dBA.

Site LT-12 was located north of the proposed alignment at the Lakes at Raintree Village Apartments, in San Dimas. The microphone was located next to the parking lot of the apartment complex. Traffic on I-210 and other local traffic contributed to the noise environment. The measured Ldn at this site was 60 dBA.

Site LT-13 was located north of the proposed alignment at the Sunnyside Senior Apartments, in San Dimas. The microphone was located next to the parking lot of the apartment complex. Local traffic and distant highway noise contributed to the noise environment at this location. The measured Ldn at this site was 65 dBA.

Site LT-14 was located north of the proposed alignment at 1638 1st Street, in La Verne. The microphone was located in the yard of a single-family residence. Local traffic and Metrolink trains on the existing alignment were the dominant sources of noise at this location. The measured Ldn at this site was 65 dBA.

Site LT-15 was located south of the proposed alignment at 2655 Deodar Road, in Pomona. The microphone was located in the yard of a single-family residence. Metrolink trains, street traffic and other local noise sources contributed to the noise environment at this location. The measured Ldn at this site was 62 dBA.

Site LT-16 was located north of the proposed alignment at the Mountain Village Senior Apartments, in Claremont. The microphone was located next to the parking lot of the apartment complex. Metrolink trains and grade crossing noise (horns) were the dominant sources of noise at this location. The measured Ldn at this site was 62 dBA.

Site LT-17 was located south of the proposed alignment at 417 Elder Drive, in Claremont. The microphone was located in the yard of a single-family residence. Metrolink trains and grade crossing noise (horns) were the dominant sources of noise at this location. The measured Ldn at this site was 65 dBA.

Site LT-18 was located north of the proposed alignment at the Montclair Park-n-Ride Facility, in Upland/Montclair. The microphone was located to the north of the Park-n-Ride facility near the location of the proposed residential development. Park-n-Ride traffic, local traffic and Metrolink trains were the dominant sources of noise at this location. The measured Ldn at this site was 63 dBA.

Site ST-1 was located north of the proposed alignment at the Latter Day Saints Church, in Arcadia. Traffic on I-210 dominated the noise environment at this site. The measured one-hour Leq at this site was 73 dBA.

Site ST-2 was located south of the proposed alignment at the Bonita Park/Serendipity School, in Arcadia. Local traffic contributed to the noise environment at this site. The one-hour Leq at this site was 53 dBA.

Site ST-3 was located south of the proposed alignment at the Aloysia Moore Park, in Duarte. Traffic on Duarte Avenue dominated the noise environment at this site. The one-hour Leq at this site was 61 dBA.

Site ST-4 was located south of the proposed alignment at the St. Augustine Medical Center, in Azusa. Traffic on Foothill Boulevard and Orange Avenue dominated the noise environment at this site. The one-hour Leq at this site was 66 dBA.

Site ST-5 was located south of the proposed alignment at the Calvary Lutheran Church, in Glendora. Traffic on Foothill Boulevard and other local noise sources contributed to the noise environment at this site. The one-hour Leq at this site was 51 dBA.

Site ST-6 was located south of the proposed alignment at the site of the future Foothill Christian Preschool, in Glendora. Traffic on local roads dominated the noise environment at this site. The one-hour Leq at this site was 52 dBA.

Site ST-7 was located south of the proposed alignment at the Pioneer Park, in San Dimas. Local traffic was the main contribution to the noise environment at this site. The one-hour Leq at this site was 56 dBA.

Site ST-8 was located south of the proposed alignment at the Keck Graduate Institute, in Claremont. Metrolink trains and freight trains were the dominant noise sources at this site. The one-hour Leq at this site was 58 dBA.

3-11.1.2 Vibration

a. Vibration Basics

Ground-borne vibration is the oscillatory motion of the ground about some equilibrium position that can be described in terms of displacement, velocity or acceleration. Because sensitivity to vibration typically corresponds to the amplitude of vibration velocity within the low-frequency range of most concern for environmental vibration (roughly 5-100 Hz), velocity is the preferred measure for evaluating ground-borne vibration from transit projects.

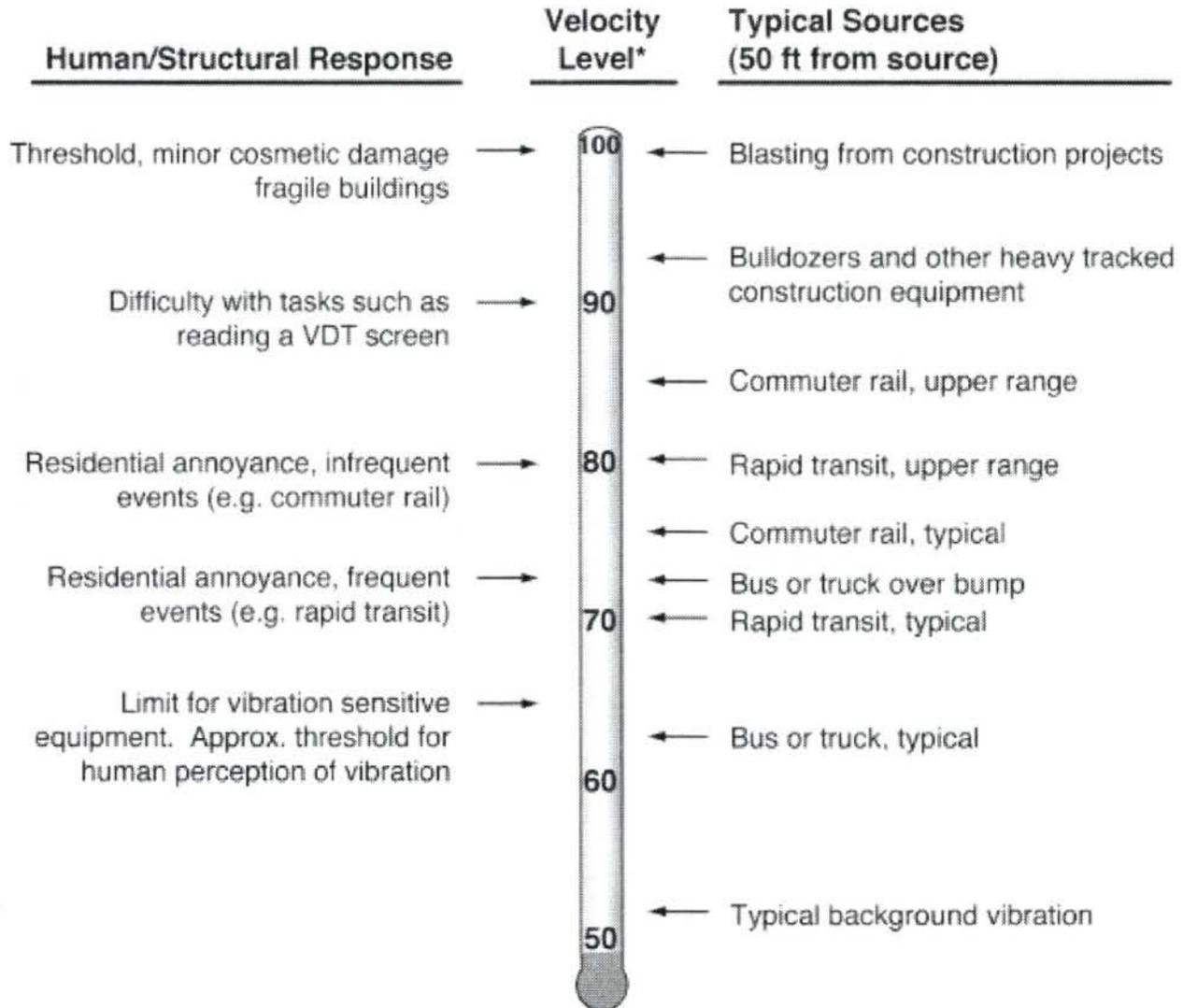
The most common measure used to quantify vibration amplitude is the peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibratory motion. PPV is typically used in monitoring blasting and other types of construction-generated vibration, since it is related to the stresses experienced by building components. Although PPV is appropriate for evaluating building damage, it is less suitable for evaluating human response, which is better related to the average vibration amplitude. Thus, ground-borne vibration from transit trains is usually characterized in terms of the “smoothed” root mean square (rms) vibration velocity level, in decibels (VdB), with a reference quantity of one micro-inch per second. VdB is used in place of dB to avoid confusing vibration decibels with sound decibels.

Figure 3-11.5 illustrates typical ground-borne vibration levels for common sources as well as criteria for human and structural response to ground-borne vibration. As shown, the range of interest is from approximately 50 to 100 VdB, from imperceptible background vibration to the threshold of damage. Although the approximate threshold of human perception to vibration is 65 VdB, annoyance is usually not significant unless the vibration exceeds 70 VdB.

b. Existing Vibration Conditions

The only significant sources of existing ground-borne vibration along the project corridor are the freight trains and Metrolink trains operating along portions of the corridor. In addition to measuring the vibration levels from the existing freight trains, the vibration measurements for this project focused on characterizing the vibration propagation characteristics of the soil at representative locations.

Eight vibration testing sites (V-1 through V-8), at the locations shown in **Figures 3-11.6 through 3-11.8**, were selected to represent a range of soil conditions in areas along the corridor that include a significant number of vibration-sensitive receptors. During the period from October 6 through October 10, 2003, ground-borne vibration propagation tests were conducted at each of these sites by impacting the ground and measuring the input force and corresponding ground vibration response at various distances. The resulting force-response transfer function can be combined with the known input force characteristics of the Pasadena Gold Line LRT vehicle (which were also measured as a part of this project, along the existing Phase I corridor) to predict future vibration levels at locations along the project corridor.



* RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second

Figure 3-11.5: Typical Ground-Borne Vibration Levels and Criteria

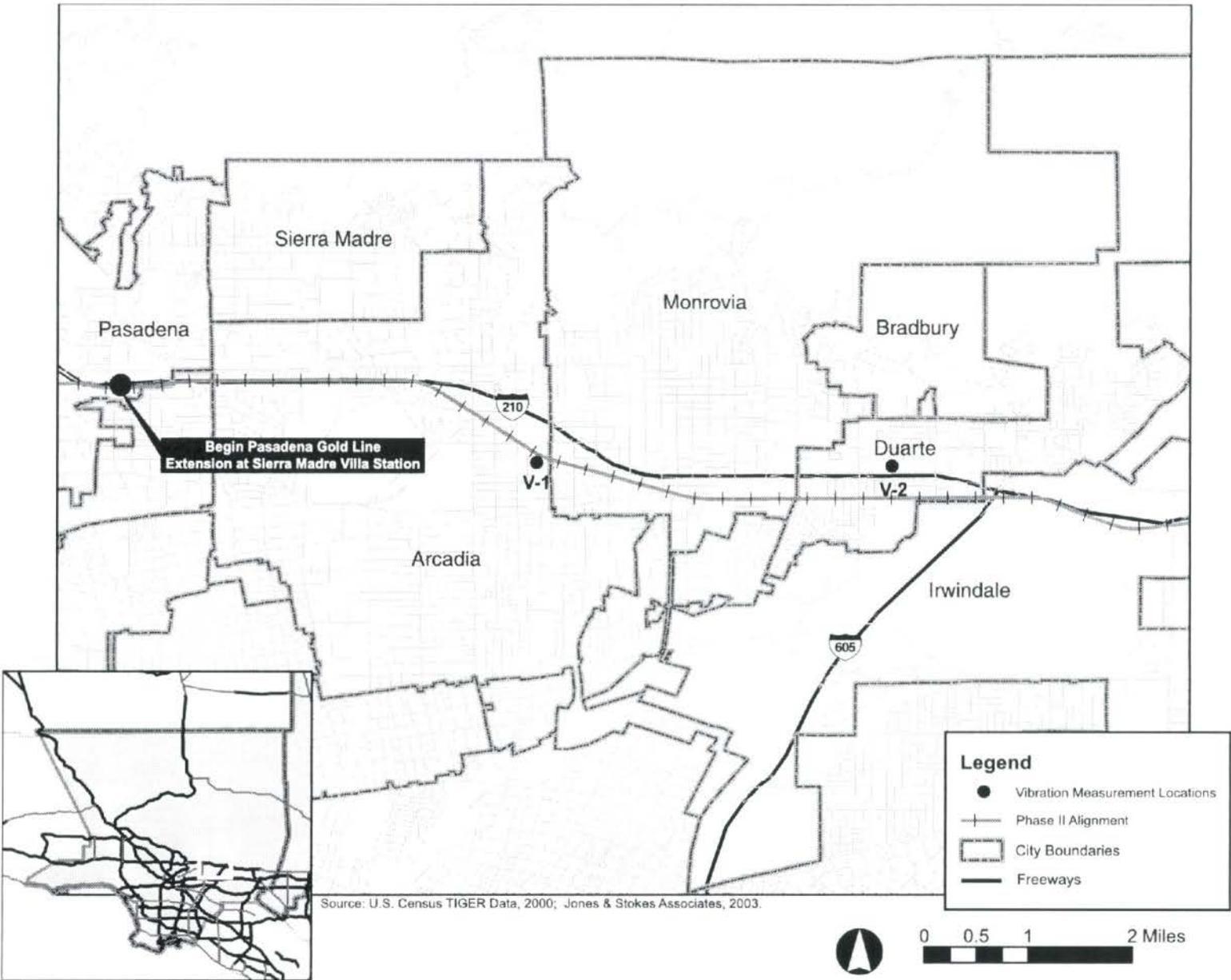


Figure 3-11.6: Ground-Borne Vibration Measurement Locations Segment 1

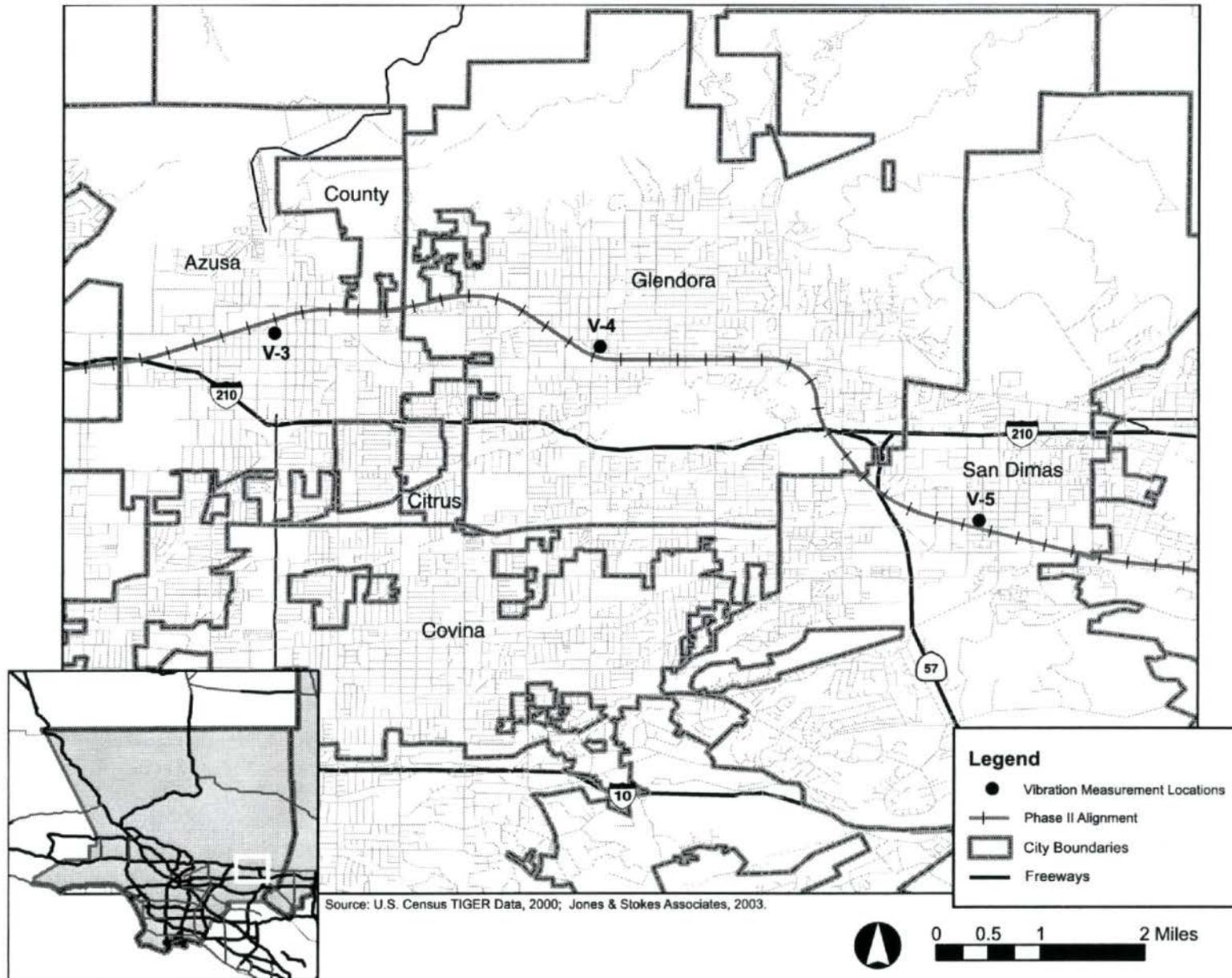


Figure 3-11.7: Ground-Borne Vibration Measurement Locations Segment 2a

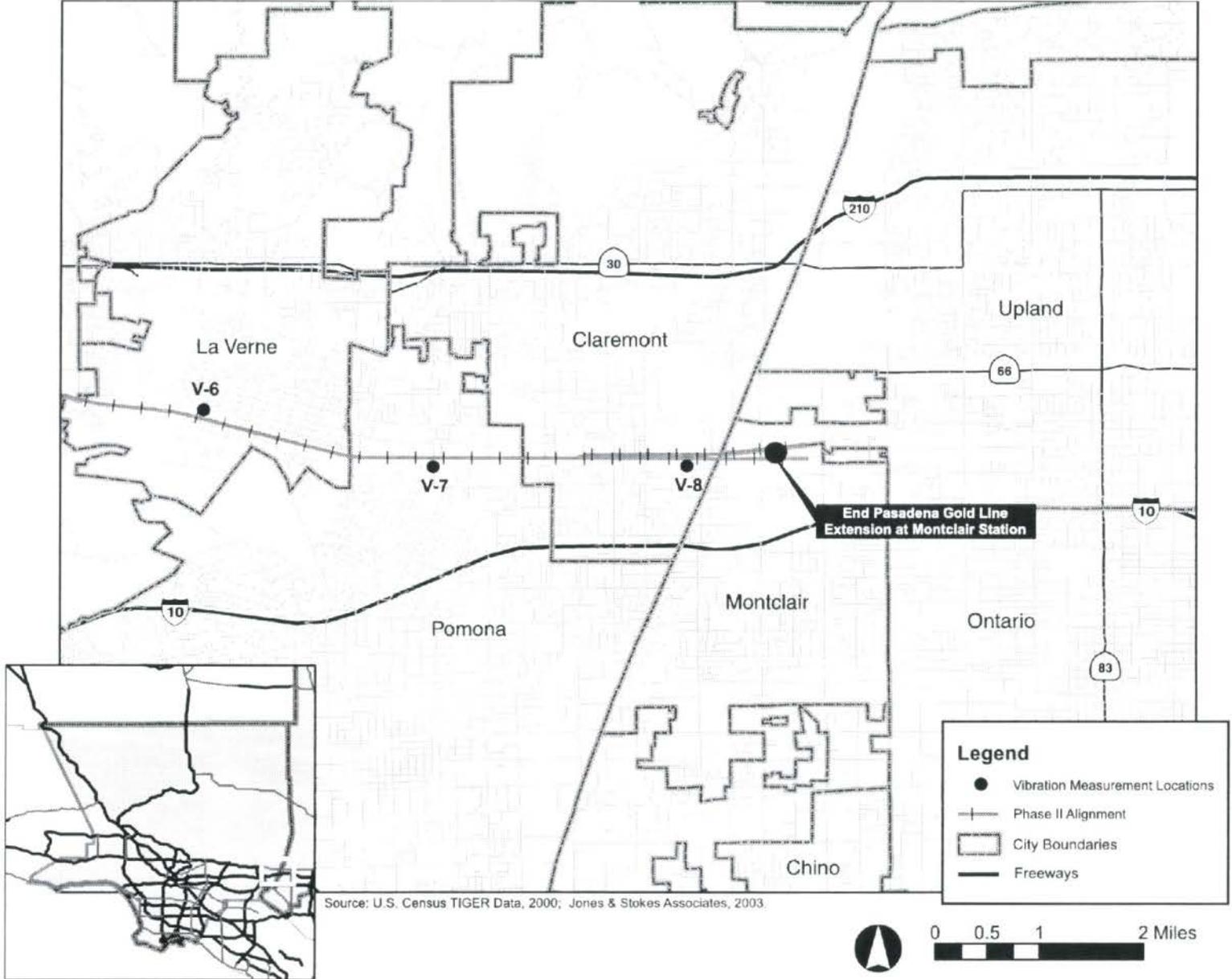


Figure 3-11.8: Ground-Borne Vibration Measurement Locations Segment 2b

The vibration propagation test sites are described below. Detailed results of the measurements are included in the Noise and Vibration Technical Report.

Site V-1 was located south of the proposed alignment at the Serendipity School, in Arcadia. This site is representative of the vibration-sensitive receptors in the western portion of the proposed alignment from the start of the Phase II project to the proposed Monrovia Station.

Site V-2 was located north of the proposed alignment at the corner of Three Ranch Road and Cinco Robles, in Duarte. This site is representative of vibration-sensitive receptors between the Monrovia Station and the maintenance facility in Irwindale.

Site V-3 was located south of the proposed alignment at the Azusa Senior Center, Azusa. This site is representative of vibration-sensitive receptors from the maintenance facility in Irwindale and North Grand Avenue in Glendora.

Site V-4 was located north of the proposed alignment at the Corner of Lemon Avenue and Minnesota Avenue, in Glendora. This site is representative of vibration-sensitive sites from North Grand Avenue in Glendora to the I-210 in Glendora.

Site V-5 was located south of the proposed alignment at the corner of Lone Vista Avenue and Railway Avenue, in San Dimas. This site is representative of vibration-sensitive sites between the I-210 in Glendora and San Dimas Canyon Road.

Site V-6 was located north of the proposed alignment at the corner of 1st Street and Park Avenue, in La Verne. This site is representative of vibration-sensitive sites between San Dimas Canyon Road and Fulton Road in La Verne.

Site V-7 was located south of the proposed alignment at the Palomares Park, in Pomona. This site is representative of vibration-sensitive sites between Fulton Road and Mountain Avenue in Claremont. In addition, vibration measurements of existing Metrolink trains were also performed at this location.

Site V-8 was located south of the proposed alignment at the corner of East Green Street and Dartmouth Road, in Montclair. This site is representative of vibration-sensitive sites from Mountain Avenue to the eastern end of the alignment. In addition, vibration measurements of existing Metrolink trains were also performed at this location.

3-11.2 Environmental Impacts

3-11.2.1 Evaluation Methodology

a. Noise Impact Assessment Methodology

The Gold Line Phase II Extension Project noise levels were projected based on noise measurements of the Pasadena Gold Line LRT vehicles, the operating plan provided by Manuel Padron & Associates and the prediction model specified in the FTA guidance manual. Significant factors are summarized below:

- Based on the vehicle noise measurements, the predictions assume that a two car 180-foot long vehicle operating at 30 mph on ballast and tie track with continuous welded rail (CWR) generates

a maximum noise level of 76 dBA at a distance of 50 feet from the track centerline. This reference noise level is used in the projections and is adjusted for the actual speed of the train and the distance to the noise-sensitive receptors at all locations. For higher speeds, the noise levels would be higher, and for lower speeds, the noise levels would be lower.

- The operating times of the Gold Line Phase II trains would likely be between 4:30 AM and 2:30 AM.¹ The operating plan for LRT service specifies peak-hour headways of 10 minutes, off-peak base period headways of 20 minutes and early morning/late night headways of 20 minutes. Two-car trains would operate most of the day, with three-car trains in peak periods.
- Peak hour operations would occur between 6:00 AM and 9:00 AM and between 3:00 PM and 6:00 PM. Early morning/late night operations will occur between 4:30 AM and 6:00 AM and 10:00 PM and 12:30 AM, and base service will occur during all other time periods. The average number of cars per train would be three cars during peak hours, two cars during base service, and two cars during evening service.
- Vehicle operating speeds are assumed to be at a maximum of 55 mph.
- The noise projections near grade crossings account for noise from train whistles and crossing bells. The projections are based on noise measurements made on the Pasadena Gold Line Phase I light rail system in 2003. The noise projections assume that the whistles generate a noise level of 76 dBA at 50 feet from the track for a five second period as trains approach each crossing. The bells are estimated to generate a noise level of 67 dBA at 50 feet for 15 seconds prior to each train. In addition, to account for the intrusive character of the whistles and bells, a 5dBA penalty was applied to noise levels from these sources in accordance with FTA procedures. It should be noted that these assumptions, in combination, produce a worst-case scenario for impacts and these reported results are subject to change during Preliminary Engineering. Changes to the analysis could occur as the result of modifications to the LRT operating assumptions or from on-going discussions with the California Public Utilities Commission about sounds levels required for warning devices, and the circumstances under which warning devices must be sounded.

b. Vibration Impact Assessment Methodology

The potential vibration impact from LRT operation was assessed on an absolute basis using the FTA criteria. The following factors were used in determining potential vibration impacts along the Pasadena Gold Line Phase II Extension Project:

- Vibration source levels were based on measurements made on the Pasadena Gold Line Phase I light rail vehicles operating on the existing light rail system.
- Vibration propagation tests were conducted at eight sites along the corridor near sensitive receptors. These tests measured the response of the ground to an input force. The results of these tests were combined with the vibration source level measurements to provide projections of vibration levels from vehicles operating on the Pasadena Gold Line Phase II Extension Project.
- Vehicle operating speeds are based on speed profiles provided by Parsons Brinckerhoff. The speed limit is 55 mph along the corridor.

¹ The last departures from downtown would typically be at 12:30 a.m.; some trains would be moving up until about 2:30 a.m. to reach the Maintenance and Operating Facility.

3-11.2.2 Impact Criteria

a. NEPA Impact Criteria

Transit Noise Criteria

Noise impact for this project is based on the criteria defined in the U. S. Federal Transit Administration (FTA) guidance manual *Transit Noise and Vibration Impact Assessment* (FTA Report DOT-T-95-16, April 1995). The FTA noise impact criteria are founded on well-documented research on community reaction to noise and are based on change in noise exposure using a sliding scale. Although higher transit noise levels are allowed in neighborhoods with high levels of existing noise, smaller increases in total noise exposure are allowed with increasing levels of existing noise.

The FTA Noise Impact Criteria group noise sensitive land uses into the following three categories:

- Category 1: Buildings or parks where quiet is an essential element of their purpose.
- Category 2: Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
- Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches and active parks.

Ldn is used to characterize noise exposure for residential areas (Category 2). For other noise sensitive land uses, such as outdoor amphitheaters and school buildings (Categories 1 and 3), the maximum 1-hour Leq during the facility's operating period is used.

There are two levels of impact included in the FTA criteria. The interpretation of these two levels of impact is summarized below:

- Severe: Severe noise impacts are considered "significant" as this term is used in the National Environmental Policy Act (NEPA) and implementing regulations.² Noise mitigation would normally be specified for severe impact areas unless there is no practical method of mitigating the noise.
- Impact: In this range of noise impact, sometimes referred to as moderate impact, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These other factors can include the predicted increase over existing noise levels, the types and number of noise-sensitive land uses affected, existing outdoor-indoor sound insulation, and the cost effectiveness of mitigating noise to more acceptable levels.

The noise impact criteria are summarized in Table 3-11.2. The first column shows the existing noise exposure and the remaining columns show the additional noise exposure from the transit project that would cause either moderate or severe impact. The future noise exposure would be the combination of the existing noise exposure and the additional noise exposure caused by the transit project. Table 3-11.3 expresses the same criteria in terms of the increase in total or cumulative noise that can occur in the

² The California Environmental Quality Act (CEQA) does not specify impact criteria for noise. The thresholds determining the significance of impacts under CEQA for this project are based on the FTA criteria. The noise impact criteria of individual cities do not apply.

overall noise environment before impact occurs. If the projected noise levels are less than the allowable increment, no impact would result. As seen in Table 3-11.3, the higher the ambient noise level, the smaller the increment of noise generated by a project can be before an impact or severe impact would occur.

| TABLE 3-11.2 FTA NOISE IMPACT CRITERIA | | | | |
|---|--|---------------|------------------|---------------|
| Existing Noise Exposure Leq or Ldn | Project Noise Exposure Impact Thresholds, Ldn or Leq (dBA) | | | |
| | Category 1 or 2 Sites | | Category 3 Sites | |
| | Impact | Severe Impact | Impact | Severe Impact |
| <43 | Amb.+10 | Amb.+15 | Amb.+15 | Amb.+20 |
| 43 | 52 | 58 | 57 | 63 |
| 44 | 52 | 59 | 57 | 64 |
| 45 | 52 | 59 | 57 | 64 |
| 46 | 52 | 59 | 57 | 64 |
| 47 | 52 | 59 | 57 | 64 |
| 48 | 53 | 59 | 58 | 64 |
| 49 | 53 | 59 | 58 | 64 |
| 50 | 53 | 60 | 58 | 65 |
| 51 | 54 | 60 | 59 | 65 |
| 52 | 54 | 60 | 59 | 65 |
| 53 | 54 | 60 | 59 | 65 |
| 54 | 55 | 61 | 60 | 66 |
| 55 | 55 | 61 | 60 | 66 |
| 56 | 56 | 62 | 61 | 67 |
| 57 | 56 | 62 | 61 | 67 |
| 58 | 57 | 62 | 62 | 67 |
| 59 | 57 | 63 | 62 | 68 |
| 60 | 58 | 63 | 63 | 68 |
| 61 | 58 | 64 | 63 | 69 |
| 62 | 59 | 64 | 64 | 69 |
| 63 | 60 | 65 | 65 | 70 |
| 64 | 60 | 66 | 65 | 71 |
| 65 | 61 | 66 | 66 | 71 |
| 66 | 61 | 67 | 66 | 72 |
| 67 | 62 | 67 | 67 | 72 |
| 68 | 63 | 68 | 68 | 73 |
| 69 | 64 | 69 | 69 | 74 |
| 70 | 64 | 69 | 69 | 74 |
| 71 | 65 | 70 | 70 | 75 |
| 72 | 65 | 71 | 70 | 76 |
| 73 | 65 | 72 | 70 | 77 |
| 74 | 65 | 72 | 70 | 77 |
| 75 | 65 | 73 | 70 | 78 |
| 76 | 65 | 74 | 70 | 79 |
| 77 | 65 | 75 | 70 | 80 |
| >77 | 65 | 75 | 70 | 80 |

TABLE 3-11.2 *continued*
FTA NOISE IMPACT CRITERIA

| Existing Noise Exposure Leq or Ldn | Project Noise Exposure Impact Thresholds, Ldn or Leq (dBA) | | | |
|------------------------------------|--|---------------|------------------|---------------|
| | Category 1 or 2 Sites | | Category 3 Sites | |
| | Impact | Severe Impact | Impact | Severe Impact |

Notes: Ldn is used for land uses where nighttime sensitivity is a factor;
 Maximum 1-hour Leq is used for land use involving only daytime activities.
 Category 1: Buildings or parks where quiet is an essential element of their purpose.
 Category 2: Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
 Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches and active parks.
 Source: Federal Transit Administration, April 1995.

TABLE 3-11.3
CUMULATIVE NOISE LEVEL INCREASE ALLOWED BY FTA CRITERIA

| Existing Noise Exposure Leq or Ldn | Impact Threshold for Increase in Cumulative Noise Exposure (dBA) | | | |
|------------------------------------|--|---------------|------------------|---------------|
| | Category 1 or 2 Sites | | Category 3 Sites | |
| | Impact | Severe Impact | Impact | Severe Impact |
| 45 | 8 | 14 | 12 | 19 |
| 46 | 7 | 13 | 12 | 18 |
| 47 | 7 | 12 | 11 | 17 |
| 48 | 6 | 12 | 10 | 16 |
| 49 | 6 | 11 | 10 | 16 |
| 50 | 5 | 10 | 9 | 15 |
| 51 | 5 | 10 | 8 | 14 |
| 52 | 4 | 9 | 8 | 14 |
| 53 | 4 | 8 | 7 | 13 |
| 54 | 3 | 8 | 7 | 12 |
| 55 | 3 | 7 | 6 | 12 |
| 56 | 3 | 7 | 6 | 11 |
| 57 | 3 | 6 | 6 | 10 |
| 58 | 2 | 6 | 5 | 10 |
| 59 | 2 | 5 | 5 | 9 |
| 60 | 2 | 5 | 5 | 9 |
| 61 | 1.9 | 5 | 4 | 9 |
| 62 | 1.7 | 4 | 4 | 8 |
| 63 | 1.6 | 4 | 4 | 8 |
| 64 | 1.5 | 4 | 4 | 8 |
| 65 | 1.4 | 4 | 3 | 7 |
| 66 | 1.3 | 4 | 3 | 7 |
| 67 | 1.2 | 3 | 3 | 7 |
| 68 | 1.1 | 3 | 3 | 6 |
| 69 | 1.1 | 3 | 3 | 6 |
| 70 | 1.0 | 3 | 3 | 6 |

TABLE 3-11.3 *continued*
CUMULATIVE NOISE LEVEL INCREASE ALLOWED BY FTA CRITERIA

| Existing Noise Exposure Leq or Ldn | Impact Threshold for Increase in Cumulative Noise Exposure (dBA) | | | |
|------------------------------------|--|---------------|------------------|---------------|
| | Category 1 or 2 Sites | | Category 3 Sites | |
| | Impact | Severe Impact | Impact | Severe Impact |
| 71 | 1.0 | 3 | 3 | 6 |
| 72 | 0.8 | 3 | 2 | 6 |
| 73 | 0.6 | 2 | 1.8 | 5 |
| 74 | 0.5 | 2 | 1.5 | 5 |
| 75 | 0.4 | 2 | 1.2 | 5 |

Notes: Ldn is used for land uses where nighttime sensitivity is a factor;
 Maximum 1-hour Leq is used for land use involving only daytime activities.
 Category 1: Buildings or parks where quiet is an essential element of their purpose.
 Category 2: Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
 Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches and active parks.

Source: Federal Transit Administration, April 1995.

Ground-Borne Vibration Criteria

The FTA ground-borne vibration impact criteria are based on land use and train frequency, as shown in Table 3-11.4. There are some buildings, such as concert halls, recording studios and theaters, which can be very sensitive to vibration but do not fit into any of the three categories listed in Table 3-11.4. Due to the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a transit project. Table 3-11.5 shows the criteria for acceptable levels of ground-borne vibration for various types of special buildings.

It should also be noted that Tables 3-11.4 and 3-11.5 include separate FTA criteria for ground-borne noise, the “rumble” that can be radiated from the motion of room surfaces in buildings due to ground-borne vibration. Although expressed in dBA, which emphasizes the more audible middle and high frequencies, the criteria are set significantly lower than for airborne noise to account for the annoying low-frequency character of ground-borne noise. Because airborne noise often masks ground-borne noise for above ground (i.e. at-grade or elevated) rail systems, ground-borne noise criteria are primarily applied to subway operations where airborne noise is not a factor. For the above-grade transit system planned along the Pasadena Gold Line Phase II, ground-borne noise criteria would be applied only to buildings that have sensitive interior spaces that are well insulated from exterior noise.

| TABLE 3-11.4 GROUND-BORNE VIBRATION AND NOISE IMPACT CRITERIA | | | | |
|---|--|--------------------------------|---|--------------------------------|
| Land Use Category | Ground-Borne Vibration Impact Levels (VdB re 1 micro inch/sec) | | Ground-Borne Noise Impact Levels (dB re 20 micro Pascals) | |
| | Frequent Events ¹ | Infrequent Events ² | Frequent Events ¹ | Infrequent Events ² |
| Category 1: Buildings where low ambient vibration is essential for interior operations. | 65 VdB ³ | 65 VdB ³ | (-4) | (-4) |
| Category 2: Residences and buildings where people normally sleep. | 72 VdB | 80 VdB | 35 dBA | 43 dBA |
| Category 3: Institutional land uses with primarily daytime use. | 75 VdB | 83 VdB | 40 dBA | 48 dBA |
| Notes: | | | | |
| 1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category. | | | | |
| 2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems. | | | | |
| 3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors. | | | | |
| 4. Vibration-sensitive equipment is not sensitive to ground-borne noise. | | | | |
| Source: Federal Transit Administration, April 1995 | | | | |

| TABLE 3-11.5 GROUND-BORNE VIBRATION AND NOISE IMPACT CRITERIA FOR SPECIAL BUILDINGS | | | | |
|--|--|--------------------------------|---|--------------------------------|
| Type of Building or Room | Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec) | | Ground-Borne Noise Impact Levels (dB re 20 micro Pascals) | |
| | Frequent Events ¹ | Infrequent Events ² | Frequent Events ¹ | Infrequent Events ² |
| Concert Halls | 65 VdB | 65 VdB | 25 dBA | 25 dBA |
| TV Studios | 65 VdB | 65 VdB | 25 dBA | 25 dBA |
| Recording Studios | 65 VdB | 65 VdB | 25 dBA | 25 dBA |
| Auditoriums | 72 VdB | 80 VdB | 30 dBA | 38 dBA |
| Theaters | 72 VdB | 80 VdB | 35 dBA | 43 dBA |
| Notes: | | | | |
| 1. "Frequent Events" is defined as more than 70 vibration events per day. Most transit projects fall into this category. | | | | |
| 2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems. | | | | |
| 3. If the building will rarely be occupied when the trains are operating, there is no need to consider impact. As an example consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 pm, it should be rare that the trains interfere with the use of the hall. | | | | |
| Source: Federal Transit Administration, April 1995 | | | | |

b. CEQA Impact Criteria

There are no noise and vibration impact criteria specified in CEQA. The Construction Authority has chosen to use the FTA noise and vibration criteria for the Phase II project since this is a federally sponsored environmental analysis.

3-11.2.3 Construction-Period Impacts

a. No Build Alternative

The only project in the No Build Alternative that would be expected to generate construction-period impacts is the planned Eastside Extension. Construction-period noise impacts are addressed in the environmental document for that project. The proposed increase in Gold Line Phase I service does not include any construction elements, and thus would generate no construction-period noise. Increases in bus service included in the No Build Alternative do not include substantial construction and would likely generate only short-term construction noise from possible construction of bus shelters or shelter improvements.

b. Transportation System Management (TSM) Alternative

The bus service improvements included in the TSM Alternative do not include any substantial construction. Construction or improvements to bus shelters that may occur would generate only temporary, short-term construction noise. Temporary, short-term noise impacts of a few days duration would be less than adverse under NEPA and less than significant under CEQA.

c. LRT, Triple Track Configuration

Temporary noise and vibration during construction of an LRT project have the potential of being intrusive to residents near the construction sites. Construction noise varies greatly depending on the construction process, type and condition of equipment used, and layout of the construction site. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately estimate levels of construction noise. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment. For most construction equipment, the engine, which is usually diesel, is the dominant noise source. This is particularly true of engines without sufficient muffling. For special activities such as impact pile driving and pavement breaking, noise generated by the actual process dominates. Construction activities that could cause intrusive vibration include pile driving, vibratory compaction, jackhammers, and use of tracked vehicles such as bulldozers. Please refer to the Noise and Vibration Technical Report in the Appendices for more detail about construction noise and vibration.

Phase I — The Cities Affected and the Effects

There are no elements of the Triple Track configuration in the cities of Los Angeles, South Pasadena, or west of the Sierra Madre Villa Station in Pasadena, so there would be no construction-period noise. The overall Triple Track configuration includes double tracks in the median of I-210 east of the Sierra Madre Villa Station. Residential land uses within 125 feet have the potential to experience temporary construction noise impacts.

Phase II, Segment 1 — The Cities Affected and the Effects

The cities in Segment 1 are Pasadena, Arcadia, Monrovia, Duarte, and Irwindale. Based on the criteria and noise projections presented in the Noise and Vibration Technical Report, and assuming that construction noise is reduced by 6 decibels for each doubling of distance from the center of the site, screening distances for potential construction noise impact can be estimated. These estimates suggest that the potential for construction noise impact will be minimal for commercial and industrial land use, with impact screening distances of 70 feet and 40 feet, respectively. Even for residential land use, the potential for temporary construction noise impact would be limited to locations within about 125 feet of the corridor.

Phase II, Segment 2 — The Cities Affected and the Effects

The cities in Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. Based on the criteria and noise projections presented in the Noise and Vibration Technical Report, and assuming that construction noise is reduced by 6 decibels for each doubling of distance from the center of the site, screening distances for potential construction noise impact can be estimated. These estimates suggest that the potential for construction noise impact will be minimal for commercial and industrial land use, with impact screening distances of 70 feet and 40 feet, respectively. Even for residential land use, the potential for temporary construction noise impact would be limited to locations within about 125 feet of the corridor.

Summary of Triple Track Impacts for Full Build Alternative

For the LRT Triple Track configuration for the Full Build Alternative, residential land uses within 125 feet of the alignment would have the potential for temporary construction noise impacts under the Triple Track Full Build Alternative.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

For the LRT Triple Track configuration for the Build Alternative to Maintenance Facility, residential land uses within 125 feet of the alignment would have the potential for temporary construction noise impacts under the Triple Track Build LRT Alternative to Maintenance Facility.

d. LRT, Double Track Configurations

Potential construction-period impacts for the Double Track configuration have the same potential for being intrusive as described for the Triple Track configuration.

Phase I — The Cities Affected and the Effects

There are no elements of the Double Track configurations in the cities of Los Angeles, South Pasadena, or west of the Sierra Madre Villa Station in Pasadena, so there would be no construction-period noise in those areas. For the double tracks in the median of I-210 east of the Sierra Madre Villa Station, residential land uses within 125 feet have the potential to experience temporary construction noise impacts.

Phase II, Segment 1 — The Cities Affected and the Effects

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte, and Irwindale. For Double Track configurations, construction-period impacts would have the same areas (distances) of potential impacts as described for the Triple Track configuration.

Phase II, Segment 2 — The Cities Affected and the Effects

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. For Double Track configurations, construction-period impacts would have the same areas (distances) of potential impacts as described for the Triple Track configuration.

Summary of Double Track Impacts for Full Build LRT Alternative

For the LRT Double Track configuration for the Full Build Alternative, residential land uses within 125 feet of the alignment would have the potential for temporary construction noise impacts.

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

For the LRT Double Track configurations for the Build Alternative to Maintenance Facility, residential land uses within 125 feet of the alignment would have the potential for temporary construction noise impacts.

3-11.2.4 Long-Term Impacts

a. No Build Alternative

Phase I — The Cities Affected and the Effects

The only elements of the No Build Alternative that would be expected to result in long-term noise or vibration impacts in a Phase I city would be the Eastside Extension. These impacts are addressed in the Draft Supplemental Environmental Impact Statement/Draft Subsequent Environmental Impact Report (FTA and LACMTA 2001).

Phase II, Segment 1 — The Cities Affected and the Effects

The No Build Alternative does not include any elements that result in long-term noise or vibration impacts for Phase II, Segment 1 cities.

Phase II, Segment 2 — The Cities Affected and the Effects

The No Build Alternative does not include any elements that would result in any long-term noise or vibration impacts for Phase II, Segment 2 cities.

b. Transportation System Management (TSM) Alternative

The TSM Alternative does not include any elements that would result in long-term noise or vibration impacts for cities in Phases I and II, Segment 1 or Phase II, Segment 2.

c. LRT, Triple Track Configuration

Noise Analysis

For the LRT Triple Track configuration, detailed comparisons of the existing and future noise levels are presented in Table 3-11.6, Table 3-11.7, Table 3-11.10, and Table 3-11.11. Table 3-11.6 includes results for the Category 2 receptors along the Phase II, Segment 1 portion of the alignment with both daytime and nighttime sensitivity to noise (e.g. residences, hotels and hospitals). Table 3-11.7 is a listing of all Category 3 receptors along the Phase II, Segment 1 portion of the alignment, consisting of institutional sites that are not sensitive to noise at night (e.g. schools, churches, parks and medical offices). Table 3-11.10 includes results for the Category 2 receptors along the Phase II, Segment 2 portion of the alignment with both daytime and nighttime sensitivity to noise (e.g. residences, hotels and hospitals). Table 3-11.11 is a listing of all Category 3 receptors along the Phase II, Segment 2 portion of the alignment, consisting of institutional sites that are not sensitive to noise at night (e.g. schools, churches, parks and medical offices). Written descriptions follow the tables of the locations where noise impacts are predicted.

In addition to the civil station (as shown on maps in Volume 2), distance to the near track and proposed LRT speed, each table includes the existing noise level, the projected noise level from LRT operations and the impact criteria for each receptor or receptor group. Based on a comparison of the predicted project noise level with the impact criteria, the impact category is listed, along with the predicted total noise level and projected noise increase due to the introduction of LRT service. Tables 3-11.6 and 3-11.10 also include an inventory of the number of impacts and severe impacts at each sensitive receptor location.

Vibration Analysis

For the LRT Triple Track configuration, the estimated root mean square (RMS) velocity levels (VdB re 1 micro-in./sec.) for sensitive receptors at representative distances are provided in Table 3-11.8, Table 3-11.9, Table 3-11.12, and Table 3-11.13. These tables summarize the results of the analysis in terms of anticipated exceedances of the FTA criteria for “frequent events” (defined as more than 70 events per day). The criteria are discussed in more detail in Section 3-11.2.2.

Vibration-sensitive locations along the alignment are listed in Table 3-11.8 for Category 2 land use and in Table 3-11.9 for Category 3 land use for Phase II, Segment 1. Vibration-sensitive locations along the alignment are listed in Table 3-11.12 for Category 2 land use and in Table 3-11.13 for Category 3 land use for Phase II, Segment 2. Each table lists the locations, the civil station, the distance to the near track, and the projected LRT speed at each location. In addition, the predicted project vibration level and the impact criterion level are indicated along with the number of impacts projected for each receptor or receptor group. Written descriptions of the locations where vibration impacts are predicted follow the tables.

Phase I — The Cities Affected and the Effects

Noise impacts for Phase I were evaluated using the maximum passby noise levels, or Lmax.³ Existing service in Phase I uses 2-car train consists. Future service levels when the Eastside LRT Extension project begins operation in 2009 would include 3-car train consists. As a result of this change, Lmax noise levels at the residences closest to the corridor would increase by substantially less than 1 dBA, which is an imperceptible difference. Changes in the frequency of service would not affect Lmax.

Phase II would not induce noise impacts in Phase I cities, since the Operating Plan for Phase II is dictated by the Eastside LRT Extension's Operating Plan, which will precede Phase II.

Phase II, Segment 1 — The Cities Affected and the Effects

Noise

Table 3-11.6 lists the noise impacts for Category 2 land use for Phase II, Segment 1 LRT Triple Track configuration. Written descriptions of the locations where noise impacts are predicted follow the tables.

³ LACTC, Metro Pasadena Project, "Design & Performance Criteria," 1992.

**TABLE 3-11.6
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|----------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| San Luis Rey-1 | Arcadia | 141 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 67.0 | 1.7 | 3 | 0 |
| San Luis Rey-2 | Arcadia | 146 | 90 | 55 | 65 | 61 | 60 | 66 | Impact | 66.0 | 1.4 | 6 | 0 |
| San Luis Rey-3 | Arcadia | 147 | 50 | 55 | 60 | 65 | 58 | 63 | Severe | 66.0 | 6.0 | 0 | 4 |
| San Luis Rey-4 | Arcadia | 149 | 120 | 55 | 60 | 59 | 58 | 63 | Impact | 62.0 | 2.5 | 2 | 0 |
| Cornell-1 | Arcadia | 151 | 96 | 55 | 60 | 60 | 58 | 63 | Impact | 63.0 | 3.2 | 6 | 0 |
| Cornell-2 | Arcadia | 155 | 90 | 55 | 60 | 61 | 58 | 63 | Impact | 63.0 | 3.4 | 8 | 0 |
| Cornell-3 | Arcadia | 156 | 90 | 55 | 60 | 61 | 58 | 63 | Impact | 63.0 | 3.4 | 8 | 0 |
| 2nd-2 | Arcadia | 185 | 80 | 55 | 60 | 61 | 58 | 63 | Impact | 64.0 | 3.7 | 0 | 0 |
| 3rd-1 | Arcadia | 201 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67.0 | 7.3 | 0 | 12 |
| Contented-1 | Monrovia | 207 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67.0 | 7.3 | 0 | 2 |
| Contented-3 | Monrovia | 209 | 50 | 55 | 60 | 65 | 57 | 63 | Severe | 66.0 | 6.2 | 0 | 4 |
| Contented-4 | Monrovia | 214 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67.0 | 7.3 | 0 | 6 |
| Montana-1 | Monrovia | 221 | 30 | 55 | 60 | 67 | 57 | 63 | Severe | 68.0 | 8.4 | 0 | 8 |
| Anita-1 | Monrovia | 221 | 28 | 55 | 60 | 68 | 57 | 63 | Severe | 68.0 | 8.7 | 0 | 4 |
| Montana-3 | Monrovia | 224 | 30 | 55 | 60 | 67 | 57 | 63 | Severe | 68.0 | 8.4 | 0 | 2 |
| Anita-3 | Monrovia | 225 | 48 | 55 | 60 | 65 | 57 | 63 | Severe | 66.0 | 6.4 | 0 | 5 |
| Montana-5 | Monrovia | 226 | 60 | 55 | 60 | 63 | 57 | 63 | Severe | 65.0 | 5.3 | 0 | 48 |
| Alamitas-1 | Monrovia | 230 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67.0 | 7.3 | 0 | 4 |
| Diamond-1 | Monrovia | 231 | 22 | 55 | 60 | 69 | 57 | 63 | Severe | 69.0 | 9.5 | 0 | 5 |
| Diamond-4 | Monrovia | 236 | 80 | 55 | 60 | 59 | 57 | 63 | Impact | 62.0 | 2.7 | 8 | 0 |
| Radford-1 | Monrovia | 236 | 44 | 55 | 60 | 66 | 57 | 63 | Severe | 67.0 | 7.2 | 0 | 3 |
| Diamond-3 | Monrovia | 237 | 40 | 55 | 60 | 68 | 57 | 63 | Severe | 68.0 | 8.6 | 0 | 6 |
| Mayflower-2 | Monrovia | 238 | 90 | 55 | 60 | 60 | 57 | 63 | Impact | 63.0 | 3.2 | 5 | 0 |
| Alamitas-2 | Monrovia | 240 | 54 | 55 | 60 | 59 | 57 | 63 | Impact | 62.0 | 2.8 | 4 | 0 |
| Mayflower-3 | Monrovia | 240 | 120 | 55 | 60 | 58 | 57 | 63 | Impact | 62.0 | 2.1 | 4 | 0 |
| Mayflower-1 | Monrovia | 240 | 30 | 55 | 60 | 68 | 57 | 63 | Severe | 69.0 | 9.3 | 0 | 2 |

TABLE 3-11.6: continued
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|-------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Mayflower-6 | Monrovia | 241 | 40 | 55 | 60 | 67 | 57 | 63 | Severe | 68.0 | 8.2 | 0 | 1 |
| Mayflower-4 | Monrovia | 246 | 46 | 55 | 60 | 66 | 57 | 63 | Severe | 67.0 | 7.5 | 0 | 40 |
| Genoa-1 | Monrovia | 250 | 30 | 55 | 60 | 68 | 57 | 63 | Severe | 68.0 | 8.7 | 0 | 20 |
| Duarte-2 | Duarte | 315 | 116 | 55 | 57 | 60 | 56 | 62 | Impact | 62.0 | 5.3 | 4 | 0 |
| Duarte-5 | Duarte | 318 | 116 | 55 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.2 | 4 | 0 |
| Duarte-8 | Duarte | 322 | 116 | 55 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.2 | 3 | 0 |
| Hamilton-1 | Duarte | 325 | 134 | 55 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.1 | 7 | 0 |
| Duarte-11 | Duarte | 330 | 116 | 55 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.2 | 3 | 0 |
| Duarte-14 | Duarte | 334 | 116 | 55 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.2 | 3 | 0 |
| Hamilton-2 | Duarte | 334 | 124 | 55 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.5 | 7 | 0 |
| Hamilton-3 | Duarte | 339 | 160 | 55 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.5 | 6 | 0 |
| Hamilton-4 | Duarte | 343 | 160 | 55 | 57 | 57 | 56 | 62 | Impact | 60.0 | 3.3 | 6 | 0 |
| Duarte-17 | Duarte | 344 | 126 | 55 | 57 | 58 | 56 | 62 | Impact | 60.0 | 3.9 | 5 | 0 |
| Duarte-18 | Duarte | 346 | 146 | 55 | 57 | 57 | 56 | 62 | Impact | 60.0 | 3.3 | 10 | 0 |
| Hamilton-5 | Duarte | 347 | 110 | 55 | 57 | 60 | 56 | 62 | Impact | 61.0 | 4.9 | 5 | 0 |
| Hamilton-6 | Duarte | 351 | 64 | 48 | 57 | 63 | 56 | 62 | Severe | 64.0 | 7.4 | 0 | 6 |
| Hamilton-8 | Duarte | 354 | 80 | 38 | 57 | 60 | 56 | 62 | Impact | 62.0 | 5.4 | 5 | 0 |
| Hamilton-10 | Duarte | 357 | 80 | 30 | 57 | 59 | 56 | 62 | Impact | 61.0 | 4.6 | 5 | 0 |

1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact.
2. Predicted levels include a 5dBA penalty applied to audible signal noise, where applicable.
3. The reported noise levels represent the highest noise levels for each location.

The following are brief descriptions of each Category 2 land use area where an impact was calculated:

- San Luis Rey: When the alignment turns south of the I-210 median in Arcadia at station number 140+00, 15 single-family homes south of the alignment are forecasted to be subject to noise impacts. Of these 15 homes, four homes are forecasted to have a severe noise impact. The noise impacts would be due to the proximity of these residences to the LRT tracks (50 to 120 feet) and the speed of the LRT vehicles.
- Cornell: North of the rail alignment at station number 151+00 in Arcadia, five multi-family housing buildings with 22 residences would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the LRT tracks (90 feet) and the speed of the LRT vehicles.
- 2nd Avenue: North of the rail alignment along 2nd Avenue in Arcadia, one hotel (Springhill Suites) would be exposed to noise impact. The impact at this hotel would be due to the proximity to the near track (80 feet) as well as the speed of the LRT vehicles.
- 3rd Avenue: South of the alignment along 3rd Avenue in Arcadia, six multi-family buildings with 12 residences would be exposed to severe noise impact in this area. The severe noise impacts would be due to the proximity of these residences to the tracks (40 feet) and the speed of the LRT vehicles.
- Contented: South of the alignment on Contented Lane and Encino Avenue in Monrovia, 12 single family homes would be exposed to severe noise impact. The severe noise impacts would be due to the proximity of these residences to the tracks (40 to 50 feet) and the speed of the LRT vehicles.
- Montana / Diamond: Both north and south of the rail alignment along Montana Street and Diamond Street in Monrovia, 21 single-family homes would be exposed to noise impact. Thirty-nine additional single-family homes and 48 multi-family residences would be exposed to severe noise impact. The severe noise impacts would be due to the proximity of these residences to the tracks (30 to 60 feet) and the speed of the LRT vehicles. Some residences near Mayflower Avenue would be exposed to audible warning devices (bells and whistles) at the grade crossing. The homes that would not receive exposure to severe noise impact are all second row homes that are slightly further away to the near tracks (50 to 120 feet) and have shielding provided by first row homes.
- Mayflower: North and south of the rail alignment at Mayflower Avenue in Monrovia, one single-family home and 40 multi-family residences would be exposed to severe noise impact. These homes would be exposed to severe noise impact due to their proximity to the near track (40 to 46 feet), their exposure to audible warning devices (bells and whistles) at the grade crossing as well as the speed of LRT vehicles.
- Genoa: South of the rail alignment at Genoa Street in Monrovia, 20 multi-family residences would be exposed to severe noise impact. These homes would be exposed to severe noise impact due to their proximity to the near track (30 feet) and the speed of LRT vehicles.
- Mountain / Buena Vista: Both north and south of the rail alignment between Mountain Avenue and Buena Vista Street in Duarte, 20 single family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (116 to 134 feet) and the speed of the LRT vehicles. Single-family homes near Mountain Avenue would also be exposed to audible warning devices (bells and whistles) at the grade crossing.
- Buena Vista / Duncannon: Both north and south of the rail alignment between Buena Vista Street and Duncannon Avenue in Duarte, five single family homes and 10 multi family residences

would be exposed to noise impact. An additional 21 single-family homes would be exposed to severe noise impact. All of these homes would be exposed to noise impact due to the proximity to the near tracks (64 to 146 feet) and the speed of LRT vehicles.

Similar to the Category 2 analysis, an assessment of noise impact for Category 3 receptors was also conducted for Phase II, Segment 1 LRT Triple Track configuration. This assessment was based on a comparison of the existing ambient noise level with the predicted project noise levels in terms of the peak transit hour Leq. Table 3-11.7 lists the noise impacts for institutional receptors. However, the only Category 3 locations with the potential for noise impact are parks used for sports and other active recreation. Because of their land-use, they are not considered noise sensitive. Therefore, there are no Category 3 noise impacts for Phase II, Segment 1.

| TABLE 3-11.7 NOISE IMPACTS FOR CATEGORY 3 LAND USE PHASE II, SEGMENT 1 TRIPLE TRACK CONFIGURATION | | | | | | | | | | |
|--|------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----------------|--------------------------------|-----------------------------------|
| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | Impact Category | Total Noise Level ¹ | Noise Level Increase ¹ |
| | | | | | | Pred ² | Impact Criteria | | | |
| | | | | | | | | | | |
| There are no Category 3 noise impacts for Phase II, Segment 1. | | | | | | | | | | |

Vibration

Table 3-11.8 lists the vibration impacts for Category 2 land use for Phase II, Segment 1 LRT Triple Track Configuration.

| TABLE 3-11.8 VIBRATION IMPACTS FOR CATEGORY 2 LAND USE PHASE II, SEGMENT 1 TRIPLE TRACK CONFIGURATION | | | | | | | |
|--|----------|-----------|-------------------------|-------------|--|---|---------------------|
| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
| Corta Calle-1 | Pasadena | 34 | 240 | 55 | 72 | 72 | 4 |
| Arboleda-1 | Pasadena | 37 | 220 | 55 | 73 | 72 | 6 |
| Arboleda-2 | Pasadena | 39 | 200 | 55 | 74 | 72 | 5 |
| Foothill-2 | Arcadia | 54 | 240 | 55 | 72 | 72 | 4 |
| Catalapa-1 | Arcadia | 58 | 220 | 55 | 73 | 72 | 4 |
| Foothill-3 | Arcadia | 58 | 190 | 55 | 74 | 72 | 4 |
| Catalapa-2 | Arcadia | 61 | 220 | 55 | 73 | 72 | 4 |
| Foothill-5 | Arcadia | 64 | 160 | 55 | 75 | 72 | 3 |

TABLE 3-11.8 *continued (page 2 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|---------------------|---------|-----------|-------------------------|-------------|--|---|---------------------|
| Catalapa-3 | Arcadia | 64 | 220 | 55 | 73 | 72 | 5 |
| Foothill-6 | Arcadia | 68 | 160 | 55 | 75 | 72 | 3 |
| Catalapa-4 | Arcadia | 70 | 250 | 55 | 72 | 72 | 6 |
| Foothill-7 | Arcadia | 71 | 150 | 55 | 75 | 72 | 4 |
| Catalapa-5 | Arcadia | 74 | 250 | 55 | 72 | 72 | 2 |
| Foothill-8 | Arcadia | 74 | 170 | 55 | 75 | 72 | 3 |
| Catalapa-6 | Arcadia | 78 | 250 | 55 | 72 | 72 | 1 |
| Foothill-9 | Arcadia | 78 | 160 | 55 | 75 | 72 | 4 |
| Foothill-10 | Arcadia | 85 | 160 | 55 | 75 | 72 | 4 |
| Catalapa-8 | Arcadia | 87 | 250 | 55 | 72 | 72 | 2 |
| Katherine-1 | Arcadia | 91 | 210 | 55 | 73 | 72 | 3 |
| English Oaks-2 | Arcadia | 97 | 210 | 55 | 73 | 72 | 6 |
| Oxford-1 | Arcadia | 107 | 240 | 55 | 72 | 72 | 5 |
| Loma Lisa-1 | Arcadia | 109 | 180 | 55 | 74 | 72 | 4 |
| Oxford-2 | Arcadia | 111 | 240 | 55 | 72 | 72 | 5 |
| San Carlos-1 | Arcadia | 115 | 130 | 55 | 76 | 72 | 2 |
| Oxford-3 | Arcadia | 115 | 240 | 55 | 72 | 72 | 4 |
| San Carlos-2 | Arcadia | 117 | 210 | 55 | 73 | 72 | 2 |
| Colorado-1 | Arcadia | 117 | 240 | 55 | 72 | 72 | 3 |
| Asder-1 | Arcadia | 121 | 140 | 55 | 76 | 72 | 3 |
| Brunnel Oaks-1 | Arcadia | 123 | 140 | 55 | 76 | 72 | 1 |
| Brunnel Oaks-2 | Arcadia | 123 | 190 | 55 | 74 | 72 | 2 |
| Chelsea-1 | Arcadia | 124 | 144 | 55 | 76 | 72 | 4 |
| Chelsea-2 | Arcadia | 126 | 140 | 55 | 76 | 72 | 1 |
| Chelsea-3 | Arcadia | 126 | 180 | 55 | 74 | 72 | 1 |
| Leandra/Mary Oaks-1 | Arcadia | 127 | 144 | 55 | 76 | 72 | 5 |
| Renoake-2 | Arcadia | 129 | 170 | 55 | 75 | 72 | 5 |
| Renoake-1 | Arcadia | 130 | 120 | 55 | 77 | 72 | 2 |
| Oakdale-1 | Arcadia | 131 | 190 | 55 | 74 | 72 | 2 |
| Cyrus-1 | Arcadia | 132 | 170 | 55 | 75 | 72 | 4 |
| Oakhurst-1 | Arcadia | 133 | 200 | 55 | 74 | 72 | 2 |
| Rancho-1 | Arcadia | 137 | 240 | 55 | 72 | 72 | 1 |

TABLE 3-11.8 *continued (page 3 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|----------------|----------|-----------|-------------------------|-------------|--|---|---------------------|
| Santa Maria-1 | Arcadia | 139 | 170 | 55 | 75 | 72 | 3 |
| Santa Rosa-1 | Arcadia | 140 | 180 | 55 | 74 | 72 | 1 |
| San Luis Rey-1 | Arcadia | 141 | 80 | 55 | 80 | 72 | 3 |
| San Luis Rey-2 | Arcadia | 146 | 90 | 55 | 79 | 72 | 6 |
| San Luis Rey-3 | Arcadia | 147 | 50 | 55 | 83 | 72 | 4 |
| San Luis Rey-4 | Arcadia | 149 | 120 | 55 | 77 | 72 | 2 |
| Cornell-1 | Arcadia | 151 | 96 | 55 | 79 | 72 | 6 |
| Cornell-4 | Arcadia | 154 | 140 | 55 | 76 | 72 | 12 |
| Cornell-2 | Arcadia | 155 | 90 | 55 | 79 | 72 | 8 |
| Santa Ynez-1 | Arcadia | 156 | 140 | 55 | 76 | 72 | 3 |
| Cornell-5 | Arcadia | 156 | 170 | 55 | 75 | 72 | 8 |
| Cornell-3 | Arcadia | 156 | 90 | 55 | 79 | 72 | 8 |
| Windsor-2 | Arcadia | 159 | 220 | 53 | 73 | 72 | 8 |
| 3rd-1 | Arcadia | 201 | 40 | 55 | 84 | 72 | 12 |
| 3rd-3 | Arcadia | 203 | 130 | 55 | 76 | 72 | 10 |
| 3rd-2 | Arcadia | 205 | 80 | 55 | 80 | 72 | 12 |
| Contented-1 | Monrovia | 207 | 40 | 55 | 84 | 72 | 2 |
| Contented-2 | Monrovia | 208 | 100 | 55 | 78 | 72 | 4 |
| Contented-3 | Monrovia | 209 | 50 | 55 | 83 | 72 | 4 |
| Contented-5 | Monrovia | 214 | 100 | 55 | 78 | 72 | 6 |
| Contented-4 | Monrovia | 214 | 40 | 55 | 84 | 72 | 6 |
| Encino-1 | Monrovia | 215 | 160 | 55 | 75 | 72 | 4 |
| Montana-2 | Monrovia | 219 | 150 | 55 | 75 | 72 | 2 |
| Anita-1 | Monrovia | 221 | 28 | 55 | 87 | 72 | 4 |
| Anita-2 | Monrovia | 221 | 100 | 55 | 78 | 72 | 4 |
| Montana-1 | Monrovia | 221 | 30 | 55 | 86 | 72 | 8 |
| Montana-4 | Monrovia | 222 | 100 | 55 | 78 | 72 | 7 |
| Montana-3 | Monrovia | 224 | 30 | 55 | 86 | 72 | 2 |
| Anita-3 | Monrovia | 225 | 48 | 55 | 83 | 72 | 5 |
| Montana-6 | Monrovia | 226 | 140 | 55 | 76 | 72 | 5 |
| Montana-5 | Monrovia | 226 | 60 | 55 | 82 | 72 | 48 |
| Anita-4 | Monrovia | 227 | 198 | 55 | 74 | 72 | 3 |

TABLE 3-11.8 *continued (page 4 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|-------------|----------|-----------|-------------------------|-------------|--|---|---------------------|
| Anita-5 | Monrovia | 229 | 100 | 55 | 78 | 72 | 4 |
| Montana-7 | Monrovia | 229 | 156 | 55 | 75 | 72 | 16 |
| Alamitas-1 | Monrovia | 230 | 40 | 55 | 84 | 72 | 4 |
| Diamond-1 | Monrovia | 231 | 22 | 55 | 88 | 72 | 5 |
| Diamond-2 | Monrovia | 231 | 140 | 55 | 76 | 72 | 6 |
| Alamitas-3 | Monrovia | 234 | 130 | 55 | 76 | 72 | 4 |
| Radford-1 | Monrovia | 236 | 44 | 55 | 84 | 72 | 3 |
| Diamond-5 | Monrovia | 236 | 110 | 55 | 78 | 72 | 5 |
| Diamond-4 | Monrovia | 236 | 80 | 55 | 80 | 72 | 8 |
| Radford-2 | Monrovia | 237 | 200 | 55 | 74 | 72 | 3 |
| Diamond-3 | Monrovia | 237 | 40 | 55 | 84 | 72 | 6 |
| Diamond-7 | Monrovia | 237 | 180 | 55 | 74 | 72 | 8 |
| Mayflower-2 | Monrovia | 238 | 90 | 55 | 79 | 72 | 5 |
| Diamond-6 | Monrovia | 238 | 120 | 55 | 77 | 72 | 8 |
| Mayflower-1 | Monrovia | 240 | 30 | 55 | 86 | 72 | 2 |
| Alamitas-2 | Monrovia | 240 | 54 | 55 | 82 | 72 | 4 |
| Mayflower-3 | Monrovia | 240 | 120 | 55 | 77 | 72 | 4 |
| Mayflower-6 | Monrovia | 241 | 40 | 55 | 84 | 72 | 1 |
| Mayflower-5 | Monrovia | 246 | 160 | 55 | 75 | 72 | 16 |
| Mayflower-4 | Monrovia | 246 | 46 | 55 | 83 | 72 | 40 |
| Genoa-2 | Monrovia | 250 | 80 | 55 | 80 | 72 | 4 |
| Genoa-4 | Monrovia | 250 | 150 | 55 | 75 | 72 | 6 |
| Genoa-3 | Monrovia | 250 | 120 | 55 | 77 | 72 | 16 |
| Genoa-1 | Monrovia | 250 | 30 | 55 | 86 | 72 | 20 |
| Magnolia-1 | Monrovia | 252 | 240 | 43 | 72 | 72 | 1 |
| Hamilton-5 | Duarte | 347 | 90 | 55 | 74 | 72 | 5 |
| Hamilton-6 | Duarte | 351 | 44 | 48 | 84 | 72 | 6 |
| Hamilton-8 | Duarte | 354 | 60 | 38 | 77 | 72 | 5 |
| Hamilton-10 | Duarte | 357 | 60 | 30 | 76 | 72 | 5 |

1. Vibration levels are measured in VdB referenced to 1 μ m/sec.

2. The reported vibration level represents the maximum vibration level for each location.

The following are brief descriptions of each Category 2 land use area where an impact is forecasted:

- Arboleda / Corte Calle: Both north and south of the rail alignment between station numbers 34+00 and 41+00 in Pomona, 15 single-family homes would be exposed to vibration impact. These homes are located approximately 200 to 240 feet away from the near track. This vibration impact would be due to the proximity of the homes to the near track, the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.
- Foothill / Catalapa: Both north and south of the rail alignment between station numbers 52+00 and 161+00 in Arcadia, 152 single-family homes and 40 multi-family residences would be exposed to vibration impact. These homes are located 50 to 250 feet away from the near track. This vibration impact would be due to the proximity of the homes to the near track, the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.
- 2nd Avenue: North of the rail alignment at station number 185+00, two hotels would be exposed to vibration impact. The Hilton Hotel and the Springhill Suites Hotel are located 210 and 80 feet away from the near track, respectively. These hotels would be exposed to vibration impact due to the proximity to the near track, the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.
- 3rd Avenue: South of the rail alignment just east of the Rancho High School in Arcadia, 34 multi-family residences would be exposed to vibration impact. This vibration impact would be due to the proximity of the homes to the near track (40 to 130 feet), the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.
- Contented / Genoa: Both north and south of the rail alignment between 5th Avenue and Genoa Street in Monrovia, 313 residences would be exposed to vibration impact. These include 182 multi-family residences and 131 single-family homes. This vibration impact would be due to the proximity of the homes to the near track (22 to 240 feet), the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.
- Hamilton: North of the rail alignment east of Buena Vista Street in Duarte, 21 single-family homes would be exposed to noise impact. These homes are all first-row homes located 44 to 90 feet away from the near track. This vibration impact would be due to the proximity of the homes to the near track, the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.

Similar to the Category 2 analysis, an assessment of vibration impact for Category 3 receptors was also conducted for Phase II, Segment 1 LRT Triple Track configuration. **Table 3-11.9** lists the vibration impacts for Category 3 land use for Phase II, Segment 1 LRT Triple Track configuration.

**TABLE 3-11.9
VIBRATION IMPACTS FOR CATEGORY 3 LAND USE
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | # of Impacts |
|------------|---------|-----------|-------------------------|-------------|--|---|--------------|
| 3rd-Avenue | Arcadia | 198 | 70 | 55 | 81 | 75 | 1 |

1. Vibration levels are measured in VdB referenced to 1 µin/sec.

2. The reported vibration level represents the maximum vibration level for each location.

Source: Harris, Miller, Miller & Hanson 2003

The following are brief descriptions of each impacted Category 3 land use area:

- 3rd Avenue: South of the rail alignment at station number 198+00 Rancho High School in Arcadia would be exposed to vibration impact. This vibration impact would be due to the proximity to the near track (70 feet), the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.

Phase II, Segment 2 — The Cities Affected and the Effects

Noise

Table 3-11.10 lists the noise impacts for Category 2 land use for Phase II, Segment 2 LRT Triple Track configuration. Written descriptions of the locations where impacts are forecasted follow the table.

**TABLE 3-11.10
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|---------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| 6th-1 | Azusa | 524 | 140 | 55 | 65 | 60 | 60 | 66 | Impact | 66 | 1.4 | 5 | 0 |
| 6th-3 | Azusa | 528 | 90 | 55 | 65 | 61 | 60 | 66 | Impact | 66 | 1.6 | 2 | 0 |
| 6th-4 | Azusa | 533 | 70 | 55 | 65 | 63 | 60 | 66 | Impact | 67 | 2.3 | 4 | 0 |
| Foothill-1 | Azusa | 543 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 67 | 1.9 | 20 | 0 |
| Foothill-2 | Azusa | 546 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 66 | 1.9 | 5 | 0 |
| Foothill-6 | Azusa | 550 | 94 | 55 | 65 | 62 | 60 | 66 | Impact | 67 | 1.9 | 4 | 0 |
| Foothill-8 | Azusa | 551 | 124 | 55 | 65 | 60 | 60 | 66 | Impact | 66 | 1.4 | 2 | 0 |
| San Gabriel-1 | Azusa | 551 | 20 | 40 | 65 | 67 | 60 | 66 | Severe | 69 | 4.7 | 0 | 1 |
| San Gabriel-6 | Azusa | 552 | 70 | 38 | 65 | 63 | 60 | 66 | Impact | 67 | 2.1 | 16 | 0 |
| Soldano-1 | Azusa | 572 | 70 | 45 | 65 | 64 | 60 | 66 | Impact | 67 | 2.8 | 4 | 0 |
| Pasadena-1 | Azusa | 574 | 60 | 50 | 65 | 71 | 60 | 66 | Severe | 72 | 7.4 | 0 | 18 |
| Pasadena-7 | Azusa | 578 | 40 | 55 | 65 | 66 | 60 | 66 | Severe | 68 | 3.8 | 0 | 24 |
| 9th-1 (EST FUTURE) | Azusa | 580 | 76 | 55 | 65 | 61 | 60 | 66 | Impact | 66 | 1.5 | 15 | 0 |
| 9th-2 (EST FUTURE) | Azusa | 583 | 80 | 55 | 65 | 60 | 60 | 66 | Impact | 66 | 1.4 | 15 | 0 |
| 9th-3 (EST FUTURE) | Azusa | 586 | 80 | 55 | 65 | 60 | 60 | 66 | Impact | 66 | 1.4 | 15 | 0 |
| 9th-4 (EST FUTURE) | Azusa | 590 | 80 | 55 | 65 | 60 | 60 | 66 | Impact | 66 | 1.4 | 15 | 0 |
| 9th-5 (EST FUTURE) | Azusa | 593 | 80 | 55 | 65 | 60 | 60 | 66 | Impact | 66 | 1.4 | 15 | 0 |
| 9th-7 (EST FUTURE) | Azusa | 599 | 80 | 40 | 65 | 63 | 60 | 66 | Impact | 67 | 2.1 | 12 | 0 |
| Palm-1 | Azusa | 602 | 100 | 55 | 65 | 64 | 60 | 66 | Impact | 67 | 2.5 | 12 | 0 |
| 9th-8 (EST FUTURE) | Azusa | 603 | 80 | 30 | 65 | 61 | 60 | 66 | Impact | 66 | 1.4 | 12 | 0 |
| 9th-11 (EST FUTURE) | Glendora | 614 | 60 | 55 | 55 | 62 | 55 | 61 | Severe | 63 | 7.4 | 0 | 15 |
| Amber Oaks-1 | Glendora | 616 | 64 | 35 | 55 | 64 | 55 | 61 | Severe | 64 | 8.9 | 0 | 16 |
| 9th-12 (EST FUTURE) | Glendora | 619 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 63 | 8.0 | 0 | 15 |
| Meadow Oaks-1 | Glendora | 620 | 82 | 48 | 55 | 63 | 55 | 61 | Severe | 63 | 8.0 | 0 | 12 |
| 9th-13 (EST FUTURE) | Glendora | 623 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.5 | 0 | 15 |
| Ranger-1 | Glendora | 623 | 70 | 53 | 55 | 64 | 55 | 61 | Severe | 64 | 8.8 | 0 | 3 |



TABLE 3-11.10 *continued (page 2 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|---------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Carera-1 | Glendora | 626 | 90 | 55 | 55 | 61 | 55 | 61 | Severe | 62 | 6.9 | 0 | 3 |
| 9th-14 (EST FUTURE) | Glendora | 627 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.5 | 0 | 15 |
| Carera-2 | Glendora | 628 | 90 | 55 | 55 | 61 | 55 | 61 | Severe | 62 | 6.9 | 0 | 4 |
| 9th-15 (EST FUTURE) | Glendora | 631 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.5 | 0 | 15 |
| Oakbank-1 | Glendora | 631 | 76 | 55 | 55 | 63 | 55 | 61 | Severe | 63 | 8.1 | 0 | 2 |
| Ashworth-3 | Glendora | 633 | 170 | 55 | 55 | 56 | 55 | 61 | Impact | 59 | 3.2 | 8 | 0 |
| 9th-16 (EST FUTURE) | Glendora | 634 | 60 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.3 | 0 | 12 |
| Ashworth-1 | Glendora | 634 | 80 | 55 | 55 | 64 | 55 | 61 | Severe | 64 | 8.9 | 0 | 5 |
| Ashworth-2 | Glendora | 636 | 130 | 55 | 55 | 58 | 55 | 61 | Impact | 60 | 4.8 | 2 | 0 |
| Barranca-1 | Glendora | 638 | 144 | 55 | 55 | 59 | 55 | 61 | Impact | 61 | 5.3 | 2 | 0 |
| Marcile-2 | Glendora | 640 | 130 | 55 | 55 | 59 | 55 | 61 | Impact | 61 | 5.6 | 5 | 0 |
| Marcile-1 | Glendora | 641 | 80 | 55 | 55 | 73 | 55 | 61 | Severe | 73 | 17.9 | 0 | 4 |
| Lowell-1 | Glendora | 644 | 80 | 55 | 55 | 62 | 55 | 61 | Severe | 63 | 7.6 | 0 | 6 |
| Vermont-3 | Glendora | 688 | 124 | 50 | 58 | 60 | 57 | 62 | Impact | 62 | 3.7 | 4 | 0 |
| Glendora-1 | Glendora | 701 | 110 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.6 | 4 | 0 |
| Lemon-1 | Glendora | 703 | 40 | 55 | 55 | 65 | 55 | 61 | Severe | 65 | 9.8 | 0 | 3 |
| Lemon-2 | Glendora | 706 | 50 | 55 | 55 | 64 | 55 | 61 | Severe | 64 | 9.0 | 0 | 12 |
| Lemon-4 | Glendora | 708 | 130 | 55 | 55 | 56 | 55 | 61 | Impact | 59 | 3.2 | 4 | 0 |
| Pasadena-1 | Glendora | 710 | 20 | 55 | 55 | 75 | 55 | 61 | Severe | 75 | 19.6 | 0 | 2 |
| Pasadena-2 | Glendora | 710 | 80 | 55 | 55 | 61 | 55 | 61 | Impact | 62 | 6.4 | 2 | 0 |
| Pasadena-4 | Glendora | 713 | 20 | 55 | 55 | 69 | 55 | 61 | Severe | 69 | 14.0 | 0 | 4 |
| Pasadena-5 | Glendora | 713 | 100 | 55 | 55 | 58 | 55 | 61 | Impact | 60 | 4.6 | 7 | 0 |
| Lemon-5 | Glendora | 716 | 40 | 55 | 55 | 65 | 55 | 61 | Severe | 66 | 10.3 | 0 | 8 |
| Alosta-1 | Glendora | 721 | 86 | 55 | 55 | 62 | 55 | 61 | Severe | 63 | 7.3 | 0 | 1 |
| Alosta-4 | Glendora | 725 | 116 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.6 | 0 | 0 |
| Lemon-8 | Glendora | 726 | 44 | 55 | 55 | 65 | 55 | 61 | Severe | 65 | 9.8 | 0 | 7 |

TABLE 3-11.10 *continued (page 3 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|-------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Lemon-10 | Glendora | 727 | 164 | 55 | 55 | 56 | 55 | 61 | Impact | 59 | 3.5 | 3 | 0 |
| Lemon-11 | Glendora | 729 | 48 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.4 | 0 | 2 |
| Lemon-14 | Glendora | 732 | 44 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.2 | 0 | 7 |
| Glenwood-1 | Glendora | 734 | 54 | 55 | 55 | 65 | 55 | 61 | Severe | 65 | 9.7 | 0 | 4 |
| Glenwood-3 | Glendora | 737 | 74 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.3 | 0 | 4 |
| Elwood-1 | Glendora | 741 | 44 | 55 | 55 | 66 | 55 | 61 | Severe | 66 | 10.6 | 0 | 3 |
| Lemon-15 | Glendora | 746 | 40 | 55 | 55 | 63 | 55 | 61 | Severe | 63 | 8.1 | 0 | 6 |
| Lemon-16 | Glendora | 752 | 30 | 55 | 55 | 73 | 55 | 61 | Severe | 73 | 17.5 | 0 | 6 |
| Lemon-18 | Glendora | 755 | 40 | 55 | 55 | 66 | 55 | 61 | Severe | 67 | 11.1 | 0 | 7 |
| Lemon-19 | Glendora | 757 | 40 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.6 | 7 | 0 |
| Alosta-8 | Glendora | 760 | 180 | 55 | 55 | 56 | 55 | 61 | Impact | 59 | 3.4 | 2 | 0 |
| Lemon-20 | Glendora | 761 | 180 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.1 | 0 | 7 |
| Alosta-7 | Glendora | 762 | 110 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.7 | 2 | 0 |
| St. Vladimir-1 | Glendora | 768 | 40 | 55 | 55 | 66 | 55 | 61 | Severe | 66 | 10.5 | 0 | 6 |
| Alosta-10 | Glendora | 769 | 120 | 55 | 55 | 59 | 55 | 61 | Impact | 61 | 5.2 | 2 | 0 |
| Alosta-12 | Glendora | 770 | 130 | 55 | 55 | 59 | 55 | 61 | Impact | 60 | 4.9 | 0 | 0 |
| St. Vladimir-2 | Glendora | 775 | 76 | 55 | 55 | 61 | 55 | 61 | Severe | 62 | 7.0 | 0 | 6 |
| Compromise Line-1 | Glendora | 778 | 20 | 55 | 55 | 68 | 55 | 61 | Severe | 68 | 12.8 | 0 | 4 |
| Compromise Line-3 | Glendora | 780 | 20 | 55 | 55 | 67 | 55 | 61 | Severe | 67 | 11.8 | 0 | 4 |
| Compromise Line-5 | Glendora | 784 | 50 | 55 | 55 | 64 | 55 | 61 | Severe | 64 | 8.9 | 0 | 5 |
| Alosta-13 | Glendora | 789 | 140 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.1 | 3 | 0 |
| Elkhorn-1 | Glendora | 794 | 124 | 55 | 60 | 59 | 57 | 63 | Impact | 62 | 2.5 | 1 | 0 |
| Remuda-2 | Glendora | 796 | 90 | 55 | 60 | 60 | 57 | 63 | Impact | 63 | 3.3 | 2 | 0 |
| Remuda-3 | Glendora | 797 | 40 | 55 | 60 | 65 | 57 | 63 | Severe | 66 | 6.7 | 0 | 7 |
| Remuda-4 | Glendora | 803 | 40 | 55 | 60 | 65 | 57 | 63 | Severe | 66 | 6.7 | 0 | 8 |
| Remuda-5 | Glendora | 807 | 40 | 55 | 60 | 65 | 57 | 63 | Severe | 66 | 6.7 | 0 | 4 |



TABLE 3-11.10 *continued (page 4 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|------------------|-----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Canyon Meadows-1 | Glendora | 810 | 110 | 55 | 60 | 59 | 57 | 63 | Impact | 62 | 2.8 | 2 | 0 |
| Remuda-10 | Glendora | 811 | 44 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.0 | 0 | 3 |
| Remuda-11 | Glendora | 813 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.1 | 0 | 3 |
| Gladstone-1 | Glendora | 848 | 84 | 55 | 60 | 63 | 57 | 63 | Severe | 65 | 5.2 | 0 | 1 |
| Gladstone-2 | Glendora | 848 | 120 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.2 | 1 | 0 |
| Gladstone-1 | San Dimas | 850 | 96 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.1 | 0 | 4 |
| Gladstone-2 | San Dimas | 851 | 164 | 55 | 60 | 59 | 57 | 63 | Impact | 62 | 2.7 | 4 | 0 |
| Gladstone-3 | San Dimas | 852 | 60 | 55 | 60 | 64 | 57 | 63 | Severe | 65 | 5.6 | 0 | 4 |
| Perlanna-1 | San Dimas | 863 | 50 | 55 | 60 | 64 | 57 | 63 | Severe | 66 | 6.0 | 0 | 3 |
| Highland-1 | San Dimas | 866 | 50 | 55 | 60 | 64 | 57 | 63 | Severe | 65 | 5.5 | 0 | 2 |
| Village-1 | San Dimas | 869 | 140 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.3 | 0 | 0 |
| Oakway-1 | San Dimas | 872 | 130 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.2 | 32 | 0 |
| Eucla-2 | San Dimas | 884 | 160 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.1 | 0 | 0 |
| Eucla-3 | San Dimas | 888 | 100 | 55 | 60 | 63 | 57 | 63 | Severe | 65 | 5.2 | 0 | 0 |
| Walnut-1 | San Dimas | 922 | 60 | 55 | 65 | 63 | 61 | 66 | Impact | 67 | 1.9 | 32 | 0 |
| Walnut-3 | San Dimas | 927 | 90 | 55 | 65 | 62 | 61 | 66 | Impact | 67 | 1.7 | 32 | 0 |
| 1st-1 | La Verne | 1002 | 60 | 55 | 65 | 63 | 61 | 66 | Impact | 67 | 2.0 | 5 | 0 |
| 1st-3 | La Verne | 1004 | 40 | 55 | 65 | 64 | 61 | 66 | Impact | 68 | 2.5 | 5 | 0 |
| 1st-5 | La Verne | 1006 | 36 | 55 | 65 | 64 | 61 | 66 | Impact | 68 | 2.7 | 5 | 0 |
| 1st-6 | La Verne | 1008 | 50 | 55 | 65 | 65 | 61 | 66 | Impact | 68 | 3.0 | 5 | 0 |
| 1st-9 | La Verne | 1013 | 56 | 55 | 65 | 63 | 61 | 66 | Impact | 67 | 2.2 | 5 | 0 |
| 1st-10 | La Verne | 1016 | 50 | 55 | 65 | 63 | 61 | 66 | Impact | 67 | 2.1 | 5 | 0 |
| ULV-7 | La Verne | 1034 | 80 | 30 | 65 | 61 | 61 | 66 | Impact | 66 | 1.5 | 24 | 0 |
| White-1 | La Verne | 1050 | 70 | 55 | 62 | 62 | 59 | 64 | Impact | 65 | 2.9 | 3 | 0 |
| Sierra-12 | La Verne | 1075 | 140 | 55 | 62 | 60 | 59 | 64 | Impact | 64 | 2.1 | 4 | 0 |
| Bonita-1 | Pomona | 1145 | 110 | 55 | 62 | 58 | 58 | 64 | Impact | 64 | 1.6 | 24 | 0 |

TABLE 3-11.10 *continued (page 5 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|-----------------------------|-----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Bonita-3 | Claremont | 1150 | 90 | 55 | 62 | 60 | 58 | 64 | Impact | 64 | 2.0 | 16 | 0 |
| Magnolia-2 | Claremont | 1155 | 140 | 55 | 62 | 59 | 58 | 64 | Impact | 64 | 1.7 | 16 | 0 |
| Bonita-5 | Claremont | 1157 | 100 | 55 | 62 | 59 | 58 | 64 | Impact | 64 | 1.8 | 16 | 0 |
| Bonita-6 | Claremont | 1163 | 40 | 55 | 62 | 68 | 58 | 64 | Severe | 69 | 7.3 | 0 | 8 |
| Bonita-8 | Claremont | 1165 | 100 | 55 | 62 | 62 | 58 | 64 | Impact | 65 | 2.9 | 20 | 0 |
| Bonita-11 (EST FUTURE) | Claremont | 1169 | 60 | 55 | 62 | 63 | 58 | 64 | Impact | 66 | 3.9 | 16 | 0 |
| Bonita-14 (EST FUTURE) | Claremont | 1173 | 60 | 55 | 62 | 63 | 58 | 64 | Impact | 66 | 3.9 | 16 | 0 |
| Bonita-15 (EST FUTURE) | Claremont | 1177 | 60 | 55 | 62 | 63 | 58 | 64 | Impact | 66 | 3.9 | 32 | 0 |
| Bonita-16 (EST FUTURE) | Claremont | 1179 | 60 | 50 | 62 | 63 | 58 | 64 | Impact | 66 | 3.6 | 24 | 0 |
| *Claremont-1 | Claremont | 1228 | 100 | 55 | 63 | 60 | 59 | 64 | Impact | 65 | 1.9 | 3 | 0 |
| *Claremont-11 | Claremont | 1231 | 80 | 55 | 63 | 63 | 59 | 64 | Impact | 66 | 3.1 | 2 | 0 |
| *Claremont-4 | Claremont | 1231 | 100 | 55 | 63 | 63 | 59 | 64 | Impact | 66 | 3.2 | 4 | 0 |
| *Claremont-12 | Montclair | 1235 | 70 | 55 | 63 | 64 | 59 | 64 | Impact | 66 | 3.6 | 4 | 0 |
| *Claremont-7 | Montclair | 1235 | 90 | 55 | 63 | 62 | 59 | 64 | Impact | 65 | 2.7 | 5 | 0 |
| *Claremont-13 | Montclair | 1238 | 80 | 55 | 63 | 62 | 59 | 64 | Impact | 65 | 2.5 | 2 | 0 |
| *Claremont-9 | Montclair | 1239 | 90 | 55 | 63 | 61 | 59 | 64 | Impact | 65 | 2.2 | 5 | 0 |
| *Monte Vista-2 (EST FUTURE) | Montclair | 1259 | 80 | 20 | 63 | 63 | 59 | 64 | Impact | 66 | 3.1 | 5 | 0 |
| *Monte Vista-3 (EST FUTURE) | Montclair | 1263 | 80 | 28 | 63 | 65 | 59 | 64 | Severe | 67 | 4.2 | 0 | 5 |
| *Monte Vista-4 (EST FUTURE) | Montclair | 1265 | 80 | 50 | 63 | 69 | 59 | 64 | Severe | 70 | 7.5 | 0 | 5 |
| **Claremont-1 | Claremont | 1230 | 80 | 55 | 65 | 63 | 60 | 66 | Impact | 67 | 2.4 | 8 | 0 |
| **Claremont-3 | Claremont | 1232 | 60 | 55 | 65 | 64 | 60 | 66 | Impact | 67 | 2.7 | 2 | 0 |

TABLE 3-11.10 *continued (page 6 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|----------|------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | Imp | Sev |
| | | | | | | | | | | | | |

1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact.
 2. Predicted levels include a 5dBA penalty applied to audible signal noise, where applicable.
 3. The reported noise levels represent the highest noise levels for each location.
 * These noise-sensitive locations only apply to the Baseline Alternative (north of the Montclair Station Park and Ride).
 ** These noise-sensitive locations only apply to the Option G Alternative (south of the Montclair Station Park and Ride).

Source: Harris, Miller, Miller & Hanson, 2003.

The following are brief descriptions of each Category 2 land use area where a noise impact was calculated:

- 6th / Lime: On the south side of the rail alignment between Virginia Avenue and Foothill Boulevard in Azusa, 11 single-family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (70 to 140 feet) and the speed of the LRT vehicles. Single-family homes near Virginia Avenue would also be exposed to audible warning devices (bells and whistles) at the grade crossing.
- Foothill / San Gabriel: On the south side of the rail alignment between Foothill Boulevard and San Gabriel Avenue in Azusa, 20 multi-family residences and two single family homes would be exposed to noise impact. An additional 9 single-family homes would be exposed to severe noise impact in this area. The noise impacts would be due to the proximity of these residences to the tracks (80 to 124 feet) and the speed of the LRT vehicles. Single-family homes near Gabriel Avenue would also be exposed to audible warning devices (bells and whistles) at the grade crossing.
- San Gabriel: North of the rail alignment just west of San Gabriel Avenue, one single-family home and 16 multi-family residences would be exposed to noise impact. The one single-family home would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (20 to 70 feet), the speed of the LRT vehicles and exposure to audible warning devices (bells and whistles) at the grade crossing.
- Dalton / Pasadena: South of the rail alignment between Dalton Avenue and Pasadena Avenue in Azusa, four single-family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (70 feet), the speed of the LRT vehicles and exposure to audible warning devices (bells and whistles) at Pasadena Avenue grade crossing.
- Pasadena / Palm: North and south of the rail alignment between Pasadena Avenue and Palm Drive in Azusa, 87 future multi-family residences are expected to be exposed to noise impact. These residences are expected to be constructed on the north side of the rail alignment between station numbers 578+00 and 602+00. They are modeled after the existing multi-family residences just to the west of these future homes that have three residences per building and are located 40 feet from the near track. Twenty-four additional multi-family residences located south of the alignment just east of Pasadena Avenue would be exposed severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (40 to 80 feet), the speed of the LRT vehicles. The residences near Pasadena Avenue and Palm Drive also would be exposed to audible warning devices (bells and whistles) at the grade crossings.
- Palm: North and south of the rail alignment just east of Palm Drive in Azusa, 24 multi-family residences would be exposed to noise impact. Twelve of these residences north of the alignment are expected to be constructed in the future as part of a planned development. Residences just east of these homes where an impact is predicted near Azusa Station are not exposed to noise impact due to decreased train speeds in this area near the station. The noise impacts would be due to the proximity of these residences to the tracks (80 to 100 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at the grade crossing.
- Barranca: North and south of the rail alignment east of the Azusa Station to Barranca Avenue in Glendora, 115 multi-family residences would be exposed to severe noise impact. Eighty-seven of these residences are located north of the alignment along an expected future housing development. These future residences are modeled after the existing multi-family residences at 575+00 that have three residences per building and are located 40 feet from the near track. Twenty-nine single-family homes would also be exposed to noise impact in this area, 17 of which

would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (60 to 140 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at the Barranca Avenue grade crossing.

- Marcile: Just east of Barranca Avenue south of the alignment in Glendora, five single-family homes would be exposed to noise impact and an additional 10 single-family homes would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (80 to 130 feet) and the speed of the LRT vehicles.
- Vermont: Just west of Vermont Avenue south of the rail alignment in Glendora, four single-family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (80 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at the Vermont Avenue grade crossing.
- Glendora: North of the rail alignment between Glendora Avenue and Pasadena Avenue in Glendora, six single-family homes would be exposed to noise impact and five single-family homes would be exposed to severe noise impact. Four multi-family residences would be exposed to noise impact and 12 multi-family residences would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (20 to 100 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at both the Glendora Avenue and Pasadena Avenue grade crossings.
- Lemon: North of the rail alignment between Pasadena Avenue and Glenwood Avenue in Glendora, 10 single-family homes would be exposed to noise impact and 28 homes are exposed to severe noise impact. Impact extends along the entire first-row set of homes in this area. South of the rail alignment at station number 721+00, one single-family home would be exposed to severe noise impact and at 725+00 the Guest Inn Hotel would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (20 to 164 feet) and the speed of the LRT vehicles. Homes near Pasadena Avenue and Glenwood Avenue also would be exposed to audible warning devices (bells and whistles) at the grade crossings.
- Glenwood: North of the rail alignment between Glenwood Avenue and Elwood Avenue in Glendora, eight single-family homes would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (54 to 74 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at both the grade crossings.
- Elwood: North of the rail alignment between Elwood Avenue and Loraine Avenue in Glendora, 15 single-family homes in the first row would be exposed to severe noise impact. The severe noise impacts would be due to the proximity of these residences to the tracks (30 to 44 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at both the grade crossings.
- Loraine: North and south of the rail alignment between Loraine Avenue and the Alostia Avenue overpass in Glendora, 13 single-family homes would be exposed to noise impact and an additional 39 homes would be exposed to severe noise impact. One hotel on the south side of the alignment at station number 770+00 also would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (20 to 180 feet) and the speed of the LRT vehicles. Some homes near Loraine Avenue would be exposed to audible warning devices (bells and whistles) at the grade crossing.
- Alostia: South of the rail alignment just east of Alostia Avenue in Glendora, four single-family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (124 to 140 feet) and the speed of the LRT vehicles.

- Remuda: North of the rail alignment between station numbers 795+00 and 815+00 in Glendora, two single-family homes would be exposed to noise impact and 25 single-family homes would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (40 to 90 feet) and the speed of the LRT vehicles.
- Canyon Meadows: South of the rail alignment at station number 810+00 on Canyon Meadows Lane in Glendora, two single-family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (110 feet) and the speed of the LRT vehicles.
- Gladstone (west): At station number 848+00 just west of Gladstone Avenue in Glendora, one single-family home would be exposed to noise impact and one single-family home would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (84 to 120 feet), the speed of the LRT vehicles, and audible warning devices (bells and whistles) at the Gladstone Avenue grade crossing.
- Gladstone (east): Just east of Gladstone Avenue in San Dimas north and south of the rail alignment, four multi-family residences would be exposed to noise impact and eight multi-family housing units would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (60 to 164 feet), the speed of the LRT vehicles, and audible warning devices (bells and whistles) at the Gladstone Avenue grade crossing.
- Highland: Just east of the Route 57 overpass on the north and south sides of the rail alignment in San Dimas, five single-family homes would be exposed to severe noise impact and 32 multi-family residences in four buildings would be exposed to noise impact. The Red Roof Inn on the south side of the alignment at station number 870+00 would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (50 to 140 feet) and the speed of the LRT vehicles.
- Eucla: South of the rail alignment west of Eucla Avenue in San Dimas, the Extended Stay American Hotel would be exposed to noise impact and the Comfort Suites Hotel would be exposed to severe noise impact. The noise impacts would be due to the proximity of these hotels to the tracks (100 to 160 feet) and the speed of the LRT vehicles. The Comfort Suites Hotel would be exposed to audible warning devices (bells and whistles) at the Eucla Avenue grade crossing.
- Walnut: North of the rail alignment between San Dimas Avenue and Walnut Avenue in San Dimas, 64 multi-family residences would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (60 to 90 feet) and the speed of the LRT vehicles. The residences near Walnut Avenue also would be exposed to audible warning devices (bells and whistles) at the grade crossing.
- Wheeler: North of the rail alignment between Wheeler Avenue and B Street in La Verne, 30 single-family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (36 to 60 feet) and the speed of the LRT vehicles. The residences near Wheeler Avenue, A Street, and B Street also would be exposed to audible warning devices (bells and whistles) at the grade crossings.
- University of La Verne: North of the rail alignment just west of Fairplex Drive in La Verne, 24 dormitories in two buildings would be exposed to noise impact. The noise impacts would be due to the proximity of these dormitories to the tracks (80 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at the grade crossing.
- White: Just west of White Avenue on the north side of the rail alignment in La Verne, three single-family homes would be exposed to noise impact. Impacts at these homes would be due to

the proximity to the near tracks (70 feet), the speed of the LRT vehicles, and audible warning signals (bells and whistles) at the grade crossing.

- Sierra: South of the rail alignment west of Fulton Road in La Verne, four single-family homes would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks (140 feet), the speed of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at the Fulton Road grade crossing.
- Bonita: North of the rail alignment at station number 1147+00 in Pomona, 24 multi-family residences in three buildings would be exposed to noise impact. The noise impacts would be due to the proximity of these residences to the tracks and the speed of the LRT vehicles.
- Cambridge: North and south of the rail alignment between station number 1149+00 and Cambridge Avenue in Claremont, 48 multi-family residences would be exposed to noise impact and eight multi-family residences would be exposed to severe noise impact. The noise impacts would be due to the proximity of these residences to the tracks (90 to 140 feet) and the speed of the LRT vehicles. The eight multi-family residences with severe noise impact also would be exposed to audible warning devices (bells and whistles) at the Cambridge Avenue grade crossing.
- Cambridge / Bucknell: North of the rail alignment between Cambridge Avenue and Bucknell Avenue in Claremont, 108 multi-family residences would be expected to be exposed to noise impact. Eighty-eight of the 108 multi-family residences would be expected to be constructed in a new housing development in this area. The future residences are modeled similar to the existing multi-family housing that has 20 residences in three buildings. The noise impacts would be due to the proximity of these residences to the tracks (60 to 100 feet) and the speed of the LRT vehicles. The existing residences near Cambridge Avenue also would be exposed to audible warning devices (bells and whistles) at the grade crossing.
- Claremont (west, Baseline): North and south of the rail alignment just west of Claremont Boulevard in Claremont, nine single-family homes would be exposed to noise impact under the Baseline Option of the Triple Track configuration. This option has the LRT rail lines continuing to the north side of the Montclair TransCenter. These nine homes would be exposed to noise impact due to the relocation of the rail lines in this area. These homes also would be exposed to audible warning devices (bells and whistles) at the Claremont Boulevard grade crossing.
- Claremont (east, Baseline): North and south of the rail alignment just east of Claremont Boulevard in Montclair, 16 single-family homes would be exposed to noise impact under the Baseline Option of the Triple Track configuration. This option has the LRT rail lines continuing to the north of the Montclair TransCenter. These nine homes would be exposed to noise impact due to the relocation of the rail lines in this area. Homes near Claremont Boulevard also would be exposed to audible warning devices (bells and whistles) at the grade crossing.
- Monte Vista (Baseline): East of Monte Vista Avenue on the north side of the rail alignment between station numbers 1257+00 and 1268+00 in Montclair, five future single-family homes would be expected to be exposed to noise impact. These homes are planned as a future housing development in the area. The impact of these homes would be due to the location of the near rail lines in this area (80 feet) and the presence of crossovers near the Montclair LRT Station (North). These future single-family homes are modeled after the location of existing single-family homes just east of Claremont Boulevard.
- Claremont (Option H): Just east of Claremont Boulevard on the north and south sides of the rail alignment in Montclair, 10 single-family homes would be exposed to noise impact under Option H of the Triple Track configuration. Option H would extend LRT service along the existing Metrolink line to an LRT station in the south side of the Montclair TransCenter. These 10 homes

would be exposed to noise impact due to the proximity to the tracks (60 to 80 feet), the speeds of the LRT vehicles, and exposure to audible warning devices (bells and whistles) at the Claremont Boulevard grade crossing.

Similar to the Category 2 analysis, an assessment of noise impact for Category 3 receptors was also conducted for Phase II, Segment 2 LRT Triple Track configuration. Although Category 3 includes park lands, since they are all used for sports and other active recreation, they would not be considered as noise-sensitive and are not included in the evaluation. This assessment was based on a comparison of the existing ambient noise level with the predicted project noise levels in terms of the peak transit hour Leq. **Table 3-11.11** lists the noise impacts for institutional receptors.

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ¹ | Noise Level Increase ¹ |
|-----------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|--------------------------------|-----------------------------------|
| | | | | | | Pred ² | Impact Criteria | | | | |
| | | | | | | | Imp | Sev | | | |
| Alameda-1 | Azusa | 563 | 80 | 23 | 49 | 59 | 58 | 64 | Impact | 59 | 11.0 |
| Pasadena-8 (Baseball) | Azusa | 584 | 102 | 55 | 49 | 61 | 58 | 64 | Impact | 61 | 12.7 |
| Palm-0 | Azusa | 599 | 120 | 55 | 51 | 61 | 59 | 65 | Impact | 61 | 9.6 |
| Grande-1 | Glendora | 671 | 44 | 55 | 51 | 65 | 58 | 65 | Severe | 65 | 14.6 |
| Foothill-1 | Glendora | 673 | 64 | 55 | 51 | 65 | 58 | 65 | Severe | 65 | 14.4 |
| Foothill-2 | Glendora | 675 | 64 | 55 | 51 | 64 | 58 | 65 | Impact | 64 | 13.7 |
| Foothill-3 | Glendora | 678 | 76 | 55 | 51 | 63 | 58 | 65 | Impact | 63 | 12.1 |
| Pasadena-6 (Future) | Glendora | 709 | 90 | 55 | 52 | 62 | 59 | 65 | Impact | 63 | 10.4 |
| Pasadena-7 (Future) | Glendora | 711 | 80 | 55 | 52 | 64 | 59 | 65 | Impact | 64 | 11.5 |
| ULV-2 | La Verne | 1025 | 70 | 53 | 57 | 61 | 61 | 67 | Impact | 62 | 5.4 |
| ULV-4 | La Verne | 1030 | 20 | 40 | 57 | 66 | 61 | 67 | Impact | 67 | 9.7 |

1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact.

2. Predicted levels include a 5dBA penalty applied to audible signal noise, where applicable.

Source: Harris, Miller, Miller & Hanson, 2003

The following are brief descriptions of each Category 3 land use area where impact was calculated:

- Alameda: South of the rail alignment between Alameda Avenue and Dalton Avenue in Azusa, the Azusa Historical Museum would be exposed to noise impact. This museum would be subject to impacts due to its proximity to the rail lines (80 feet), the speed of the LRT vehicles, and the exposure to audible warning signals (bells and whistles) at the Dalton Avenue grade crossing.
- Pasadena: South of the rail alignment west of Palm Drive in Azusa, one school building at Azusa Pacific University would be exposed to noise impact. This school would be subject to impact due to its proximity to the rail lines (102 to 120 feet), the speed of the LRT vehicles, and the exposure to audible warning signals (bells and whistles) at the Palm Drive grade crossing.

- **Foothill / Vermont:** Between Foothill Boulevard and Vermont Avenue on the north and south sides of the rail alignment in Glendora, two medical buildings would be exposed to noise impact, one senior center educational building would be exposed to severe noise impact, and one medical building would be exposed to severe noise impact. These buildings are subject to impact due to their proximity to the rail lines (44 to 76 feet) and the speed of the LRT vehicles. The medical building north Foothill Boulevard also would be exposed to audible warning signals (bells and whistles) at the Foothill Boulevard and Grand Avenue grade crossing.
- **Pasadena (future):** South of the rail alignment to the west of Pasadena Avenue in Glendora, a future preschool and future medical building would be exposed to noise impact. These buildings would be subject to impact due to their proximity to the rail lines (80 to 90 feet), the speed of the LRT vehicles and their exposure to audible warning signals (bells and whistles) at Pasadena Avenue grade crossing.
- **University of La Verne:** Between B Street and Fairplex Drive north of the rail alignment at the University of La Verne a school building would be exposed to noise impact. This school building would be subject to impact due to their proximity to the near track (20 and 70 feet), the speed of the LRT vehicles, and audible warning signals (bells and whistles) at D Street.

Vibration

Table 3-11.12 lists the vibration impacts for Category 2 land use for Phase II, Segment 2 LRT Triple Track configuration. Written descriptions of the locations where vibration impacts are forecasted follow the table.

| TABLE 3-11.12 VIBRATION IMPACTS FOR CATEGORY 2 LAND USE PHASE II, SEGMENT 2 TRIPLE TRACK CONFIGURATON | | | | | | | |
|---|-------|-----------|-------------------------|-------------|--|---|-------------------|
| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | # of Res. Impacts |
| 6th-1 | Azusa | 524 | 120 | 55 | 74 | 72 | 5 |
| 6th-3 | Azusa | 528 | 70 | 55 | 79 | 72 | 2 |
| 6th-4 | Azusa | 533 | 50 | 55 | 82 | 72 | 4 |
| 6th-5 | Azusa | 533 | 100 | 55 | 76 | 72 | 4 |
| Lime-1 | Azusa | 537 | 90 | 55 | 77 | 72 | 2 |
| Foothill-4 | Azusa | 543 | 140 | 55 | 72 | 72 | 2 |
| Foothill-3 | Azusa | 543 | 90 | 55 | 77 | 72 | 6 |
| Foothill-1 | Azusa | 543 | 60 | 55 | 80 | 72 | 20 |
| Foothill-2 | Azusa | 546 | 60 | 55 | 80 | 72 | 5 |
| Foothill-7 | Azusa | 549 | 140 | 55 | 72 | 72 | 5 |
| Foothill-6 | Azusa | 550 | 70 | 55 | 79 | 72 | 4 |
| San Gabriel-1 | Azusa | 551 | 40 | 40 | 81 | 72 | 1 |
| San Gabriel-2 | Azusa | 551 | 90 | 40 | 76 | 72 | 1 |
| San Gabriel-3 | Azusa | 551 | 130 | 40 | 72 | 72 | 1 |
| Foothill-8 | Azusa | 551 | 100 | 55 | 76 | 72 | 2 |
| San Gabriel-6 | Azusa | 552 | 100 | 38 | 75 | 72 | 16 |
| Dalton-5 | Azusa | 567 | 120 | 55 | 74 | 72 | 12 |
| Dalton-2 | Azusa | 568 | 120 | 35 | 73 | 72 | 1 |

TABLE 3-11.12 *continued (page 2 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | # of Res. Impacts |
|------------------------------------|----------|-----------|-------------------------|-------------|--|---|-------------------|
| Soldano-1 | Azusa | 572 | 50 | 45 | 80 | 72 | 4 |
| Soldano-2 | Azusa | 573 | 110 | 48 | 74 | 72 | 3 |
| Pasadena-1 | Azusa | 574 | 40 | 50 | 83 | 72 | 18 |
| Pasadena-2 | Azusa | 575 | 110 | 55 | 75 | 72 | 12 |
| Pasadena-7 | Azusa | 578 | 60 | 55 | 80 | 72 | 24 |
| Pasadena-5 | Azusa | 579 | 130 | 55 | 73 | 72 | 36 |
| 9th-1 (EST FUTURE) | Azusa | 580 | 80 | 55 | 78 | 72 | 15 |
| 9th-2 (EST FUTURE) | Azusa | 583 | 80 | 55 | 78 | 72 | 15 |
| 9th-3 (EST FUTURE) | Azusa | 586 | 80 | 55 | 78 | 72 | 15 |
| 9th-4 (EST FUTURE) | Azusa | 590 | 80 | 55 | 78 | 72 | 15 |
| 9th-5 (EST FUTURE) | Azusa | 593 | 80 | 55 | 78 | 72 | 15 |
| 9th-6 (EST FUTURE) | Azusa | 596 | 80 | 48 | 76 | 72 | 15 |
| 9th-7 (EST FUTURE) | Azusa | 599 | 80 | 40 | 76 | 72 | 12 |
| Palm-1 | Azusa | 602 | 100 | 55 | 76 | 72 | 12 |
| 9th-8 (EST FUTURE) | Azusa | 603 | 80 | 30 | 75 | 72 | 12 |
| 9th-10 (EST FUTURE) (NEAR STAT) | Azusa | 611 | 80 | 35 | 74 | 72 | 15 |
| 9th-11 (EST FUTURE) | Glendora | 614 | 80 | 55 | 78 | 72 | 15 |
| Amber Oaks-1 | Glendora | 616 | 70 | 35 | 77 | 72 | 16 |
| 9th-12 (EST FUTURE) | Glendora | 619 | 80 | 55 | 78 | 72 | 15 |
| Meadow Oaks-1 | Glendora | 620 | 90 | 48 | 76 | 72 | 12 |
| Ranger-1 | Glendora | 623 | 60 | 53 | 80 | 72 | 3 |
| 9th-13 (EST FUTURE) | Glendora | 623 | 80 | 55 | 78 | 72 | 15 |
| Ranger-2 | Glendora | 625 | 140 | 55 | 72 | 72 | 3 |
| Carera-1 | Glendora | 626 | 70 | 55 | 79 | 72 | 3 |
| 9th-14 (EST FUTURE) | Glendora | 627 | 80 | 55 | 78 | 72 | 15 |
| Carera-2 | Glendora | 628 | 70 | 55 | 79 | 72 | 4 |
| Oakbank-1 | Glendora | 631 | 60 | 55 | 80 | 72 | 2 |
| 9th-15 (EST FUTURE) | Glendora | 631 | 80 | 55 | 78 | 72 | 15 |
| Ashworth-1 | Glendora | 634 | 60 | 55 | 80 | 72 | 5 |
| 9th-16 (EST FUTURE) | Glendora | 634 | 80 | 55 | 78 | 72 | 12 |
| Ashworth-2 | Glendora | 636 | 110 | 55 | 75 | 72 | 2 |
| Marcile-2 | Glendora | 640 | 110 | 55 | 75 | 72 | 5 |
| Marcile-1 | Glendora | 641 | 60 | 55 | 80 | 72 | 4 |
| Lowell-1 | Glendora | 644 | 60 | 55 | 80 | 72 | 6 |
| Grande-2 | Glendora | 677 | 100 | 55 | 75 | 72 | 8 |
| Vermont-3 | Glendora | 688 | 100 | 50 | 74 | 72 | 4 |
| Glendora-1 | Glendora | 701 | 120 | 55 | 73 | 72 | 4 |
| Lemon-1 | Glendora | 703 | 50 | 55 | 84 | 72 | 3 |
| Lemon-2 | Glendora | 706 | 60 | 55 | 82 | 72 | 12 |
| Pasadena-1 | Glendora | 710 | 60 | 55 | 82 | 72 | 2 |
| Pasadena-2 | Glendora | 710 | 100 | 55 | 75 | 72 | 2 |
| Pasadena-4 | Glendora | 713 | 40 | 55 | 87 | 72 | 4 |

TABLE 3-11.12 *continued (page 3 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | # of Res. Impacts |
|-------------------|----------|-----------|-------------------------|-------------|--|---|-------------------|
| Pasadena-5 | Glendora | 713 | 120 | 55 | 73 | 72 | 7 |
| Lemon-5 | Glendora | 716 | 56 | 55 | 83 | 72 | 8 |
| Lemon-6 | Glendora | 716 | 120 | 55 | 73 | 72 | 10 |
| Alosta-1 | Glendora | 721 | 70 | 55 | 80 | 72 | 1 |
| Lemon-7 | Glendora | 721 | 120 | 55 | 73 | 72 | 7 |
| Lemon-8 | Glendora | 726 | 60 | 55 | 82 | 72 | 7 |
| Lemon-11 | Glendora | 729 | 64 | 55 | 81 | 72 | 2 |
| Lemon-14 | Glendora | 732 | 60 | 55 | 82 | 72 | 7 |
| Glenwood-1 | Glendora | 734 | 70 | 55 | 80 | 72 | 4 |
| Glenwood-3 | Glendora | 737 | 90 | 55 | 77 | 72 | 4 |
| Elwood-1 | Glendora | 741 | 60 | 55 | 82 | 72 | 3 |
| Alosta-5 | Glendora | 745 | 96 | 55 | 76 | 72 | 3 |
| Lemon-14B | Glendora | 746 | 64 | 55 | 81 | 72 | 6 |
| Lemon-15 | Glendora | 746 | 50 | 55 | 84 | 72 | 6 |
| Lemon-18 | Glendora | 755 | 60 | 55 | 82 | 72 | 7 |
| Lemon-19 | Glendora | 757 | 50 | 55 | 84 | 72 | 7 |
| Alosta-7 | Glendora | 762 | 90 | 55 | 77 | 72 | 2 |
| St. Vladimir-1 | Glendora | 768 | 60 | 55 | 82 | 72 | 6 |
| Alosta-10 | Glendora | 769 | 100 | 55 | 75 | 72 | 2 |
| St. Vladimir-2 | Glendora | 775 | 90 | 55 | 77 | 72 | 6 |
| Compromise Line-1 | Glendora | 778 | 40 | 55 | 87 | 72 | 4 |
| Compromise Line-3 | Glendora | 780 | 30 | 55 | 90 | 72 | 4 |
| Compromise Line-5 | Glendora | 784 | 64 | 55 | 81 | 72 | 5 |
| Alosta-13 | Glendora | 789 | 110 | 55 | 74 | 72 | 3 |
| Elkhorn-1 | Glendora | 794 | 100 | 55 | 75 | 72 | 1 |
| Remuda-2 | Glendora | 796 | 110 | 55 | 74 | 72 | 2 |
| Remuda-3 | Glendora | 797 | 60 | 55 | 82 | 72 | 7 |
| Remuda-4 | Glendora | 803 | 60 | 55 | 82 | 72 | 8 |
| Remuda-6 | Glendora | 806 | 110 | 55 | 74 | 72 | 3 |
| Remuda-5 | Glendora | 807 | 60 | 55 | 82 | 72 | 4 |
| Remuda-7 | Glendora | 809 | 110 | 55 | 74 | 72 | 4 |
| Canyon Meadows-1 | Glendora | 810 | 80 | 55 | 78 | 72 | 2 |
| Remuda-10 | Glendora | 811 | 80 | 55 | 78 | 72 | 3 |
| Remuda-11 | Glendora | 813 | 70 | 55 | 80 | 72 | 3 |
| Gladstone-1 | Glendora | 848 | 64 | 55 | 81 | 72 | 1 |
| Gladstone-2 | Glendora | 848 | 100 | 55 | 75 | 72 | 1 |
| 1st-1 | La Verne | 1002 | 60 | 55 | 73 | 72 | 5 |
| 1st-3 | La Verne | 1004 | 40 | 55 | 80 | 72 | 5 |
| 1st-5 | La Verne | 1006 | 36 | 55 | 82 | 72 | 5 |
| 1st-6 | La Verne | 1008 | 50 | 55 | 76 | 72 | 5 |
| 1st-9 | La Verne | 1013 | 56 | 55 | 74 | 72 | 5 |
| 1st-10 | La Verne | 1016 | 50 | 55 | 76 | 72 | 5 |
| Garey-1 | Pomona | 1104 | 160 | 55 | 72 | 72 | 54 |

TABLE 3-11.12 *continued (page 4 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATON

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | # of Res. Impacts |
|-----------------------------|-----------|-----------|-------------------------|-------------|--|---|-------------------|
| Roderick-2 | Pomona | 1126 | 150 | 55 | 73 | 72 | 6 |
| Bonita-1 | Pomona | 1145 | 110 | 55 | 76 | 72 | 24 |
| Bonita-3 | Claremont | 1150 | 90 | 55 | 78 | 72 | 16 |
| Bonita-4 | Claremont | 1154 | 150 | 55 | 73 | 72 | 4 |
| Magnolia-2 | Claremont | 1155 | 140 | 55 | 74 | 72 | 16 |
| Bonita-5 | Claremont | 1157 | 100 | 55 | 77 | 72 | 16 |
| Bonita-7 | Claremont | 1162 | 140 | 55 | 74 | 72 | 8 |
| Bonita-6 | Claremont | 1163 | 40 | 55 | 87 | 72 | 8 |
| Bonita-11 (EST FUTURE) | Claremont | 1169 | 60 | 55 | 76 | 72 | 16 |
| Bonita-14 (EST FUTURE) | Claremont | 1173 | 60 | 55 | 76 | 72 | 16 |
| Bonita-15 (EST FUTURE) | Claremont | 1177 | 60 | 55 | 76 | 72 | 32 |
| Bonita-16 (EST FUTURE) | Claremont | 1179 | 60 | 50 | 75 | 72 | 24 |
| **Claremont-1 | Claremont | 1230 | 80 | 55 | 73 | 72 | 8 |
| *Claremont-11 | Claremont | 1231 | 80 | 55 | 73 | 72 | 2 |
| **Claremont-3 | Claremont | 1232 | 60 | 55 | 76 | 72 | 2 |
| Claremont-12 | Montclair | 1235 | 70 | 55 | 74 | 72 | 4 |
| *Claremont-7 | Montclair | 1235 | 90 | 55 | 72 | 72 | 5 |
| *Claremont-8 | Montclair | 1236 | 90 | 55 | 72 | 72 | 5 |
| *Claremont-13 | Montclair | 1238 | 80 | 55 | 73 | 72 | 2 |
| *Claremont-9 | Montclair | 1239 | 90 | 55 | 72 | 72 | 5 |
| *Monte Vista-2 (EST FUTURE) | Montclair | 1259 | 80 | 20 | 74 | 72 | 5 |
| *Monte Vista-3 (EST FUTURE) | Montclair | 1263 | 80 | 28 | 77 | 72 | 5 |
| *Monte Vista-4 (EST FUTURE) | Montclair | 1265 | 80 | 50 | 82 | 72 | 5 |

1. Vibration levels are measured in VdB referenced to 1 µin/sec.
 2. The reported vibration level represents the maximum vibration level for each location.
 * These noise-sensitive locations only apply to the Baseline Alternative (north of the Montclair TransCenter).
 ** These noise-sensitive locations only apply to the Option G Alternative (south of the Montclair TransCenter).

Source: Harris, Miller, Miller & Hanson, 2003.

The following are brief descriptions of each Category 2 land use area where vibration impact was calculated:

- Virginia / San Gabriel: South of the rail alignment between station numbers 523+00 and 553+00 in Azusa, 41 single family homes and 20 multi-family residences would be exposed to vibration impact. North of the rail alignment just west of San Gabriel Avenue in Azusa, three single-family homes and 16 multi-family residences also would be exposed to vibration impact. These homes are located approximately 40 to 140 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.

- Dalton / Azusa Citrus Station: From Dalton Avenue to the Azusa Citrus Station in Azusa, eight single-family homes and 243 multi-family homes would be exposed to vibration impact. One hundred twenty-nine of the multi-family residences are future proposed residences that are expected to be constructed on the north side of the alignment. These homes were modeled similar to the existing multi-family residences just east of Pasadena Avenue on the north side of the alignment. This existing development has three residences per building. The homes in this area are approximately 40 to 130 feet away from the near track. The vibration impact of these homes would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Azusa Citrus Station / Lowell: From the Azusa Citrus Station to Lowell Street in Glendora on both sides of the alignment, 115 multi-family residences and 37 single-family homes would be exposed to vibration impact. These homes are located 60 to 140 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Grande: In between Grande Avenue and Vermont Avenue at station number 677+00 on the north side of the alignment and at 688+00 on the south side of the alignment, eight multi-family residences and four single-family homes, respectively, would be exposed to vibration impact. These homes are located 100 feet away from the near track. The vibration impact of these homes would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Glendora / I-210: North and south of the rail alignment between Glendora Avenue and the I-210 off ramp in Glendora, 175 single-family homes, 10 multi-family residences, and two hotels would be exposed to vibration impact. These homes and hotels are located 30 to 120 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Gladstone: At station number 848+00 on the south side of the rail alignment in Glendora, two single-family homes would be exposed to vibration impact. These homes are 64 and 100 feet away from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Wheeler / B: From Wheeler Street to B Street on the north side of the alignment in La Verne, 30 single-family homes would be exposed to vibration impact. These homes are 36 to 60 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Garey: North of the rail alignment at station number 1105+00 in Pomona, 54 multi-family residences in three buildings would be exposed to vibration impact. These residences are located 160 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Roderick: South of the rail alignment at station number 1127+00 in Pomona, six single-family homes would be exposed to vibration impact. These residences are located 150 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Bonita: North of the rail alignment at station number 1147+00 in Pomona, 24 multi-family residences in three buildings would be exposed to vibration impact. These residences are located 110 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.
- Cambridge (west): West of Cambridge Avenue on the north and south sides of the rail alignment in Claremont, 68 multi-family residences would be exposed to vibration impact. These

residences are located 40 to 150 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.

- Cambridge (east): East of Cambridge Avenue between station numbers 1168+00 and 1180+00 on the north side of the alignment in Claremont, 88 future multi-family residences would be expected to be exposed to vibration impact. This future housing development is modeled after the existing multi-family housing just east of Cambridge Avenue. The vibration impact would be due to the proximity of the homes to the near track (60 feet) and the speed of the LRT vehicles.
- Claremont (west): Just west of Claremont Boulevard on the south side of the rail alignment in Claremont, two single-family homes would be exposed to vibration impact for the Baseline Option under the Triple Track configuration. These homes are located 80 feet from the near track. The vibration impact would be due to the proximity of the homes to the relocated near track and the speed of the LRT vehicles.
- Claremont (east): East of Claremont Boulevard on both the north and the south side of the rail alignment in Montclair, 21 single-family homes would be exposed to vibration impact for the Baseline Option under the Triple Track configuration. These homes are located 70 to 90 feet from the relocated near tracks. The vibration impact would be due to the proximity of the homes to the relocated near track and the speed of the LRT vehicles.
- Monte Vista (future): North of the rail alignment between station numbers 1257+00 and 1268+00 in Montclair, 15 future single-family residences would be expected to be impacted by vibration in the Baseline Option. These homes are modeled after the existing single-family homes just east of Claremont Boulevard. They are located approximately 80 feet from the near track. The vibration impact would be due to the proximity of the homes to the relocated near track and the speed of the LRT vehicles.
- Claremont (east, Option H): East of Claremont Boulevard on the north and south side of the rail alignment in Montclair, eight multi-family residences and two single-family residences would be exposed to vibration impact. These homes are located 60 to 80 feet from the near track. The vibration impact would be due to the proximity of the homes to the near track and the speed of the LRT vehicles.

Similar to the Category 2 analysis, an assessment of vibration impact for Category 3 receptors was also conducted for Phase II, Segment 2 LRT Triple Track configuration. **Table 3-11.13** lists the vibration impacts for Category 3 land use for Phase II, Segment 2 LRT Triple Track configuration.

**TABLE 3-11.13
VIBRATION IMPACTS FOR CATEGORY 3 LAND USE
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATION**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Impacts |
|---------------------|----------|-----------|-------------------------|-------------|--|---|----------------|
| Lime-3 | Azusa | 539 | 100 | 55 | 76 | 75 | 1 |
| Grande-1 | Glendora | 671 | 60 | 55 | 82 | 75 | 1 |
| Foothill-1 | Glendora | 673 | 60 | 55 | 82 | 75 | 1 |
| Foothill-2 | Glendora | 675 | 50 | 55 | 84 | 75 | 1 |
| Foothill-3 | Glendora | 678 | 60 | 55 | 82 | 75 | 1 |
| Pasadena-6 (Future) | Glendora | 709 | 70 | 55 | 80 | 75 | 1 |
| Pasadena-7 (Future) | Glendora | 711 | 60 | 55 | 82 | 75 | 1 |
| ULV-4 | La Verne | 1030 | 20 | 40 | 88 | 75 | 1 |

1. Vibration levels are measured in VdB referenced to 1 μ in/sec.
2. The reported vibration level represents the maximum vibration level for each location.

Source: Harris, Miller, Miller & Hanson, 2003.

The following are brief descriptions of each Category 3 land use area where an impact was calculated:

- **Lime:** South of the rail alignment at station number 538+00 in Azusa, a medical building would be exposed to vibration impact. This building is located 100 feet from the near track. The vibration impact would be due to the proximity of the building to the near track and the speed of the LRT vehicles.
- **Grande:** East of Grande Avenue from station numbers 670+00 to 679+00, three medical buildings and one school building would be exposed to vibration impact. These buildings are located 50 to 60 feet from the near track. The vibration impacts would be due to the proximity of the buildings to the near track and the speed of the LRT vehicles.
- **Pasadena (future):** West of Pasadena Avenue on the south side of the alignment in Glendora, a future medical building and a future preschool would be expected to be impacted by vibration. These future buildings are estimated to be 60 to 70 feet from the near track. The vibration impact of these buildings would be due to the proximity of the buildings to the near track and the speed of the LRT vehicles.
- **University of La Verne:** North of the rail alignment at station number 1080+00, one school building at the University of La Verne would be exposed to vibration impact. This building is located 20 feet from the near track. The vibration impact would be due to the proximity of the building to the near track and the speed of the LRT vehicles.

Summary of Triple Track Impacts for Full Build LRT Alternative

For both Segments 1 and 2, there are 744 residences that are exposed to noise impact and an additional 532 residences that are exposed to severe noise impact. There are a total of 1575 residences that are

exposed to vibration impact. Of this total, 554 residences were located in areas where the vibration measurements indicated efficient propagation conditions resulting in greater than normal number of impacts. For Category 3, there are four schools that are exposed to noise impact and one school that is exposed to severe noise impact. The schools exposed to noise impact include a senior center and a future preschool. There are also three medical buildings and a museum that are exposed to noise impact and one school that is exposed to severe noise impact. There are also vibration impacts for Category 3 land use areas that include four schools and five medical buildings.

Summary of Triple Track Impacts for Build LRT Alternative to Maintenance Facility

For Segment 1 of the Triple Track configuration, there are 127 residences exposed to noise impact and an additional 182 residences that are exposed to severe noise impact. There are a total of 575 homes that are also exposed to vibration impact. Of this total, 554 residences were located in areas where the vibration measurements indicated efficient propagation conditions resulting in greater than normal number of impacts. For Category 3 land use, there is one school that would be exposed to noise impact. This school is also exposed to vibration impact.

d. LRT, Double Track Configurations

Noise Analysis

For the LRT Double Track Configurations, detailed comparisons of the existing and future noise levels are presented in Table 3-11.14, Table 3-11.15, Table 3-11.18, and Table 3-11.19. Table 3-11.14 includes results for the Category 2 receptors along the Phase II, Segment 1 portion of the alignment with both daytime and nighttime sensitivity to noise (e.g. residences, hotels and hospitals). Table 3-11.15 is a listing of all Category 3 receptors along the Phase II, Segment 1 portion of the alignment, consisting of institutional sites that are not sensitive to noise at night (e.g. schools, churches, parks and medical offices). Table 3-11.18 includes results for the Category 2 receptors along the Phase II, Segment 2 portion of the alignment with both daytime and nighttime sensitivity to noise (e.g. residences, hotels and hospitals). Table 3-11.19 is a listing of all Category 3 receptors along the Phase II, Segment 2 portion of the alignment, consisting of institutional sites that are not sensitive to noise at night (e.g. schools, churches, parks and medical offices).

In addition to the civil station (as shown in figures in Volume 2), distance to the near track and proposed LRT speed, each table includes the existing noise level, the projected noise level from LRT operations and the impact criteria for each receptor or receptor group. Based on a comparison of the predicted project noise level with the impact criteria, the impact category is listed, along with the predicted total noise level and projected noise increase due to the introduction of LRT service. Tables 3-11.14 and 3-11.18 also include an inventory of the number of impacts and severe impacts at each sensitive receptor location.

It should be noted that, although the forecasted Double Track noise levels at specific locations are different than for the Triple Track configuration, the number of residences for the Double Track configurations that would be subject to impact or severe impact are the same as reported for the Triple Track configuration.

Vibration Analysis

For the LRT Double Track configurations, the estimated root mean square (RMS) velocity levels (VdB re 1 micro-in./sec.) for sensitive receptors at representative distances are provided in Table 3-11.16, Table 3-11.17, Table 3-11.20, and 3-11.21. These tables summarize the results of the analysis in terms of anticipated exceedances of the FTA criteria for “frequent events” (defined as more than 70 events per day). The criteria are discussed in more detail in Section 3-11.2.2.

Vibration-sensitive locations along the alignment are listed in Table 3-11.16 for Category 2 land use and in Table 3-11.17 for Category 3 land use for Phase II, Segment 1. Vibration-sensitive locations along the alignment are listed in Table 3-11.20 for Category 2 land use and in Table 3-11.21 for Category 3 land use for Phase II, Segment 2. Each table lists the locations, the civil station, the distance to the near track, and the projected LRT speed at each location. In addition, the predicted project vibration level and the impact criterion level are indicated along with the number of impacts projected for each receptor or receptor group.

Phase I — The Cities Affected and the Effects

Noise impacts for Phase I were evaluated using the maximum passby noise levels, or L_{max}.⁴ Existing service in Phase I uses 2-car train consists. Future service levels when the Eastside LRT Extension project begins operation in 2009 would include 3-car train consists. As a result of this change, L_{max} noise levels at the residences closest to the corridor would increase by substantially less than 1 dBA, which is an imperceptible difference. Changes in the frequency of service would not affect L_{max}.

Phase II would not induce noise impacts in Phase I cities, since the Operating Plan for Phase II is dictated by the Eastside LRT Extension’s Operating Plan, which will precede Phase II.

Phase II, Segment 1 — The Cities Affected and the Effects

Noise

Table 3-11.14 lists the noise impacts for Category 2 land use for Phase II, Segment 1 LRT Double Track configurations. The locations of these impacts are the same as previously described for the Triple Track configurations following **Table 3-11.10**.

⁴ LACTC, Metro Pasadena Project, “Design & Performance Criteria,” 1992.

**TABLE 3-11.14
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|----------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| San Luis Rey-1 | Arcadia | 141 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 67 | 1.7 | 3 | 0 |
| San Luis Rey-2 | Arcadia | 146 | 90 | 55 | 65 | 61 | 60 | 66 | Impact | 66 | 1.4 | 6 | 0 |
| San Luis Rey-3 | Arcadia | 147 | 50 | 55 | 60 | 65 | 58 | 63 | Severe | 66 | 6.0 | 0 | 4 |
| San Luis Rey-4 | Arcadia | 149 | 120 | 55 | 60 | 59 | 58 | 63 | Impact | 62 | 2.5 | 2 | 0 |
| Cornell-1 | Arcadia | 151 | 96 | 55 | 60 | 60 | 58 | 63 | Impact | 63 | 3.2 | 6 | 0 |
| Cornell-2 | Arcadia | 155 | 90 | 55 | 60 | 61 | 58 | 63 | Impact | 63 | 3.4 | 8 | 0 |
| Cornell-3 | Arcadia | 156 | 90 | 55 | 60 | 61 | 58 | 63 | Impact | 63 | 3.4 | 8 | 0 |
| 2nd-2 | Arcadia | 185 | 80 | 55 | 60 | 61 | 58 | 63 | Impact | 64 | 3.7 | 0 | 0 |
| 3rd-1 | Arcadia | 201 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.3 | 0 | 12 |
| Contented-1 | Monrovia | 207 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.3 | 0 | 2 |
| Contented-3 | Monrovia | 209 | 50 | 55 | 60 | 65 | 57 | 63 | Severe | 66 | 6.2 | 0 | 4 |
| Contented-4 | Monrovia | 214 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.3 | 0 | 6 |
| Montana-1 | Monrovia | 221 | 30 | 55 | 60 | 67 | 57 | 63 | Severe | 68 | 8.4 | 0 | 8 |
| Anita-1 | Monrovia | 221 | 28 | 55 | 60 | 68 | 57 | 63 | Severe | 68 | 8.7 | 0 | 4 |
| Montana-3 | Monrovia | 224 | 30 | 55 | 60 | 67 | 57 | 63 | Severe | 68 | 8.4 | 0 | 2 |
| Anita-3 | Monrovia | 225 | 48 | 55 | 60 | 65 | 57 | 63 | Severe | 66 | 6.4 | 0 | 5 |
| Montana-5 | Monrovia | 226 | 60 | 55 | 60 | 63 | 57 | 63 | Severe | 65 | 5.3 | 0 | 48 |
| Alamitas-1 | Monrovia | 230 | 40 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.3 | 0 | 4 |
| Diamond-1 | Monrovia | 231 | 22 | 55 | 60 | 69 | 57 | 63 | Severe | 69 | 9.5 | 0 | 5 |
| Diamond-4 | Monrovia | 236 | 80 | 55 | 60 | 59 | 57 | 63 | Impact | 62 | 2.7 | 8 | 0 |
| Radford-1 | Monrovia | 236 | 44 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.2 | 0 | 3 |
| Diamond-3 | Monrovia | 237 | 40 | 55 | 60 | 68 | 57 | 63 | Severe | 68 | 8.6 | 0 | 6 |
| Mayflower-2 | Monrovia | 238 | 90 | 55 | 60 | 60 | 57 | 63 | Impact | 63 | 3.2 | 5 | 0 |
| Alamitas-2 | Monrovia | 240 | 54 | 55 | 60 | 59 | 57 | 63 | Impact | 62 | 2.8 | 4 | 0 |
| Mayflower-3 | Monrovia | 240 | 120 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.1 | 4 | 0 |
| Mayflower-1 | Monrovia | 240 | 30 | 55 | 60 | 68 | 57 | 63 | Severe | 69 | 9.3 | 0 | 2 |



TABLE 3-11.14 *continued*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|-------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Mayflower-6 | Monrovia | 241 | 40 | 55 | 60 | 67 | 57 | 63 | Severe | 68 | 8.2 | 0 | 1 |
| Mayflower-4 | Monrovia | 246 | 46 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 7.5 | 0 | 40 |
| Genoa-1 | Monrovia | 250 | 30 | 55 | 60 | 68 | 57 | 63 | Severe | 68 | 8.7 | 0 | 20 |
| Duarte-2 | Duarte | 315 | 130 | 55 | 57 | 60 | 56 | 62 | Impact | 62 | 5.2 | 4 | 0 |
| Duarte-5 | Duarte | 318 | 130 | 55 | 57 | 58 | 56 | 62 | Impact | 60 | 4.0 | 4 | 0 |
| Duarte-8 | Duarte | 322 | 130 | 55 | 57 | 58 | 56 | 62 | Impact | 60 | 4.0 | 3 | 0 |
| Hamilton-1 | Duarte | 325 | 120 | 55 | 57 | 59 | 56 | 62 | Impact | 61 | 4.3 | 7 | 0 |
| Duarte-11 | Duarte | 330 | 130 | 55 | 57 | 58 | 56 | 62 | Impact | 60 | 4.0 | 3 | 0 |
| Duarte-14 | Duarte | 334 | 130 | 55 | 57 | 58 | 56 | 62 | Impact | 60 | 4.0 | 3 | 0 |
| Hamilton-2 | Duarte | 334 | 110 | 55 | 57 | 59 | 56 | 62 | Impact | 61 | 4.7 | 7 | 0 |
| Hamilton-3 | Duarte | 339 | 140 | 55 | 57 | 59 | 56 | 62 | Impact | 61 | 4.8 | 6 | 0 |
| Hamilton-4 | Duarte | 343 | 140 | 55 | 57 | 58 | 56 | 62 | Impact | 60 | 3.7 | 6 | 0 |
| Duarte-17 | Duarte | 344 | 140 | 55 | 57 | 58 | 56 | 62 | Impact | 60 | 3.7 | 5 | 0 |
| Duarte-18 | Duarte | 346 | 160 | 55 | 57 | 57 | 56 | 62 | Impact | 60 | 3.2 | 10 | 0 |
| Hamilton-5 | Duarte | 347 | 90 | 55 | 57 | 61 | 56 | 62 | Impact | 62 | 5.7 | 5 | 0 |
| Hamilton-6 | Duarte | 351 | 44 | 48 | 57 | 65 | 56 | 62 | Severe | 65 | 8.9 | 0 | 6 |
| Hamilton-8 | Duarte | 354 | 60 | 38 | 57 | 62 | 56 | 62 | Severe | 63 | 6.5 | 0 | 5 |
| Hamilton-10 | Duarte | 357 | 60 | 30 | 57 | 61 | 56 | 62 | Impact | 62 | 5.5 | 5 | 0 |

1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact.

2. Predicted levels include a 5dBA penalty applied to audible signal noise, where applicable.

3. The reported noise levels represent the highest noise levels for each location.

Source: Harris, Miller, Miller & Hanson, 2003

**TABLE 3-11.15
NOISE IMPACTS FOR CATEGORY 3 LAND USE
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATION**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | Impact Category | Total Noise Level ¹ | Noise Level Increase ¹ |
|--|------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----------------|--------------------------------|-----------------------------------|
| | | | | | | Pred ² | Impact Criteria | | | |
| | | | | | | | | | | |
| There are no Category 3 noise impacts for Phase II, Segment 1. | | | | | | | | | | |

Vibration

Table 3-11.16 lists the vibration impacts for Category 2 land use for Phase II, Segment 1 LRT Double Track configurations. The locations of the forecasted vibration impacts would be the same as previously described for the Triple Track configurations following Table 3-11.8.

**TABLE 3-11.16
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|----------------|----------|-----------|-------------------------|-------------|--|---|---------------------|
| Corta Calle-1 | Pasadena | 34 | 240 | 55 | 72 | 72 | 4 |
| Arboleda-1 | Pasadena | 37 | 220 | 55 | 73 | 72 | 6 |
| Arboleda-2 | Pasadena | 39 | 200 | 55 | 74 | 72 | 5 |
| Foothill-2 | Arcadia | 54 | 240 | 55 | 72 | 72 | 4 |
| Catalapa-1 | Arcadia | 58 | 220 | 55 | 73 | 72 | 4 |
| Foothill-3 | Arcadia | 58 | 190 | 55 | 74 | 72 | 4 |
| Catalapa-2 | Arcadia | 61 | 220 | 55 | 73 | 72 | 4 |
| Foothill-5 | Arcadia | 64 | 160 | 55 | 75 | 72 | 3 |
| Catalapa-3 | Arcadia | 64 | 220 | 55 | 73 | 72 | 5 |
| Foothill-6 | Arcadia | 68 | 160 | 55 | 75 | 72 | 3 |
| Catalapa-4 | Arcadia | 70 | 250 | 55 | 72 | 72 | 6 |
| Foothill-7 | Arcadia | 71 | 150 | 55 | 75 | 72 | 4 |
| Catalapa-5 | Arcadia | 74 | 250 | 55 | 72 | 72 | 2 |
| Foothill-8 | Arcadia | 74 | 170 | 55 | 75 | 72 | 3 |
| Catalapa-6 | Arcadia | 78 | 250 | 55 | 72 | 72 | 1 |
| Foothill-9 | Arcadia | 78 | 160 | 55 | 75 | 72 | 4 |
| Foothill-10 | Arcadia | 85 | 160 | 55 | 75 | 72 | 4 |
| Catalapa-8 | Arcadia | 87 | 250 | 55 | 72 | 72 | 2 |
| Katherine-1 | Arcadia | 91 | 210 | 55 | 73 | 72 | 3 |
| English Oaks-2 | Arcadia | 97 | 210 | 55 | 73 | 72 | 6 |
| Oxford-1 | Arcadia | 107 | 240 | 55 | 72 | 72 | 5 |

TABLE 3-11.16: *continued (page 2 of 3)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|---------------------|----------|-----------|-------------------------|-------------|--|---|---------------------|
| Loma Lisa-1 | Arcadia | 109 | 180 | 55 | 74 | 72 | 4 |
| Oxford-2 | Arcadia | 111 | 240 | 55 | 72 | 72 | 5 |
| San Carlos-1 | Arcadia | 115 | 130 | 55 | 76 | 72 | 2 |
| Oxford-3 | Arcadia | 115 | 240 | 55 | 72 | 72 | 4 |
| San Carlos-2 | Arcadia | 117 | 210 | 55 | 73 | 72 | 2 |
| Colorado-1 | Arcadia | 117 | 240 | 55 | 72 | 72 | 3 |
| Asder-1 | Arcadia | 121 | 140 | 55 | 76 | 72 | 3 |
| Brunnel Oaks-1 | Arcadia | 123 | 140 | 55 | 76 | 72 | 1 |
| Brunnel Oaks-2 | Arcadia | 123 | 190 | 55 | 74 | 72 | 2 |
| Chelsea-1 | Arcadia | 124 | 144 | 55 | 76 | 72 | 4 |
| Chelsea-2 | Arcadia | 126 | 140 | 55 | 76 | 72 | 1 |
| Chelsea-3 | Arcadia | 126 | 180 | 55 | 74 | 72 | 1 |
| Leandra/Mary Oaks-1 | Arcadia | 127 | 144 | 55 | 76 | 72 | 5 |
| Renoake-2 | Arcadia | 129 | 170 | 55 | 75 | 72 | 5 |
| Renoake-1 | Arcadia | 130 | 120 | 55 | 77 | 72 | 2 |
| Oakdale-1 | Arcadia | 131 | 190 | 55 | 74 | 72 | 2 |
| Cyrus-1 | Arcadia | 132 | 170 | 55 | 75 | 72 | 4 |
| Oakhurst-1 | Arcadia | 133 | 200 | 55 | 74 | 72 | 2 |
| Rancho-1 | Arcadia | 137 | 240 | 55 | 72 | 72 | 1 |
| Santa Maria-1 | Arcadia | 139 | 170 | 55 | 75 | 72 | 3 |
| Santa Rosa-1 | Arcadia | 140 | 180 | 55 | 74 | 72 | 1 |
| San Luis Rey-1 | Arcadia | 141 | 80 | 55 | 80 | 72 | 3 |
| San Luis Rey-2 | Arcadia | 146 | 90 | 55 | 79 | 72 | 6 |
| San Luis Rey-3 | Arcadia | 147 | 50 | 55 | 83 | 72 | 4 |
| San Luis Rey-4 | Arcadia | 149 | 120 | 55 | 77 | 72 | 2 |
| Cornell-1 | Arcadia | 151 | 96 | 55 | 79 | 72 | 6 |
| Cornell-4 | Arcadia | 154 | 140 | 55 | 76 | 72 | 12 |
| Cornell-2 | Arcadia | 155 | 90 | 55 | 79 | 72 | 8 |
| Santa Ynez-1 | Arcadia | 156 | 140 | 55 | 76 | 72 | 3 |
| Cornell-5 | Arcadia | 156 | 170 | 55 | 75 | 72 | 8 |
| Cornell-3 | Arcadia | 156 | 90 | 55 | 79 | 72 | 8 |
| Windsor-2 | Arcadia | 159 | 220 | 53 | 73 | 72 | 8 |
| 3rd-1 | Arcadia | 201 | 40 | 55 | 84 | 72 | 12 |
| 3rd-3 | Arcadia | 203 | 130 | 55 | 76 | 72 | 10 |
| 3rd-2 | Arcadia | 205 | 80 | 55 | 80 | 72 | 12 |
| Contented-1 | Monrovia | 207 | 40 | 55 | 84 | 72 | 2 |
| Contented-2 | Monrovia | 208 | 100 | 55 | 78 | 72 | 4 |
| Contented-3 | Monrovia | 209 | 50 | 55 | 83 | 72 | 4 |
| Contented-5 | Monrovia | 214 | 100 | 55 | 78 | 72 | 6 |
| Contented-4 | Monrovia | 214 | 40 | 55 | 84 | 72 | 6 |
| Encino-1 | Monrovia | 215 | 160 | 55 | 75 | 72 | 4 |
| Montana-2 | Monrovia | 219 | 150 | 55 | 75 | 72 | 2 |
| Anita-1 | Monrovia | 221 | 28 | 55 | 87 | 72 | 4 |

TABLE 3-11.16 *continued (page 3 of 3)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|-------------|----------|-----------|-------------------------|-------------|--|---|---------------------|
| Anita-2 | Monrovia | 221 | 100 | 55 | 78 | 72 | 4 |
| Montana-1 | Monrovia | 221 | 30 | 55 | 86 | 72 | 8 |
| Montana-4 | Monrovia | 222 | 100 | 55 | 78 | 72 | 7 |
| Montana-3 | Monrovia | 224 | 30 | 55 | 86 | 72 | 2 |
| Anita-3 | Monrovia | 225 | 48 | 55 | 83 | 72 | 5 |
| Montana-6 | Monrovia | 226 | 140 | 55 | 76 | 72 | 5 |
| Montana-5 | Monrovia | 226 | 60 | 55 | 82 | 72 | 48 |
| Anita-4 | Monrovia | 227 | 198 | 55 | 74 | 72 | 3 |
| Anita-5 | Monrovia | 229 | 100 | 55 | 78 | 72 | 4 |
| Montana-7 | Monrovia | 229 | 156 | 55 | 75 | 72 | 16 |
| Alamitas-1 | Monrovia | 230 | 40 | 55 | 84 | 72 | 4 |
| Diamond-1 | Monrovia | 231 | 22 | 55 | 88 | 72 | 5 |
| Diamond-2 | Monrovia | 231 | 140 | 55 | 76 | 72 | 6 |
| Alamitas-3 | Monrovia | 234 | 130 | 55 | 76 | 72 | 4 |
| Radford-1 | Monrovia | 236 | 44 | 55 | 84 | 72 | 3 |
| Diamond-5 | Monrovia | 236 | 110 | 55 | 78 | 72 | 5 |
| Diamond-4 | Monrovia | 236 | 80 | 55 | 80 | 72 | 8 |
| Radford-2 | Monrovia | 237 | 200 | 55 | 74 | 72 | 3 |
| Diamond-3 | Monrovia | 237 | 40 | 55 | 84 | 72 | 6 |
| Diamond-7 | Monrovia | 237 | 180 | 55 | 74 | 72 | 8 |
| Mayflower-2 | Monrovia | 238 | 90 | 55 | 79 | 72 | 5 |
| Diamond-6 | Monrovia | 238 | 120 | 55 | 77 | 72 | 8 |
| Mayflower-1 | Monrovia | 240 | 30 | 55 | 86 | 72 | 2 |
| Alamitas-2 | Monrovia | 240 | 54 | 55 | 82 | 72 | 4 |
| Mayflower-3 | Monrovia | 240 | 120 | 55 | 77 | 72 | 4 |
| Mayflower-6 | Monrovia | 241 | 40 | 55 | 84 | 72 | 1 |
| Mayflower-5 | Monrovia | 246 | 160 | 55 | 75 | 72 | 16 |
| Mayflower-4 | Monrovia | 246 | 46 | 55 | 83 | 72 | 40 |
| Genoa-2 | Monrovia | 250 | 80 | 55 | 80 | 72 | 4 |
| Genoa-4 | Monrovia | 250 | 150 | 55 | 75 | 72 | 6 |
| Genoa-3 | Monrovia | 250 | 120 | 55 | 77 | 72 | 16 |
| Genoa-1 | Monrovia | 250 | 30 | 55 | 86 | 72 | 20 |
| Magnolia-1 | Monrovia | 252 | 240 | 43 | 72 | 72 | 1 |
| Hamilton-5 | Duarte | 347 | 90 | 55 | 74 | 72 | 5 |
| Hamilton-6 | Duarte | 351 | 44 | 48 | 84 | 72 | 6 |
| Hamilton-8 | Duarte | 354 | 60 | 38 | 77 | 72 | 5 |
| Hamilton-10 | Duarte | 357 | 60 | 30 | 76 | 72 | 5 |

1. Vibration levels are measured in VdB referenced to 1 µin/sec.
 2. The reported vibration level represents the maximum vibration level for each location.

Source: Harris, Miller, Miller & Hanson, 2003.

Similar to the Category 2 analysis, an assessment of vibration impact for Category 3 receptors was also conducted for Phase II, Segment 1 LRT Double Track configurations. Table 3-11.17 lists the vibration impacts for Category 3 land use for Phase II, Segment 1 LRT Double Track configurations.

| TABLE 3-11.17 VIBRATION IMPACTS FOR CATEGORY 3 LAND USE PHASE II, SEGMENT 1 DOUBLE TRACK CONFIGURATIONS | | | | | | | |
|--|---------|--------------|----------------------------------|----------------|--|---|-----------------|
| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | # of Impacts |
| 3rd Avenue | Arcadia | 198 | 70 | 55 | 81 | 75 | 1 |
| 1. Vibration levels are measured in VdB referenced to 1 μ in/sec. 2. The reported vibration level represents the maximum vibration level for each location. Source: Harris, Miller, Miller & Hanson, 2003. | | | | | | | |

The following is a brief description of the Category 3 land use area where a vibration impact is predicted.

- 3rd Avenue: South of the rail alignment at station number 198+00 Rancho High School in Arcadia is exposed to vibration impact. This vibration impact is due to the proximity to the near track (70 feet), the speed of the LRT vehicles as well as the efficient vibration propagation characteristics of the ground in this area.

Phase II, Segment 2 — The Cities Affected and the Effects

Noise

Table 3-11.18 lists the noise impacts for Category 2 land use for Phase II, Segment 2 LRT Double Track configurations. Although the forecasted noise levels at specific locations are different than for the Double Track configurations, the number of properties affected is the same as reported for the Triple Track configurations. The locations of the impacts are the same as previously described following Table 3-11.10.

**TABLE 3-11.18
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|---------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| 6th-1 | Azusa | 524 | 120 | 55 | 65 | 61 | 60 | 66 | Impact | 66 | 1.5 | 5 | 0 |
| 6th-3 | Azusa | 528 | 70 | 55 | 65 | 62 | 60 | 66 | Impact | 67 | 2.1 | 2 | 0 |
| 6th-4 | Azusa | 533 | 50 | 55 | 65 | 65 | 60 | 66 | Impact | 68 | 3.1 | 4 | 0 |
| Lime-1 | Azusa | 537 | 90 | 55 | 65 | 61 | 60 | 66 | Impact | 66 | 1.5 | 2 | 0 |
| Foothill-1 | Azusa | 543 | 60 | 55 | 65 | 63 | 60 | 66 | Impact | 67 | 2.5 | 20 | 0 |
| Foothill-2 | Azusa | 546 | 60 | 55 | 65 | 63 | 60 | 66 | Impact | 67 | 2.4 | 5 | 0 |
| Foothill-6 | Azusa | 550 | 70 | 55 | 65 | 63 | 60 | 66 | Impact | 67 | 2.3 | 4 | 0 |
| Foothill-8 | Azusa | 551 | 100 | 55 | 65 | 61 | 60 | 66 | Impact | 66 | 1.6 | 2 | 0 |
| San Gabriel-1 | Azusa | 551 | 40 | 40 | 65 | 66 | 60 | 66 | Severe | 68 | 3.6 | 0 | 1 |
| San Gabriel-6 | Azusa | 552 | 100 | 38 | 65 | 62 | 60 | 66 | Impact | 66 | 1.9 | 16 | 0 |
| Soldano-1 | Azusa | 572 | 50 | 45 | 65 | 65 | 60 | 66 | Impact | 68 | 3.2 | 4 | 0 |
| Pasadena-1 | Azusa | 574 | 40 | 50 | 65 | 71 | 60 | 66 | Severe | 72 | 7.3 | 0 | 18 |
| Pasadena-7 | Azusa | 578 | 60 | 55 | 65 | 64 | 60 | 66 | Impact | 68 | 2.9 | 24 | 0 |
| 9th-1 (EST FUTURE) | Azusa | 580 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 66 | 1.8 | 15 | 0 |
| 9th-2 (EST FUTURE) | Azusa | 583 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 66 | 1.8 | 15 | 0 |
| 9th-3 (EST FUTURE) | Azusa | 586 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 66 | 1.8 | 15 | 0 |
| 9th-4 (EST FUTURE) | Azusa | 590 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 66 | 1.8 | 15 | 0 |
| 9th-5 (EST FUTURE) | Azusa | 593 | 80 | 55 | 65 | 62 | 60 | 66 | Impact | 66 | 1.8 | 15 | 0 |
| 9th-6 (EST FUTURE) | Azusa | 596 | 80 | 48 | 65 | 61 | 60 | 66 | Impact | 66 | 1.5 | 15 | 0 |
| 9th-7 (EST FUTURE) | Azusa | 599 | 80 | 40 | 65 | 64 | 60 | 66 | Impact | 67 | 2.6 | 12 | 0 |
| Palm-1 | Azusa | 602 | 100 | 55 | 65 | 62 | 60 | 66 | Impact | 67 | 2.0 | 12 | 0 |
| 9th-8 (EST FUTURE) | Azusa | 603 | 80 | 30 | 65 | 62 | 60 | 66 | Impact | 66 | 1.9 | 12 | 0 |
| 9th-11 (EST FUTURE) | Glendora | 614 | 80 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 6.1 | 15 | 0 |
| Amber Oaks-1 | Glendora | 616 | 70 | 35 | 55 | 61 | 55 | 61 | Impact | 62 | 6.5 | 16 | 0 |
| 9th-12 (EST FUTURE) | Glendora | 619 | 80 | 55 | 55 | 61 | 55 | 61 | Impact | 62 | 6.7 | 15 | 0 |
| Meadow Oaks-1 | Glendora | 620 | 90 | 48 | 55 | 60 | 55 | 61 | Impact | 61 | 6.0 | 12 | 0 |



TABLE 3-11.18 *continued (page 2 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|---------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| 9th-13 (EST FUTURE) | Glendora | 623 | 80 | 55 | 55 | 62 | 55 | 61 | Severe | 62 | 7.2 | 0 | 15 |
| Ranger-1 | Glendora | 623 | 60 | 53 | 55 | 63 | 55 | 61 | Severe | 64 | 8.6 | 0 | 3 |
| Carera-1 | Glendora | 626 | 70 | 55 | 55 | 62 | 55 | 61 | Severe | 63 | 7.9 | 0 | 3 |
| 9th-14 (EST FUTURE) | Glendora | 627 | 80 | 55 | 55 | 62 | 55 | 61 | Severe | 62 | 7.2 | 0 | 15 |
| Carera-2 | Glendora | 628 | 70 | 55 | 55 | 62 | 55 | 61 | Severe | 63 | 7.9 | 0 | 4 |
| 9th-15 (EST FUTURE) | Glendora | 631 | 80 | 55 | 55 | 62 | 55 | 61 | Severe | 62 | 7.2 | 0 | 15 |
| Oakbank-1 | Glendora | 631 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.8 | 0 | 2 |
| Ashworth-3 | Glendora | 633 | 150 | 55 | 55 | 56 | 55 | 61 | Impact | 59 | 3.3 | 8 | 0 |
| 9th-16 (EST FUTURE) | Glendora | 634 | 80 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.2 | 0 | 12 |
| Ashworth-1 | Glendora | 634 | 60 | 55 | 55 | 65 | 55 | 61 | Severe | 65 | 9.7 | 0 | 5 |
| Ashworth-2 | Glendora | 636 | 110 | 55 | 55 | 58 | 55 | 61 | Impact | 60 | 4.9 | 2 | 0 |
| Barranca-1 | Glendora | 638 | 160 | 55 | 55 | 59 | 55 | 61 | Impact | 61 | 5.2 | 2 | 0 |
| Marcile-2 | Glendora | 640 | 110 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.6 | 5 | 0 |
| Marcile-1 | Glendora | 641 | 60 | 55 | 55 | 73 | 55 | 61 | Severe | 73 | 17.6 | 0 | 4 |
| Lowell-1 | Glendora | 644 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.8 | 0 | 6 |
| Vermont-3 | Glendora | 688 | 100 | 50 | 58 | 60 | 57 | 62 | Impact | 62 | 4.1 | 4 | 0 |
| Glendora-1 | Glendora | 701 | 120 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.8 | 4 | 0 |
| Lemon-1 | Glendora | 703 | 50 | 55 | 55 | 65 | 55 | 61 | Severe | 65 | 9.9 | 0 | 3 |
| Lemon-2 | Glendora | 706 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.6 | 0 | 12 |
| Lemon-4 | Glendora | 708 | 140 | 55 | 55 | 56 | 55 | 61 | Impact | 59 | 3.3 | 4 | 0 |
| Pasadena-1 | Glendora | 710 | 60 | 55 | 55 | 73 | 55 | 61 | Severe | 73 | 17.6 | 0 | 2 |
| Pasadena-2 | Glendora | 710 | 100 | 55 | 55 | 60 | 55 | 61 | Impact | 62 | 6.2 | 2 | 0 |
| Pasadena-4 | Glendora | 713 | 40 | 55 | 55 | 67 | 55 | 61 | Severe | 67 | 11.9 | 0 | 4 |
| Pasadena-5 | Glendora | 713 | 120 | 55 | 55 | 58 | 55 | 61 | Impact | 60 | 4.3 | 7 | 0 |
| Lemon-5 | Glendora | 716 | 56 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.1 | 0 | 8 |
| Alosta-1 | Glendora | 721 | 70 | 55 | 55 | 62 | 55 | 61 | Severe | 63 | 7.8 | 0 | 1 |

TABLE 3-11.18 *continued (page 3 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|-------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Alosta-4 | Glendora | 725 | 100 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.9 | 0 | 0 |
| Lemon-8 | Glendora | 726 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.7 | 0 | 7 |
| Lemon-10 | Glendora | 727 | 180 | 55 | 55 | 56 | 55 | 61 | Impact | 59 | 3.3 | 3 | 0 |
| Lemon-11 | Glendora | 729 | 64 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.4 | 0 | 2 |
| Lemon-14 | Glendora | 732 | 60 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.3 | 0 | 7 |
| Glenwood-1 | Glendora | 734 | 70 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.1 | 0 | 4 |
| Glenwood-3 | Glendora | 737 | 90 | 55 | 55 | 64 | 55 | 61 | Severe | 65 | 9.2 | 0 | 4 |
| Elwood-1 | Glendora | 741 | 60 | 55 | 55 | 65 | 55 | 61 | Severe | 65 | 9.8 | 0 | 3 |
| Alosta-5 | Glendora | 745 | 96 | 55 | 55 | 55 | 55 | 61 | Impact | 58 | 3.0 | 3 | 0 |
| Lemon-15 | Glendora | 746 | 50 | 55 | 55 | 64 | 55 | 61 | Severe | 64 | 8.8 | 0 | 6 |
| Lemon-18 | Glendora | 755 | 60 | 55 | 55 | 65 | 55 | 61 | Severe | 65 | 9.7 | 0 | 7 |
| Lemon-19 | Glendora | 757 | 50 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.7 | 7 | 0 |
| Alosta-8 | Glendora | 760 | 160 | 55 | 55 | 57 | 55 | 61 | Impact | 59 | 3.8 | 2 | 0 |
| Lemon-20 | Glendora | 761 | 200 | 55 | 55 | 57 | 55 | 61 | Impact | 60 | 4.1 | 7 | 0 |
| Alosta-7 | Glendora | 762 | 90 | 55 | 55 | 61 | 55 | 61 | Impact | 62 | 6.5 | 2 | 0 |
| St. Vladimir-1 | Glendora | 768 | 60 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.7 | 0 | 6 |
| Alosta-10 | Glendora | 769 | 100 | 55 | 55 | 60 | 55 | 61 | Impact | 61 | 5.9 | 2 | 0 |
| Alosta-12 | Glendora | 770 | 110 | 55 | 55 | 59 | 55 | 61 | Impact | 61 | 5.5 | 0 | 0 |
| St. Vladimir-2 | Glendora | 775 | 90 | 55 | 55 | 61 | 55 | 61 | Impact | 62 | 6.5 | 6 | 0 |
| Compromise Line-1 | Glendora | 778 | 40 | 55 | 55 | 66 | 55 | 61 | Severe | 66 | 11.0 | 0 | 4 |
| Compromise Line-3 | Glendora | 780 | 30 | 55 | 55 | 67 | 55 | 61 | Severe | 68 | 12.3 | 0 | 4 |
| Compromise Line-5 | Glendora | 784 | 64 | 55 | 55 | 63 | 55 | 61 | Severe | 64 | 8.4 | 0 | 5 |
| Alosta-13 | Glendora | 789 | 110 | 55 | 60 | 59 | 57 | 63 | Impact | 63 | 2.9 | 3 | 0 |
| Elkhorn-1 | Glendora | 794 | 100 | 55 | 60 | 60 | 57 | 63 | Impact | 63 | 3.2 | 1 | 0 |
| Remuda-2 | Glendora | 796 | 110 | 55 | 60 | 59 | 57 | 63 | Impact | 63 | 2.9 | 2 | 0 |
| Remuda-3 | Glendora | 797 | 60 | 55 | 60 | 63 | 57 | 63 | Severe | 65 | 5.3 | 0 | 7 |

TABLE 3-11.18 *continued (page 4 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|------------------|-----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| Remuda-4 | Glendora | 803 | 60 | 55 | 60 | 63 | 57 | 63 | Severe | 65 | 5.3 | 0 | 8 |
| Remuda-5 | Glendora | 807 | 60 | 55 | 60 | 63 | 57 | 63 | Severe | 65 | 5.3 | 0 | 4 |
| Canyon Meadows-1 | Glendora | 810 | 80 | 55 | 60 | 62 | 57 | 63 | Impact | 64 | 4.0 | 2 | 0 |
| Remuda-10 | Glendora | 811 | 80 | 55 | 60 | 62 | 57 | 63 | Impact | 64 | 4.0 | 3 | 0 |
| Remuda-11 | Glendora | 813 | 70 | 55 | 60 | 62 | 57 | 63 | Impact | 64 | 4.6 | 3 | 0 |
| Gladstone-1 | Glendora | 848 | 64 | 55 | 60 | 64 | 57 | 63 | Severe | 65 | 5.9 | 0 | 1 |
| Gladstone-2 | Glendora | 848 | 100 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.3 | 1 | 0 |
| Gladstone-1 | San Dimas | 850 | 80 | 55 | 60 | 66 | 57 | 63 | Severe | 67 | 6.9 | 0 | 4 |
| Gladstone-2 | San Dimas | 851 | 150 | 55 | 60 | 59 | 57 | 63 | Impact | 62 | 2.7 | 4 | 0 |
| Gladstone-3 | San Dimas | 852 | 80 | 55 | 60 | 63 | 57 | 63 | Impact | 64 | 4.8 | 4 | 0 |
| Perianna-1 | San Dimas | 863 | 70 | 55 | 60 | 62 | 57 | 63 | Impact | 64 | 4.7 | 3 | 0 |
| Highland-1 | San Dimas | 866 | 60 | 55 | 60 | 63 | 57 | 63 | Severe | 65 | 5.4 | 0 | 2 |
| Village-1 | San Dimas | 869 | 120 | 55 | 60 | 59 | 57 | 63 | Impact | 62 | 2.6 | 0 | 0 |
| Oakway-1 | San Dimas | 872 | 140 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.2 | 32 | 0 |
| Eucla-3 | San Dimas | 888 | 100 | 55 | 60 | 62 | 57 | 63 | Impact | 64 | 4.4 | 0 | 0 |
| Eucla-1 | San Dimas | 889 | 190 | 55 | 60 | 58 | 57 | 63 | Impact | 62 | 2.2 | 4 | 0 |
| Walnut-1 | San Dimas | 922 | 70 | 55 | 65 | 62 | 61 | 66 | Impact | 67 | 1.9 | 32 | 0 |
| Walnut-3 | San Dimas | 927 | 100 | 55 | 65 | 62 | 61 | 66 | Impact | 67 | 1.8 | 32 | 0 |
| 1st-1 | La Verne | 1002 | 60 | 55 | 65 | 64 | 61 | 66 | Impact | 68 | 2.7 | 5 | 0 |
| 1st-3 | La Verne | 1004 | 40 | 55 | 65 | 66 | 61 | 66 | Impact | 69 | 3.6 | 5 | 0 |
| 1st-5 | La Verne | 1006 | 36 | 55 | 65 | 67 | 61 | 66 | Severe | 69 | 3.9 | 0 | 5 |
| 1st-6 | La Verne | 1008 | 50 | 55 | 65 | 67 | 61 | 66 | Severe | 69 | 3.9 | 0 | 5 |
| 1st-9 | La Verne | 1013 | 56 | 55 | 65 | 65 | 61 | 66 | Impact | 68 | 2.9 | 5 | 0 |
| 1st-10 | La Verne | 1016 | 50 | 55 | 65 | 65 | 61 | 66 | Impact | 68 | 2.9 | 5 | 0 |
| ULV-6 | La Verne | 1032 | 80 | 35 | 65 | 62 | 61 | 66 | Impact | 67 | 1.6 | 24 | 0 |
| ULV-7 | La Verne | 1034 | 80 | 30 | 65 | 62 | 61 | 66 | Impact | 67 | 1.9 | 24 | 0 |

TABLE 3-11.18 *continued (page 5 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|-----------------------------|-----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | | Imp | Sev |
| | | | | | | | Imp | Sev | | | | | |
| White-1 | La Verne | 1050 | 70 | 55 | 62 | 63 | 59 | 64 | Impact | 66 | 3.7 | 3 | 0 |
| Sierra-12 | La Verne | 1075 | 140 | 55 | 62 | 59 | 59 | 64 | Impact | 64 | 1.8 | 4 | 0 |
| Bonita-1 | Pomona | 1145 | 110 | 55 | 62 | 59 | 58 | 64 | Impact | 64 | 1.9 | 24 | 0 |
| Bonita-3 | Claremont | 1150 | 90 | 55 | 62 | 61 | 58 | 64 | Impact | 64 | 2.5 | 16 | 0 |
| Bonita-5 | Claremont | 1157 | 100 | 55 | 62 | 60 | 58 | 64 | Impact | 64 | 2.2 | 16 | 0 |
| Bonita-6 | Claremont | 1163 | 40 | 55 | 62 | 68 | 58 | 64 | Severe | 69 | 7.3 | 0 | 8 |
| Bonita-8 | Claremont | 1165 | 100 | 55 | 62 | 62 | 58 | 64 | Impact | 65 | 2.9 | 20 | 0 |
| Bonita-11 (EST FUTURE) | Claremont | 1169 | 60 | 55 | 62 | 63 | 58 | 64 | Impact | 66 | 3.9 | 16 | 0 |
| Bonita-14 (EST FUTURE) | Claremont | 1173 | 60 | 55 | 62 | 63 | 58 | 64 | Impact | 66 | 3.9 | 16 | 0 |
| Bonita-15 (EST FUTURE) | Claremont | 1177 | 60 | 55 | 62 | 63 | 58 | 64 | Impact | 66 | 3.9 | 32 | 0 |
| Bonita-16 (EST FUTURE) | Claremont | 1179 | 60 | 50 | 62 | 63 | 58 | 64 | Impact | 66 | 3.6 | 24 | 0 |
| *Claremont-1 | Claremont | 1228 | 100 | 55 | 63 | 60 | 59 | 64 | Impact | 65 | 1.9 | 3 | 0 |
| *Claremont-11 | Claremont | 1231 | 80 | 55 | 63 | 63 | 59 | 64 | Impact | 66 | 3.1 | 2 | 0 |
| *Claremont-4 | Claremont | 1231 | 100 | 55 | 63 | 63 | 59 | 64 | Impact | 66 | 3.2 | 4 | 0 |
| *Claremont-12 | Montclair | 1235 | 70 | 55 | 63 | 64 | 59 | 64 | Impact | 66 | 3.6 | 4 | 0 |
| *Claremont-7 | Montclair | 1235 | 90 | 55 | 63 | 62 | 59 | 64 | Impact | 65 | 2.7 | 5 | 0 |
| *Claremont-13 | Montclair | 1238 | 80 | 55 | 63 | 62 | 59 | 64 | Impact | 65 | 2.5 | 2 | 0 |
| *Claremont-9 | Montclair | 1239 | 90 | 55 | 63 | 61 | 59 | 64 | Impact | 65 | 2.2 | 5 | 0 |
| *Monte Vista-2 (EST FUTURE) | Montclair | 1259 | 80 | 20 | 63 | 63 | 59 | 64 | Impact | 66 | 3.1 | 5 | 0 |
| *Monte Vista-3 (EST FUTURE) | Montclair | 1263 | 80 | 28 | 63 | 65 | 59 | 64 | Severe | 67 | 4.2 | 0 | 5 |
| *Monte Vista-4 (EST FUTURE) | Montclair | 1265 | 80 | 50 | 63 | 69 | 59 | 64 | Severe | 70 | 7.5 | 0 | 5 |
| **Claremont-1 | Claremont | 1230 | 80 | 55 | 65 | 63 | 60 | 66 | Impact | 67 | 2.4 | 8 | 0 |
| **Claremont-3 | Claremont | 1232 | 60 | 55 | 65 | 64 | 60 | 66 | Impact | 67 | 2.7 | 2 | 0 |

TABLE 3-11.18 *continued (page 6 of 6)*
NOISE IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | Impact Category | Total Noise Level ^{1,3} | Noise Level Increase ^{1,3} | # of Res Impacts | |
|----------|------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----------------|----------------------------------|-------------------------------------|------------------|-----|
| | | | | | | Pred ^{2,3} | Impact Criteria | | | | Imp | Sev |
| | | | | | | | | | | | | |

1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact.
 2. Predicted levels include a 5dBA penalty applied to audible signal noise, where applicable.
 3. The reported noise levels represent the highest noise levels for each location.
 * These noise-sensitive locations only apply to the Baseline Alternative (north of the Montclair Station Park and Ride).
 ** These noise-sensitive locations only apply to the Option G Alternative (south of the Montclair Station Park and Ride).

Source: Harris, Miller, Miller & Hanson, 2003

Similar to the Category 2 analysis, an assessment of noise impact for Category 3 receptors was also conducted for Phase II, Segment 2 LRT Double Track configurations. Although Category 3 includes parklands, since they are all used for sports and other active recreation, they would not be considered as noise-sensitive and are not included in the evaluation. This assessment was based on a comparison of the existing ambient noise level with the predicted project noise levels in terms of the peak transit hour Leq. Table 3-11.19 lists the noise impacts for institutional receptors.

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Exist. Noise Level ¹ | Project Noise Level ¹ | | | Impact Category | Total Noise Level ¹ | Noise Level Increase ¹ |
|-----------------------|----------|-----------|-------------------------|-------------|---------------------------------|----------------------------------|-----------------|-----|-----------------|--------------------------------|-----------------------------------|
| | | | | | | Pred ² | Impact Criteria | | | | |
| | | | | | | | Imp | Sev | | | |
| Alameda-1 | Azusa | 563 | 60 | 23 | 49 | 59 | 58 | 64 | Impact | 59 | 10.8 |
| Pasadena-8 (Baseball) | Azusa | 584 | 100 | 55 | 49 | 60 | 58 | 64 | Impact | 60 | 11.9 |
| Palm-0 | Azusa | 599 | 120 | 55 | 51 | 60 | 59 | 65 | Impact | 60 | 8.8 |
| Grande-1 | Glendora | 671 | 60 | 55 | 51 | 64 | 58 | 65 | Impact | 64 | 13.6 |
| Foothill-1 | Glendora | 673 | 60 | 55 | 51 | 63 | 58 | 65 | Impact | 64 | 13.0 |
| Foothill-2 | Glendora | 675 | 50 | 55 | 51 | 65 | 58 | 65 | Severe | 65 | 14.2 |
| Foothill-3 | Glendora | 678 | 60 | 55 | 51 | 63 | 58 | 65 | Impact | 64 | 12.9 |
| Pasadena-6 (Future) | Glendora | 709 | 70 | 55 | 52 | 63 | 59 | 65 | Impact | 64 | 11.2 |
| Pasadena-7 (Future) | Glendora | 711 | 60 | 55 | 52 | 64 | 59 | 65 | Impact | 65 | 12.5 |
| ULV-2 | La Verne | 1025 | 70 | 53 | 57 | 62 | 61 | 67 | Impact | 63 | 6.5 |
| ULV-4 | La Verne | 1030 | 20 | 40 | 57 | 69 | 61 | 67 | Severe | 70 | 12.6 |

1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact.

2. Predicted levels include a 5dBA penalty applied to audible signal noise, where applicable.

This noise-sensitive location only applies to the Option G Alternative (south of the Montclair Station Park and Ride).

Source: Harris, Miller, Miller & Hanson, 2003.

The following are brief descriptions of each Category 3 land use area where a noise impact was calculated:

- Alameda: South of the rail alignment between Alameda Avenue and Dalton Avenue in Azusa, the Azusa Historical Museum would be exposed to noise impact. This museum would be impacted due to its proximity to the rail lines (80 feet), the speed of the LRT vehicles, and the exposure to audible warning signals (bells and whistles) at the Dalton Avenue grade crossing.
- Pasadena: South of the rail alignment west of Palm Drive in Azusa, one school building at Azusa Pacific University would be exposed to noise impact. This school would be exposed to impact due to its proximity to the rail lines (102 to 120 feet), the speed of the LRT vehicles, and the exposure to audible warning signals (bells and whistles) at the Palm Drive grade crossing.

- **Foothill / Vermont:** Between Foothill Boulevard and Vermont Avenue on the north and south sides of the rail alignment in Glendora, two medical buildings would be exposed to noise impact, one senior center educational building would be exposed to severe noise impact, and one medical building would be exposed to severe noise impact. These buildings all would be impacted due to their proximity to the rail lines (44 to 76 feet) and the speed of the LRT vehicles. The medical building north Foothill Boulevard also would be exposed to audible warning signals (bells and whistles) at the Foothill Boulevard and Grand Avenue grade crossing.
- **Pasadena (future):** South of the rail alignment to the west of Pasadena Avenue in Glendora, a future preschool and future medical building would be exposed to noise impact. These buildings would be impacted due to their proximity to the rail lines (80 to 90 feet), the speed of the LRT vehicles, and their exposure to audible warning signals (bells and whistles) at Pasadena Avenue grade crossing.
- **University of La Verne:** Between B Street and Fairplex Drive north of the rail alignment at the University of La Verne a school building would be exposed to noise impact. This school building would be exposed to impact due to its proximity to the near track (20 and 70 feet), the speed of the LRT vehicles, and audible warning signals (bells and whistles) at D Street.

Vibration

Table 3-11.20 lists the vibration impacts for Category 2 land use for Phase II, Segment 2 LRT Double Track configurations. Although the forecasted impacts at specific locations are different, the same locations as in the Triple Track configurations are affected. The locations are the same as previously described for the Triple Track configurations following Table 3-11.11.

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level^{1,2} | Vibration Impact Criterion¹ | No. of Res. Impacts |
|-----------------|-------------|------------------|--------------------------------|--------------------|--|---|----------------------------|
| 6th-3 | Azusa | 528 | 70 | 55 | 74 | 72 | 2 |
| 6th-5 | Azusa | 533 | 100 | 55 | 76 | 72 | 4 |
| 6th-4 | Azusa | 533 | 50 | 55 | 77 | 72 | 4 |
| Lime-1 | Azusa | 537 | 90 | 55 | 72 | 72 | 2 |
| Foothill-3 | Azusa | 543 | 90 | 55 | 77 | 72 | 6 |
| Foothill-4 | Azusa | 543 | 140 | 55 | 72 | 72 | 2 |
| Foothill-1 | Azusa | 543 | 60 | 55 | 76 | 72 | 20 |
| Foothill-2 | Azusa | 546 | 60 | 55 | 80 | 72 | 5 |
| Foothill-7 | Azusa | 549 | 140 | 55 | 72 | 72 | 5 |
| Foothill-6 | Azusa | 550 | 70 | 55 | 79 | 72 | 4 |
| Foothill-8 | Azusa | 551 | 100 | 55 | 76 | 72 | 2 |
| San Gabriel-2 | Azusa | 551 | 90 | 40 | 76 | 72 | 1 |
| San Gabriel-3 | Azusa | 551 | 130 | 40 | 72 | 72 | 1 |
| San Gabriel-1 | Azusa | 551 | 40 | 40 | 81 | 72 | 1 |
| San Gabriel-6 | Azusa | 552 | 100 | 38 | 75 | 72 | 16 |
| Dalton-5 | Azusa | 567 | 120 | 55 | 74 | 72 | 12 |

TABLE 3-11.20 *continued (page 2 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|------------------------------------|----------|-----------|-------------------------|-------------|--|---|---------------------|
| Dalton-2 | Azusa | 568 | 120 | 35 | 73 | 72 | 1 |
| Soldano-1 | Azusa | 572 | 50 | 45 | 80 | 72 | 4 |
| Soldano-2 | Azusa | 573 | 110 | 48 | 74 | 72 | 3 |
| Pasadena-1 | Azusa | 574 | 40 | 50 | 83 | 72 | 18 |
| Pasadena-2 | Azusa | 575 | 110 | 55 | 75 | 72 | 12 |
| Pasadena-7 | Azusa | 578 | 60 | 55 | 80 | 72 | 24 |
| Pasadena-5 | Azusa | 579 | 130 | 55 | 73 | 72 | 36 |
| 9th-1 (EST FUTURE) | Azusa | 580 | 80 | 55 | 78 | 72 | 15 |
| 9th-2 (EST FUTURE) | Azusa | 583 | 80 | 55 | 78 | 72 | 15 |
| 9th-3 (EST FUTURE) | Azusa | 586 | 80 | 55 | 78 | 72 | 15 |
| 9th-4 (EST FUTURE) | Azusa | 590 | 80 | 55 | 78 | 72 | 15 |
| 9th-5 (EST FUTURE) | Azusa | 593 | 80 | 55 | 78 | 72 | 15 |
| 9th-6 (EST FUTURE) | Azusa | 596 | 80 | 48 | 76 | 72 | 15 |
| 9th-7 (EST FUTURE) | Azusa | 599 | 80 | 40 | 76 | 72 | 12 |
| Palm-1 | Azusa | 602 | 100 | 55 | 76 | 72 | 12 |
| 9th-8 (EST FUTURE) | Azusa | 603 | 80 | 30 | 75 | 72 | 12 |
| 9th-10 (EST FUTURE) (NEAR STAT) | Azusa | 611 | 80 | 35 | 74 | 72 | 15 |
| 9th-11 (EST FUTURE) | Glendora | 614 | 80 | 55 | 78 | 72 | 15 |
| Amber Oaks-1 | Glendora | 616 | 70 | 35 | 77 | 72 | 16 |
| 9th-12 (EST FUTURE) | Glendora | 619 | 80 | 55 | 78 | 72 | 15 |
| Meadow Oaks-1 | Glendora | 620 | 90 | 48 | 76 | 72 | 12 |
| Ranger-1 | Glendora | 623 | 60 | 53 | 80 | 72 | 3 |
| 9th-13 (EST FUTURE) | Glendora | 623 | 80 | 55 | 78 | 72 | 15 |
| Carera-1 | Glendora | 626 | 70 | 55 | 79 | 72 | 3 |
| 9th-14 (EST FUTURE) | Glendora | 627 | 80 | 55 | 78 | 72 | 15 |
| Carera-2 | Glendora | 628 | 70 | 55 | 79 | 72 | 4 |
| Oakbank-1 | Glendora | 631 | 60 | 55 | 80 | 72 | 2 |
| 9th-15 (EST FUTURE) | Glendora | 631 | 80 | 55 | 78 | 72 | 15 |
| Ashworth-1 | Glendora | 634 | 60 | 55 | 80 | 72 | 5 |
| 9th-16 (EST FUTURE) | Glendora | 634 | 80 | 55 | 78 | 72 | 12 |
| Ashworth-2 | Glendora | 636 | 110 | 55 | 75 | 72 | 2 |
| Marcile-2 | Glendora | 640 | 110 | 55 | 75 | 72 | 5 |
| Marcile-1 | Glendora | 641 | 60 | 55 | 80 | 72 | 4 |
| Lowell-1 | Glendora | 644 | 60 | 55 | 80 | 72 | 6 |
| Grande-2 | Glendora | 677 | 100 | 55 | 75 | 72 | 8 |
| Vermont-3 | Glendora | 688 | 100 | 50 | 75 | 72 | 4 |
| Glendora-1 | Glendora | 701 | 120 | 55 | 74 | 72 | 4 |
| Lemon-1 | Glendora | 703 | 50 | 55 | 82 | 72 | 3 |
| Lemon-2 | Glendora | 706 | 60 | 55 | 80 | 72 | 12 |
| Lemon-4 | Glendora | 708 | 140 | 55 | 72 | 72 | 4 |
| Pasadena-1 | Glendora | 710 | 60 | 55 | 80 | 72 | 2 |

TABLE 3-11.20 *continued (page 3 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|-------------------|-----------|-----------|-------------------------|-------------|--|---|---------------------|
| Pasadena-2 | Glendora | 710 | 100 | 55 | 76 | 72 | 2 |
| Pasadena-4 | Glendora | 713 | 40 | 55 | 84 | 72 | 4 |
| Pasadena-5 | Glendora | 713 | 120 | 55 | 74 | 72 | 7 |
| Lemon-6 | Glendora | 716 | 120 | 55 | 73 | 72 | 10 |
| Lemon-5 | Glendora | 716 | 56 | 55 | 81 | 72 | 8 |
| Lemon-7 | Glendora | 721 | 120 | 55 | 73 | 72 | 7 |
| Alosta-1 | Glendora | 721 | 70 | 55 | 79 | 72 | 1 |
| Alosta-4 | Glendora | 725 | 100 | 55 | 76 | 72 | 0 |
| Lemon-8 | Glendora | 726 | 60 | 55 | 82 | 72 | 7 |
| Lemon-11 | Glendora | 729 | 64 | 55 | 81 | 72 | 2 |
| Glenwood-1 | Glendora | 734 | 70 | 55 | 80 | 72 | 4 |
| Glenwood-3 | Glendora | 737 | 90 | 55 | 77 | 72 | 4 |
| Elwood-1 | Glendora | 741 | 60 | 55 | 82 | 72 | 3 |
| Alosta-5 | Glendora | 745 | 96 | 55 | 76 | 72 | 3 |
| Lemon-14B | Glendora | 746 | 64 | 55 | 81 | 72 | 6 |
| Lemon-15 | Glendora | 746 | 50 | 55 | 84 | 72 | 6 |
| Lemon-18 | Glendora | 755 | 60 | 55 | 82 | 72 | 7 |
| Lemon-19 | Glendora | 757 | 50 | 55 | 84 | 72 | 7 |
| Alosta-7 | Glendora | 762 | 90 | 55 | 77 | 72 | 2 |
| St. Vladimir-1 | Glendora | 768 | 60 | 55 | 82 | 72 | 6 |
| Alosta-10 | Glendora | 769 | 100 | 55 | 75 | 72 | 2 |
| Alosta-12 | Glendora | 770 | 110 | 55 | 74 | 72 | 0 |
| St. Vladimir-2 | Glendora | 775 | 90 | 55 | 77 | 72 | 6 |
| Compromise Line-1 | Glendora | 778 | 40 | 55 | 87 | 72 | 4 |
| Compromise Line-3 | Glendora | 780 | 30 | 55 | 90 | 72 | 4 |
| Compromise Line-5 | Glendora | 784 | 64 | 55 | 81 | 72 | 5 |
| Alosta-13 | Glendora | 789 | 110 | 55 | 74 | 72 | 3 |
| Elkhorn-1 | Glendora | 794 | 100 | 55 | 75 | 72 | 1 |
| Remuda-2 | Glendora | 796 | 110 | 55 | 74 | 72 | 2 |
| Remuda-3 | Glendora | 797 | 60 | 55 | 82 | 72 | 7 |
| Remuda-4 | Glendora | 803 | 60 | 55 | 82 | 72 | 8 |
| Remuda-6 | Glendora | 806 | 110 | 55 | 74 | 72 | 3 |
| Remuda-5 | Glendora | 807 | 60 | 55 | 82 | 72 | 4 |
| Remuda-7 | Glendora | 809 | 110 | 55 | 74 | 72 | 4 |
| Canyon Meadows-1 | Glendora | 810 | 80 | 55 | 78 | 72 | 2 |
| Remuda-10 | Glendora | 811 | 80 | 55 | 78 | 72 | 3 |
| Remuda-11 | Glendora | 813 | 70 | 55 | 80 | 72 | 3 |
| Gladstone-1 | Glendora | 848 | 64 | 55 | 81 | 72 | 1 |
| Gladstone-2 | Glendora | 848 | 100 | 55 | 75 | 72 | 1 |
| Gladstone-1 | San Dimas | 850 | 80 | 55 | 78 | 72 | 4 |
| Gladstone-3 | San Dimas | 852 | 80 | 55 | 78 | 72 | 4 |
| Perlanna-1 | San Dimas | 863 | 70 | 55 | 80 | 72 | 3 |

TABLE 3-11.20 *continued (page 4 of 4)*
VIBRATION IMPACTS FOR CATEGORY 2 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Res. Impacts |
|-----------------------------|-----------|-----------|-------------------------|-------------|--|---|---------------------|
| Highland-1 | San Dimas | 866 | 60 | 55 | 82 | 72 | 2 |
| Village-1 | San Dimas | 869 | 120 | 55 | 73 | 72 | 0 |
| Eucla-3 | San Dimas | 888 | 100 | 55 | 75 | 72 | 0 |
| Walnut-1 | San Dimas | 922 | 70 | 55 | 80 | 72 | 32 |
| Walnut-3 | San Dimas | 927 | 100 | 55 | 75 | 72 | 32 |
| 1st-1 | La Verne | 1002 | 60 | 55 | 82 | 72 | 5 |
| 1st-3 | La Verne | 1004 | 40 | 55 | 76 | 72 | 5 |
| 1st-5 | La Verne | 1006 | 36 | 55 | 77 | 72 | 5 |
| 1st-6 | La Verne | 1008 | 50 | 55 | 73 | 72 | 5 |
| 1st-9 | La Verne | 1013 | 56 | 55 | 72 | 72 | 5 |
| 1st-10 | La Verne | 1016 | 50 | 55 | 73 | 72 | 5 |
| Sierra-10 | La Verne | 1073 | 140 | 55 | 74 | 72 | 5 |
| Garey-1 | Pomona | 1104 | 160 | 55 | 72 | 72 | 54 |
| Roderick-2 | Pomona | 1126 | 150 | 55 | 73 | 72 | 6 |
| Bonita-6 | Claremont | 1163 | 40 | 55 | 80 | 72 | 8 |
| Bonita-11 (EST FUTURE) | Claremont | 1169 | 60 | 55 | 73 | 72 | 16 |
| Bonita-14 (EST FUTURE) | Claremont | 1173 | 60 | 55 | 73 | 72 | 16 |
| Bonita-15 (EST FUTURE) | Claremont | 1177 | 60 | 55 | 73 | 72 | 32 |
| Bonita-16 (EST FUTURE) | Claremont | 1179 | 60 | 50 | 82 | 72 | 24 |
| *Claremont-2 | Claremont | 1228 | 150 | 55 | 73 | 72 | 3 |
| *Claremont-5 | Claremont | 1231 | 150 | 55 | 73 | 72 | 1 |
| *Claremont-11 | Claremont | 1231 | 80 | 55 | 73 | 72 | 2 |
| *Claremont-7 | Montclair | 1235 | 90 | 55 | 72 | 72 | 5 |
| *Claremont-12 | Montclair | 1235 | 70 | 55 | 74 | 72 | 4 |
| *Claremont-8 | Montclair | 1236 | 90 | 55 | 78 | 72 | 5 |
| *Claremont-13 | Montclair | 1238 | 80 | 55 | 73 | 72 | 2 |
| *Claremont-9 | Montclair | 1239 | 90 | 55 | 72 | 72 | 5 |
| *Monte Vista-2 (EST FUTURE) | Montclair | 1259 | 80 | 20 | 74 | 72 | 5 |
| *Monte Vista-3 (EST FUTURE) | Montclair | 1263 | 80 | 28 | 77 | 72 | 5 |
| *Monte Vista-4 (EST FUTURE) | Montclair | 1265 | 80 | 50 | 82 | 72 | 5 |
| **Claremont-1 | Claremont | 1230 | 80 | 55 | 73 | 72 | 8 |
| **Claremont-3 | Claremont | 1232 | 60 | 55 | 76 | 72 | 2 |

1. Vibration levels are measured in VdB referenced to 1 µin/sec.

2. The reported vibration level represents the maximum vibration level for each location.

* These noise-sensitive locations only apply to the Baseline Alternative (north of the Montclair Station Park and Ride).

** These noise-sensitive locations only apply to the Option G Alternative (south of the Montclair Station Park and Ride).

Source: Harris, Miller, Miller & Hanson, 2003.

Similar to the Category 2 analysis, an assessment of vibration impact for Category 3 receptors was also conducted for Phase II, Segment 2 LRT Double Track configurations. Table 3-11.21 lists the vibration impacts for Category 3 land use for Phase II, Segment 2 LRT Double Track configurations.

**TABLE 3-11.21
VIBRATION IMPACTS FOR CATEGORY 3 LAND USE
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Civil Stn | Dist to Near Track (ft) | Speed (mph) | Project Vibration Level ^{1,2} | Vibration Impact Criterion ¹ | No. of Impacts |
|---------------------|----------|-----------|-------------------------|-------------|--|---|----------------|
| Lime-3 | Azusa | 539 | 100 | 55 | 76 | 75 | 1 |
| Grande-1 | Glendora | 671 | 60 | 55 | 82 | 75 | 1 |
| Foothill-1 | Glendora | 673 | 60 | 55 | 82 | 75 | 1 |
| Foothill-2 | Glendora | 675 | 50 | 55 | 84 | 75 | 1 |
| Foothill-3 | Glendora | 678 | 60 | 55 | 82 | 75 | 1 |
| Pasadena-6 (Future) | Glendora | 709 | 70 | 55 | 80 | 75 | 1 |
| Pasadena-7 (Future) | Glendora | 711 | 60 | 55 | 82 | 75 | 1 |
| ULV-4 | La Verne | 1030 | 20 | 40 | 88 | 75 | 1 |

1. Vibration levels are measured in VdB referenced to 1 µin/sec.

2. The reported vibration level represents the maximum vibration level for each location.

Source: Harris, Miller, Miller & Hanson, 2003.

The following are brief descriptions of each Category 3 land use area where a vibration impact was calculated:

- **Lime:** South of the rail alignment at station number 538+00 in Azusa, a medical building would be exposed to vibration impact. This building is located 100 feet from the near track. The vibration impact would be due to the proximity of the building to the near track and the speed of the LRT vehicles.
- **Grande:** East of Grande Avenue from station numbers 670+00 to 679+00, three medical buildings and one school building would be exposed to vibration impact. These buildings are located 50 to 60 feet from the near track. The vibration impacts would be due to the proximity of the buildings to the near track and the speed of the LRT vehicles.
- **Pasadena (future):** West of Pasadena Avenue on the south side of the alignment in Glendora, a future medical building and a future preschool would be expected to be impacted by vibration. These future buildings are estimated to be 60 to 70 feet from the near track. The vibration impact of these buildings would be due to the proximity of the buildings to the near track and the speed of the LRT vehicles.
- **University of La Verne:** North of the rail alignment at station number 1080+00, one school building at the University of La Verne would be exposed to vibration impact. This building is located 20 feet from the near track. The vibration impact would be due to the proximity of the building to the near track and the speed of the LRT vehicles.

Summary of Double Track Impacts for Full Build LRT Alternative

In Segments 1 and 2 of the Double Track configurations for the Full Build Alternative, there would be a total of 869 residences subject to noise impact and an additional 333 residences that would be exposed to severe noise impact. A total of 1,575 residences also would be subject to vibration for this Alternative. Of this total, 554 residences were located in areas where the vibration measurements indicated efficient propagation conditions resulting in greater than normal number of impacts. Category 3 land use impacts include four schools impacted by noise and one school exposed to severe noise impact. Three medical buildings would be exposed to noise impact and one medical building is exposed to severe noise impact. Category 3 vibration impacts include four medical buildings and four schools.

Summary of Double Track Impacts for Build LRT Alternative to Maintenance Facility

For Segment 1 of the Double Track configurations, there would be a total of 122 residences exposed to noise impact and an additional 87 homes exposed to severe noise impact. Vibration impacts for Segment 1 would include 575 residences and one school. Of this total, 554 residences were located in areas where the vibration measurements indicated efficient propagation conditions resulting in greater than normal number of impacts. Category 3 noise impacts include one school.

3-11.2.5 Cumulative Impacts

Metrolink commuter rail service on the San Bernardino Line is part of the existing noise and vibration environment in the area between La Verne and Montclair. Under No-Build and TSM options, Metrolink operations would continue to provide service as needed and there would be no cumulative impacts associated with the project. Metrolink service does not extend to Phase II Segment 1. Under the Full Build Alternative, the only areas with potential cumulative noise and vibration impacts associated with the Phase II Extension would occur in Segment 2. Relocation of the tracks within the right-of-way could slightly increase the noise exposure and vibration levels experienced by adjacent land use. The slight change in noise and vibration levels resulting from minor track shifts would be insignificant with respect to existing conditions. When added to the proposed LRT operations, the impacts would not change from those projected as long term impacts.

3-11.2.6 Impacts Addressed by Regulatory Compliance

a. Construction Period Impacts

Impacts that would arise from construction of any of the alternatives were identified in Section 3-11.2.3, above. Elimination or reduction of these construction period impacts would occur through two steps, as follows: (1) compliance with local, state or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies, and (2) implementation of the proposed alternatives with additional construction period mitigation measures defined in Section 3-11.3.1. Following is a discussion of the construction period impacts for each of the alternatives that would be addressed by the first step, regulatory compliance.

No Build Alternative

For the No Build Alternative, only the planned construction of the Eastside LRT Extension would include construction-period noise impacts. These impacts are addressed in the Draft Supplemental Environmental Impact Statement/Draft Subsequent Environmental Impact Report for that project (FTA and LACMTA 2001). The other elements of the No Build Alternative include only minor construction activities for such items as new or improved bus shelters. Construction or improvements to shelters would typically require only a few days work. These short-term construction activities would not be expected to generate substantial amounts of noise. Other than the Eastside LRT construction in Los Angeles, no other construction period impacts noise impacts that would be adverse under NEPA or significant under CEQA would be expected in the other cities in Phase I, or in any of the cities in Phase II. It is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment, which is consistent with local noise ordinances.

Transportation System Management (TSM) Alternative

Construction elements of the TSM Alternative would also be limited to possible bus shelters construction, which would be limited to a few days. This alternative does not include elements that would generate construction noise that would be of sufficient magnitude to be adverse under NEPA or significant under CEQA.

It is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment, which is consistent with local noise ordinances.

LRT, Triple Track Configuration

There are no specific state or federal regulations concerning noise generated by construction activities. The FTA guidance manual offers some information on construction noise levels and mitigation options, which are discussed in more detail in the accompanying noise and vibration technical report.

At the local level, many cities and towns, including some along the Pasadena Gold Line Phase II Extension, have sections in their General Plans related to noise, and in some cases to construction noise specifically. These noise sections are typically guidance aimed at reducing noise within communities. Examples of these types of regulations include:

- Pasadena Revised Noise Element of the General Plan limits the hours of construction activity and requires contractors to “employ techniques to minimize noise.”
- Arcadia General Plan Chapter 5 has noise level restrictions for activities within the city.
- San Dimas General Plan Section VIII Noise Element states that for construction activities lasting less than 2-3 months the impact is minimal, but limits late night and weekend disturbance from construction activities.
- Limiting construction activities to weekday daytime hours (7 AM to 6 PM typically), and employing typical measures for limiting noise during construction would meet most, if not all local regulations and guidelines for construction activities. It should be noted that the Construction Authority is technically not subject to local ordinances, but would voluntarily comply with the ordinances to the extent possible. Limiting construction hours and using typical

construction practices, combined with the mitigation recommendations below in Section 3-11.3.1 would mitigate all construction noise impacts.

Phase I — The Cities Affected and the Results of Regulatory Compliance

The cities in Phase I are Los Angeles, South Pasadena, and Pasadena. There are no elements of the Triple Track configuration in the cities of Los Angeles, South Pasadena or in Pasadena west of the Sierra Madre Villa Station, so there would be no construction period impacts and no regulatory compliance.

Phase II, Segment 1 — The Cities Affected and the Results of Regulatory Compliance

Limiting construction activities to weekday daytime hours (usually 7 AM to 6 PM), and employing typical construction period noise-limiting practices, combined with the mitigation recommendations below in Section 3-11.3.1 would mitigate all construction noise impacts.

Phase II, Segment 2 – The Cities Affected and the Results of Regulatory Compliance

Limiting construction activities to weekday daytime hours (usually 7 AM to 6 PM), and employing typical construction period noise-limiting practices, combined with the mitigation recommendations below in Section 3-11.3.1 will mitigate all construction noise impacts.

Summary of Construction Period Impacts for Full Build Alternative, Triple Track Configuration, Addressed by Regulatory Compliance

Limiting construction activities to weekday daytime hours (usually 7 AM to 6 PM), and employing, typical construction period noise-limiting practices, combined with the mitigation recommendations below in Section 3-11.3.1 will mitigate all construction noise impacts for the cities in Segments 1 and 2.

Summary of Construction Period Impacts for Build LRT Alternative to Maintenance Facility, Triple Track Configuration Addressed by Regulatory Compliance

Construction period impacts in Segment 1 cities would be mitigated by limiting construction activities to weekday daytime hours (usually 7 AM to 6 PM), and employing, typical construction period noise-limiting practices, combined with the mitigation recommendations below in Section 3-11.3.1

LRT, Double Track Configurations

The regulatory compliance issues for the Double Track configurations are the same as described for the Triple Track configuration.

Summary of Construction Period Impacts for Full Build Alternative, Double Track Configurations, Addressed by Regulatory Compliance

Construction period impacts in Phase II Segment 1 and 2 cities would be mitigated by limiting construction activities to weekday daytime hours (usually 7 AM to 6 PM), and employing, typical

construction period noise-limiting practices, combined with the mitigation recommendations below in Section 3-11.3.1.

Summary of Construction Period Impacts for Build LRT Alternative to Maintenance Facility, Double Track Configurations, Addressed by Regulatory Compliance

Construction period impacts in Phase II Segment 1 cities would be mitigated by limiting construction activities to weekday daytime hours (usually 7 AM to 6 PM), and employing, typical construction period noise-limiting practices, combined with the mitigation recommendations below in Section 3-11.3.1.

b. Long Term Impacts

Long term impacts associated with the alternatives were identified in Section 3-11.2.4, above. Elimination or reduction of these long-term impacts would occur through two steps, as follows: (1) compliance with local, state or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies. (2) implementation of the proposed alternatives with additional mitigation measures defined in Section 3-11.3.2. Following is a discussion of the long-term impacts for each of the alternatives that would be addressed by the first step, regulatory compliance.

The No Build and TSM Alternatives do not include any elements that would result in long-term noise impacts and thus no regulatory compliance is required. There are no elements of the Triple Track or Double Track LRT Alternatives that result in long-term noise impacts after mitigation and thus no regulatory compliance is required. Additionally, there are no federal or state regulations pertaining to noise and/or vibration impacts from LRT operations. The California Public Utilities Commission (CPUC) General Order requires the sounding of at-grade warning devices during LRT operation. The effect of the General Order has been included in the noise impact analysis.

3-11.3 Potential Mitigation

3-11.3.1 Construction Period Mitigation Measures

Section 3-11.2.6a identified construction period impacts for which compliance with local, state, and federal regulations, permits, or similar types of requirements would eliminate or reduce such impacts. The following sections identify potential mitigation measures that would need to be implemented in order to address any remainder impacts (i.e., impacts that would still exist after regulatory compliance). The combination of regulatory compliance and these construction period mitigation measures would result in the reduction of construction period impacts to levels that would be not adverse under NEPA and less than significant under CEQA.

a. No Build Alternative

Other than the planned Eastside LRT Extension, the No Build Alternative does not require construction-period noise and vibration mitigation measures. These measures are defined in the environmental document for that project. It is assumed that construction of other elements of the No Build Alternative would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment, and no further mitigation measures would be required.

b. Transportation Systems Management (TSM) Alternative Construction Period Mitigation

It is assumed that construction of all elements of the TSM Alternative would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment, and no further mitigation measures would be required.

c. LRT, Triple Track Configuration Construction Period Mitigation

Phase I — The Cities Affected and Proposed Measures

The LRT, Triple Track configuration does not include any elements in the cities of Los Angeles, South Pasadena or in Pasadena west of the Sierra Madre Villa Station. No construction period measures are required.

Phase II, Segment 1 — The Cities Affected and Proposed Measures

The cities in Phase II, Segment 1 are Pasadena, Arcadia, Monrovia, Duarte, and Irwindale. In addition to the noise reduction that would result from voluntary regulatory compliance, consideration can be given to:

- (1) including specific residential property line noise limits in the construction specifications for this project, and
- (2) performing noise monitoring during construction to verify compliance with the limits. This approach allows the contractor flexibility to meet the noise limits in the most efficient and cost effective manner. Experience suggests that community annoyance with construction noise will be minimal if: the Resident Engineer is committed to minimizing excessive noise; noise

monitoring is performed to verify compliance with the noise limits; and a complaint resolution procedure is in place to rapidly address any problems that may develop. Avoiding vibration impacts during construction can be achieved through numeric limits in the construction specifications. The noise and Vibration Technical Report in the Appendices has more detail about construction activities, impact criteria, noise level limits and mitigation strategies.

Phase II, Segment 2 — The Cities Affected and Proposed Measures

The cities in Phase II, Segment 2 are Azusa, Glendora, San Dimas, La Verne, Pomona, Claremont, Montclair, and Upland. The recommended mitigation measures for these cities are the same as described for Segment 1.

Summary of Construction Period Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

For the Full Build LRT Triple Track configuration, in addition to typical noise limiting measures described under regulatory compliance, the following draft measures can be considered:

- including specific residential property line noise limits in the construction specifications for this project, and
- performing noise monitoring during construction to verify compliance with the limits.

Summary of Construction Period Mitigation Measures for Built LRT Alternative to Maintenance Facility, Triple Track Configuration

For the Built LRT Triple Track configuration to Maintenance Facility, in addition to typical noise limiting measures described under regulatory compliance, the following draft measures can be considered:

- including specific residential property line noise limits in the construction specifications for this project, and
- performing noise monitoring during construction to verify compliance with the limits.

d. LRT, Double Track Configurations Construction Period Mitigation

The same mitigations measures are recommended for the Double Track configurations as were described for the Triple Track configuration.

3-11.3.2 Long Term Mitigation

Section 3-11.2.6 identified long-term impacts for which compliance with local, state and federal regulations, permits, or similar types of requirements would eliminate or reduce such impacts. The following sections identify potential mitigation measures that would need to be implemented in order to address any remainder impacts (i.e., impacts that would still exist after regulatory compliance). The combination of regulatory compliance and these mitigation measures would result in the reduction of long term impacts to levels that would be not adverse under NEPA and less than significant under CEQA.

a. No Build Alternative

The No Build Alternative does not require long-term noise and vibration mitigation measures because no long-term impacts were identified for this alternative.

b. Transportation Systems Management (TSM) Alternative

The TSM Alternative does not require long-term noise and vibration mitigation measures because no impacts were identified for this alternative

c. LRT, Triple Track Configuration

There are no elements of the Triple Track configuration in the Phase I cities of Los Angeles, South Pasadena or Pasadena. The following measures would apply in Phase II cities only.

Noise Impact Mitigation

Potential mitigation measures for reducing noise impacts from LRT operations are described below. During Preliminary Engineering, more detailed noise impact analysis would be conducted to determine where and how these potential measures would be most effectively used to reduce impacts to less than the impact threshold. For instance, the final definition of the length and height of a noise barrier at a specific location would need to account for topography (the elevation of the LRT compared to the affected property), distance from track to property border, track curvature, any changes in assumptions about LRT operating speed, whether or not the location is also influenced by the sounding of at-grade warning devices, etc.

- **Noise Barriers** - This is a common approach to reducing noise impacts from surface transportation sources. The primary requirements for an effective noise barrier are that (1) the barrier must be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) the barrier must be of an impervious material with a minimum surface density of 4 lb/sq. ft. and (3) the barrier must not have any gaps or holes between the panels or at the bottom. Because numerous materials meet these requirements, the selection of materials for noise barriers is usually dictated by aesthetics, durability, cost, and maintenance considerations. Depending on the proximity of the barrier to the tracks and on the track elevation, transit system noise barriers typically range in height from between four and eight feet.
- **Building Sound Insulation** - Sound insulation of residences and institutional buildings to improve the outdoor-to-indoor noise reduction has been widely applied around airports and has seen limited application for transit projects. Although this approach has no effect on noise in exterior areas, it may be the best choice for sites where noise barriers are not feasible or desirable, and for buildings where indoor sensitivity is of most concern. Substantial improvements in building sound insulation (on the order of 5 to 10 dBA) can often be achieved by adding an extra layer of glazing to the windows, by sealing any holes in exterior surfaces that act as sound leaks, and by providing forced ventilation and air-conditioning so that windows do not need to be opened.

- **Relocation of Crossovers or Special Trackwork at Crossovers** - Because the impacts of LRT wheels over rail gaps at track crossover locations increases LRT noise by about 6 dBA, crossovers are a major source of noise impact when they are located in sensitive areas. If crossovers cannot be relocated away from residential areas, another approach is to use spring rail or moveable point frogs in place of standard rigid frogs at turnouts. These devices allow the flangeway gap to remain closed in the main traffic direction for revenue service trains.
- **LRT Speed Reductions in Sensitive Areas** - Speed reductions will always lower community noise levels, but they are not often implemented for noise control because of the negative impact on the LRT operating schedule. Thus, their impact on the operating schedule would need to be evaluated with respect to their potential noise mitigation benefits.
- **Grade Separation or Closure of Grade Crossings** – One of the largest components of noise is the bells and whistles used for safety reasons at grade crossings. Elimination of this noise would reduce the noise impact near grade crossings. Grade crossing noise can be eliminated by grade separations (elevated structures or underpasses), or by closure of grade crossings.
- **Modifications to At-grade Warning Devices and Operations**- Subject to the approval on a case-by-case basis by the CPUC, warning devices or their operation may be modified in ways that may reduce impacts in the vicinity of at-grade crossings. For instance, rather than using a whistle that broadcasts sound over a wide area, it may be possible to use a directional horn which focuses sound along an intersecting street. The time period during which warning bells sound as crossing gates are actuated (descend and arise) may also be modified by CPUC. A recent approval in how bells must be sounded at intersections in proximity to stations in Phase I cities, resulted in a much shorter time period in which the warning bells sound.

As discussed in Section 3-11.2.2, FTA states that in implementing noise impact criteria, severe impacts should be mitigated unless there are no practical means to do so. At the moderate impact level, more discretion should be used, and other project-specific factors should be included in the consideration of mitigation. These other factors can include the predicted increase over existing noise levels, the types and number of noise-sensitive land uses affected, existing outdoor-to-indoor sound insulation and the cost-effectiveness of mitigating noise to more acceptable levels.

Based on the results of the noise assessment, potential mitigation measures have been identified. The primary mitigation measure would be the construction of sound barrier walls to shield areas where impact is projected. **Tables 3-11.22 and 3-11.25** indicate the approximate noise barrier locations, lengths, and side of track as well as the number of moderate and severe impacts that would be reduced for Segment 1 and Segment 2, respectively. However, because barriers would not be practical for shielding receptors near grade crossings from the train and warning signal noise, sound insulation may need to be applied to such residences. **Tables 3-11.23 and 3-11.26** indicate areas that may be candidates for sound insulation for Segment 1 and Segment 2, respectively.

A number of residential areas on the corridor have existing noise barriers/privacy walls. The noise impact analysis did not include any noise reduction from existing walls along the corridor. The existing barriers were not included because it is not possible to assess the effectiveness of any barriers/privacy walls without more detailed plan and profile mapping of the corridor. In addition, many of the walls may not be effective as noise barriers due to construction, height, or any gaps that are present. During the final design of the project, the effectiveness of the existing barriers/privacy walls should be assessed and incorporated into any mitigation recommendations. It may be determined that a number of the existing barriers are effective for mitigation, or that some may only need to be repaired or raised slightly to provide the appropriate level of noise reduction. Thus, the recommendations in **Tables 3-11.22 and 3-11.25** could range from new noise barriers to slight modifications of existing walls to no action needed to provide adequate noise reduction.

Figures 3-11.9 through 3-11.22 show the approximate locations of the forecasted noise impacts and, correspondingly, where mitigation would likely be provided. As noted before, the final locations of noise impacts and of mitigation would be determined during Preliminary Engineering, and reported in the Final EIS/EIR.

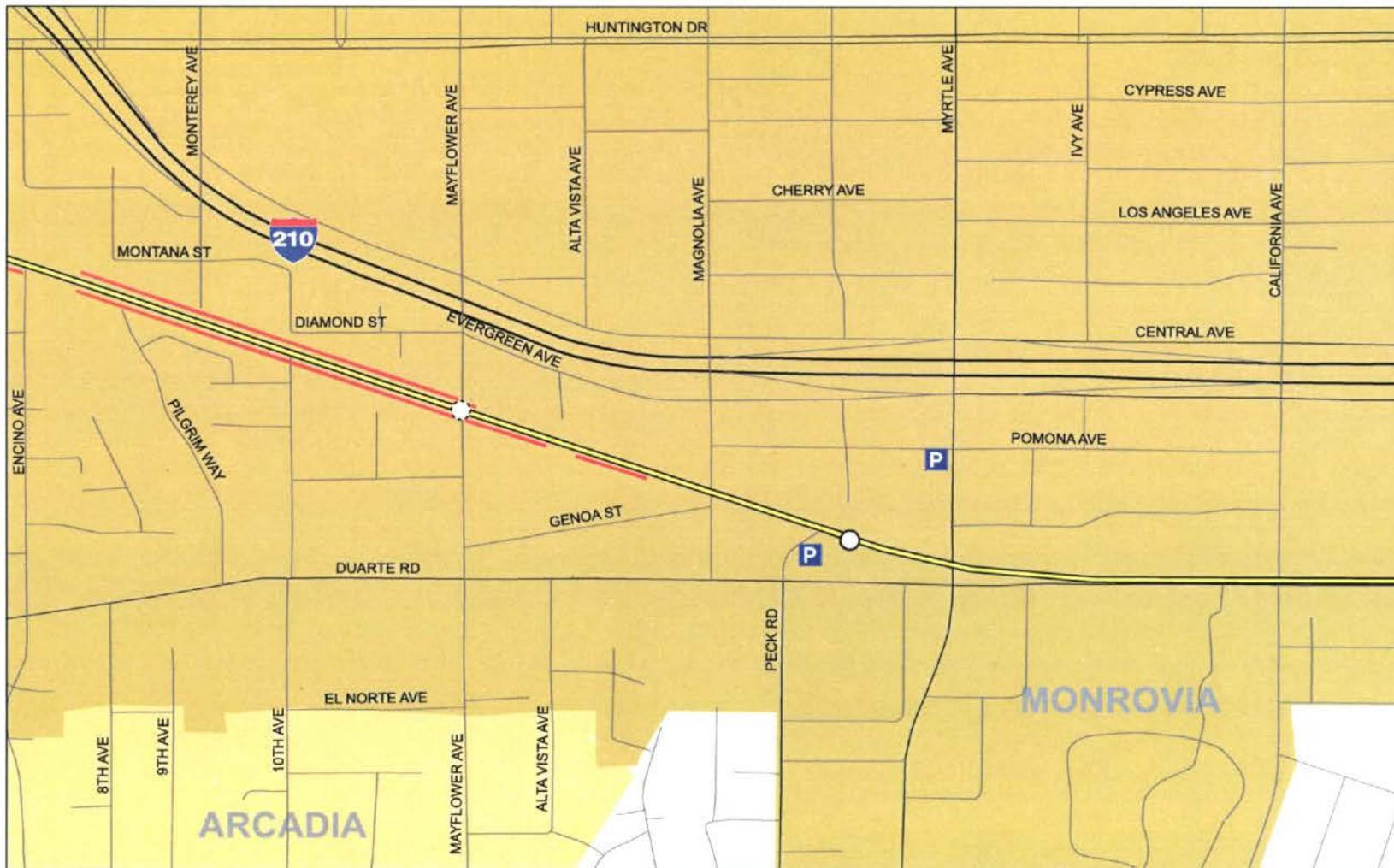


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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

Figure 3-11.9: Preliminary Noise Impact Areas (1 of 13)



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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

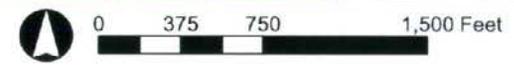


Figure 3-11.10: Preliminary Noise Impact Areas (2 of 13)



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Legend

-  Gold Line Alignment
-  Proposed Station
-  Potential Parking
-  Noise Impacts From Warning Devices
-  Potential Noise Impact Areas

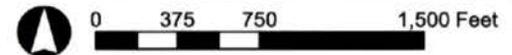


Figure 3-11.11: Preliminary Noise Impact Areas (3 of 13)



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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

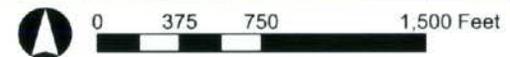
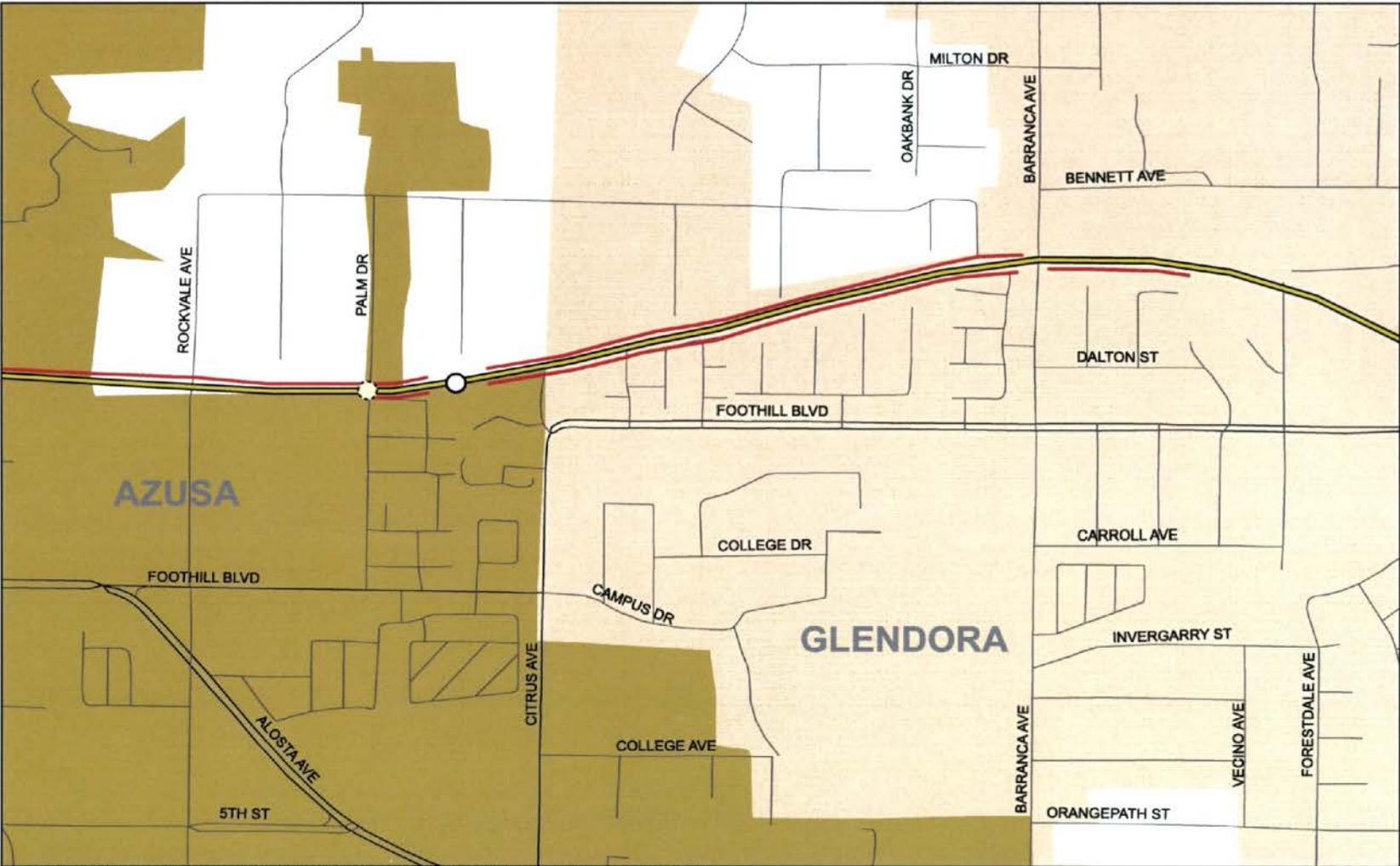


Figure 3-11.12: Preliminary Noise Impact Areas (4 of 13)



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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

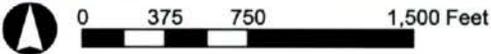
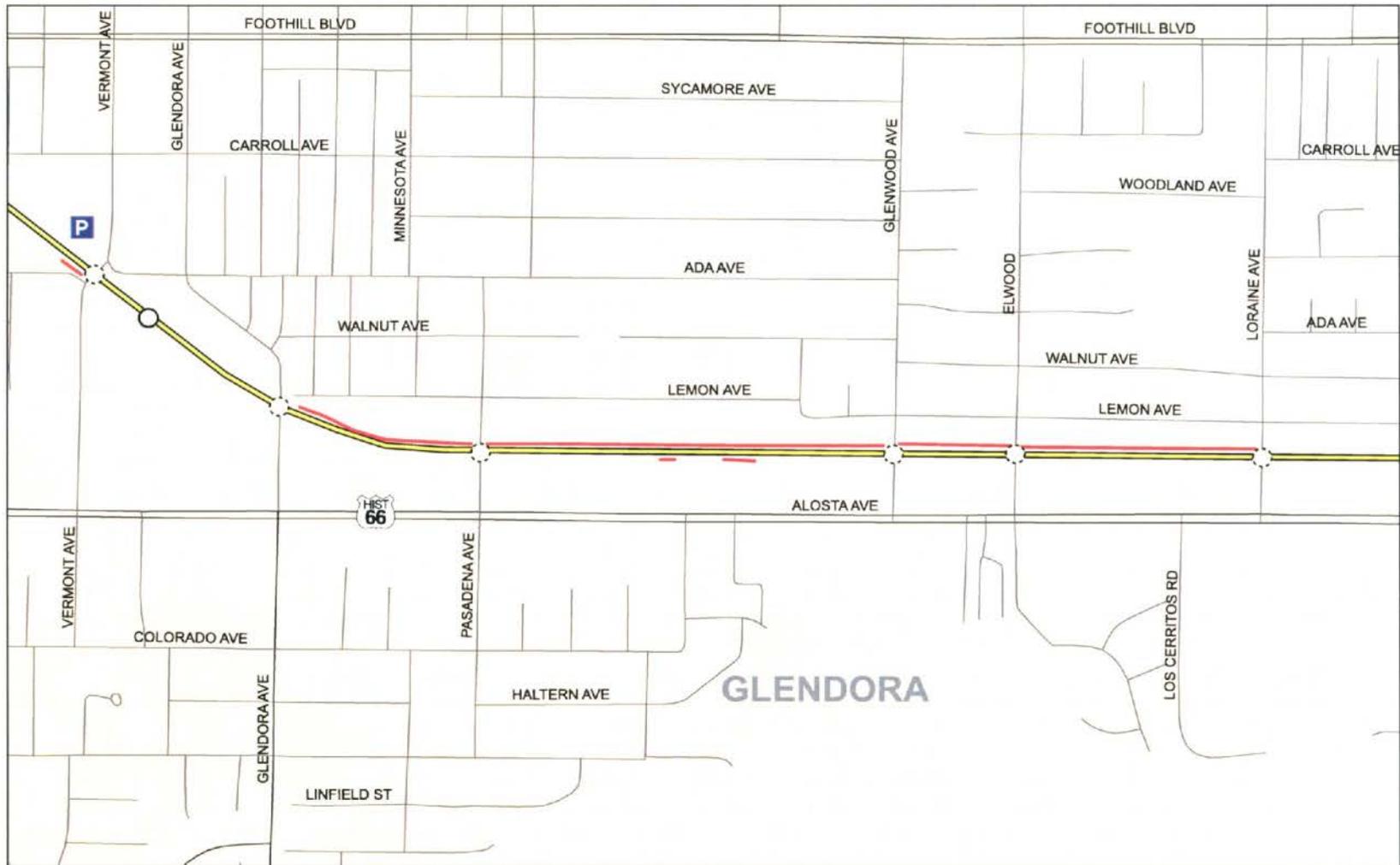


Figure 3-11.13: Preliminary Noise Impact Areas (5 of 13)



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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

Figure 3-11.14: Preliminary Noise Impact Areas (6 of 13)



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Legend

-  Gold Line Alignment
-  Proposed Station
-  Potential Parking
-  Noise Impacts From Warning Devices
-  Potential Noise Impact Areas

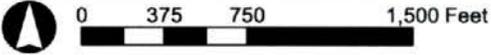


Figure 3-11.15: Preliminary Noise Impact Areas (7 of 13)



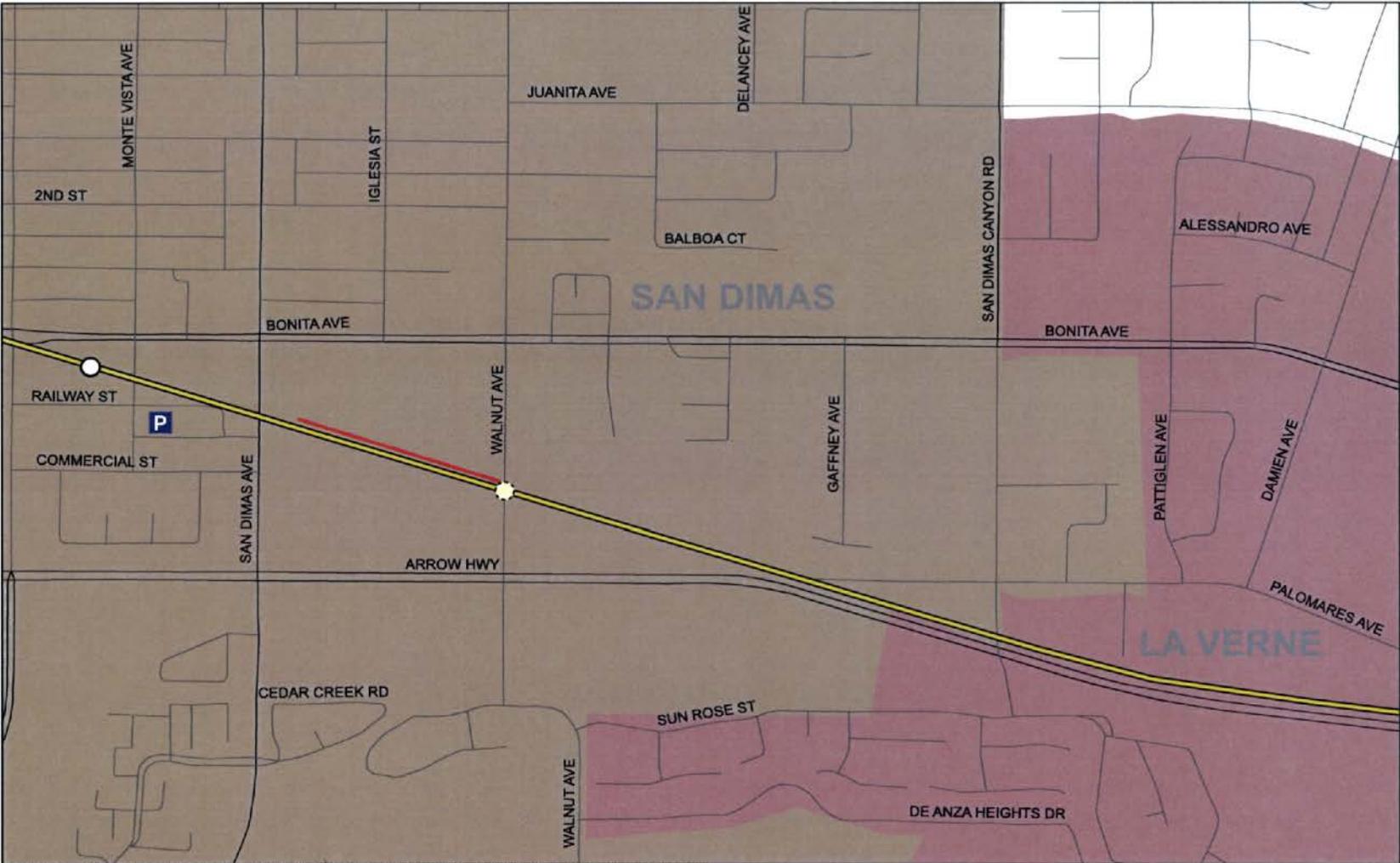
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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas



Figure 3-11.16: Preliminary Noise Impact Areas (8 of 13)



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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

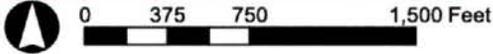
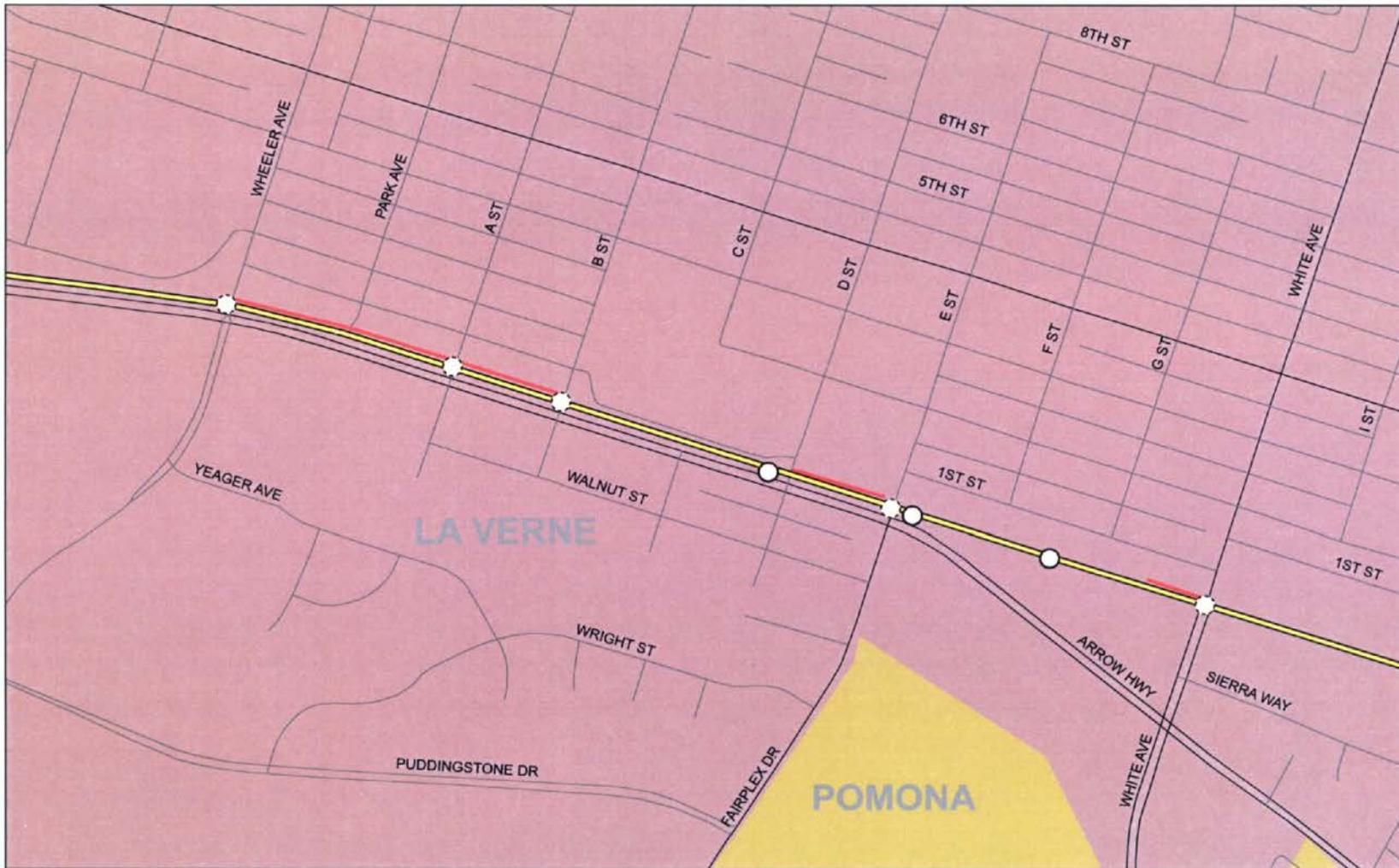


Figure 3-11.17: Preliminary Noise Impact Areas (9 of 13)



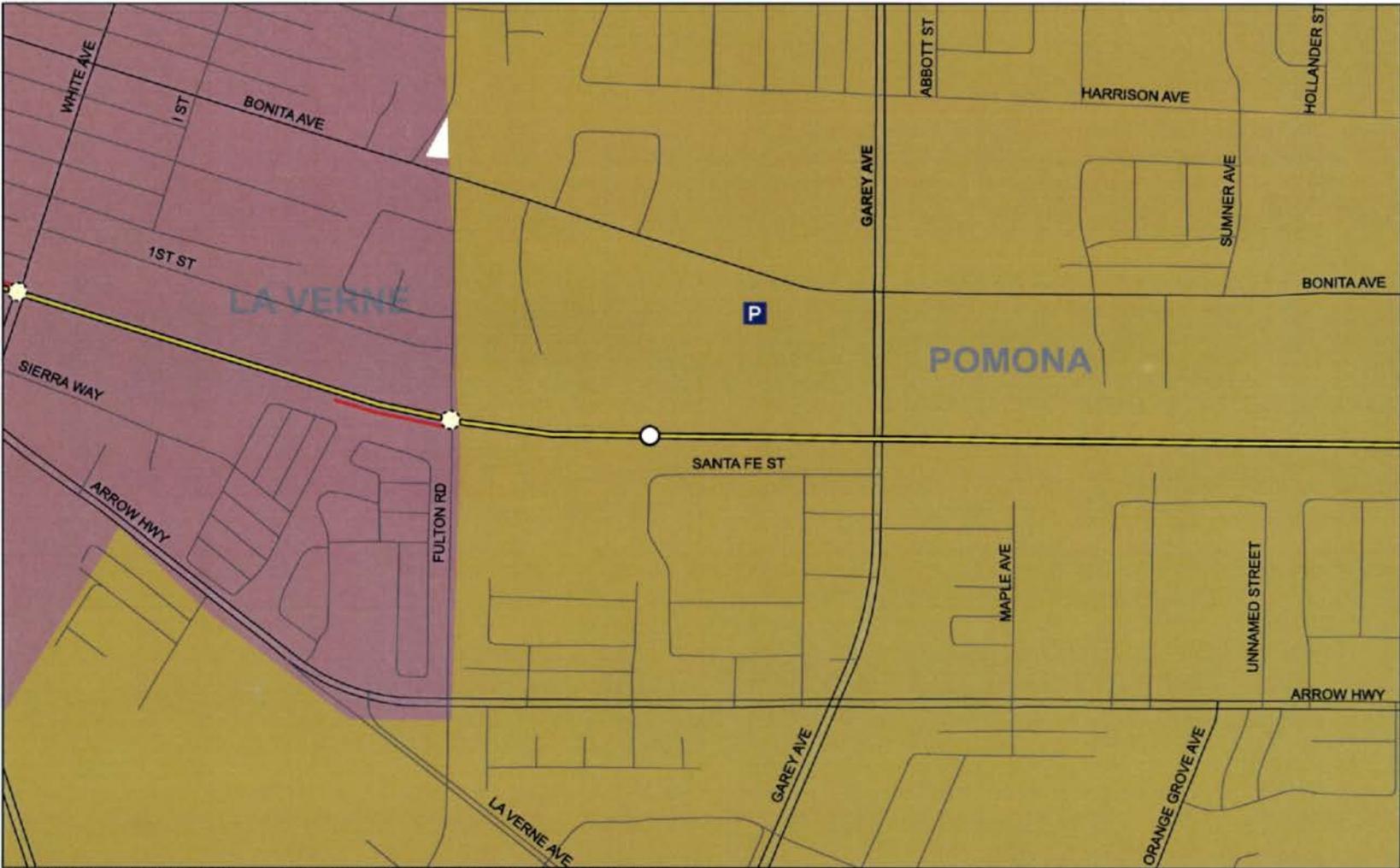
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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas



Figure 3-11.18: Preliminary Noise Impact Areas (10 of 13)



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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

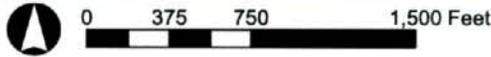
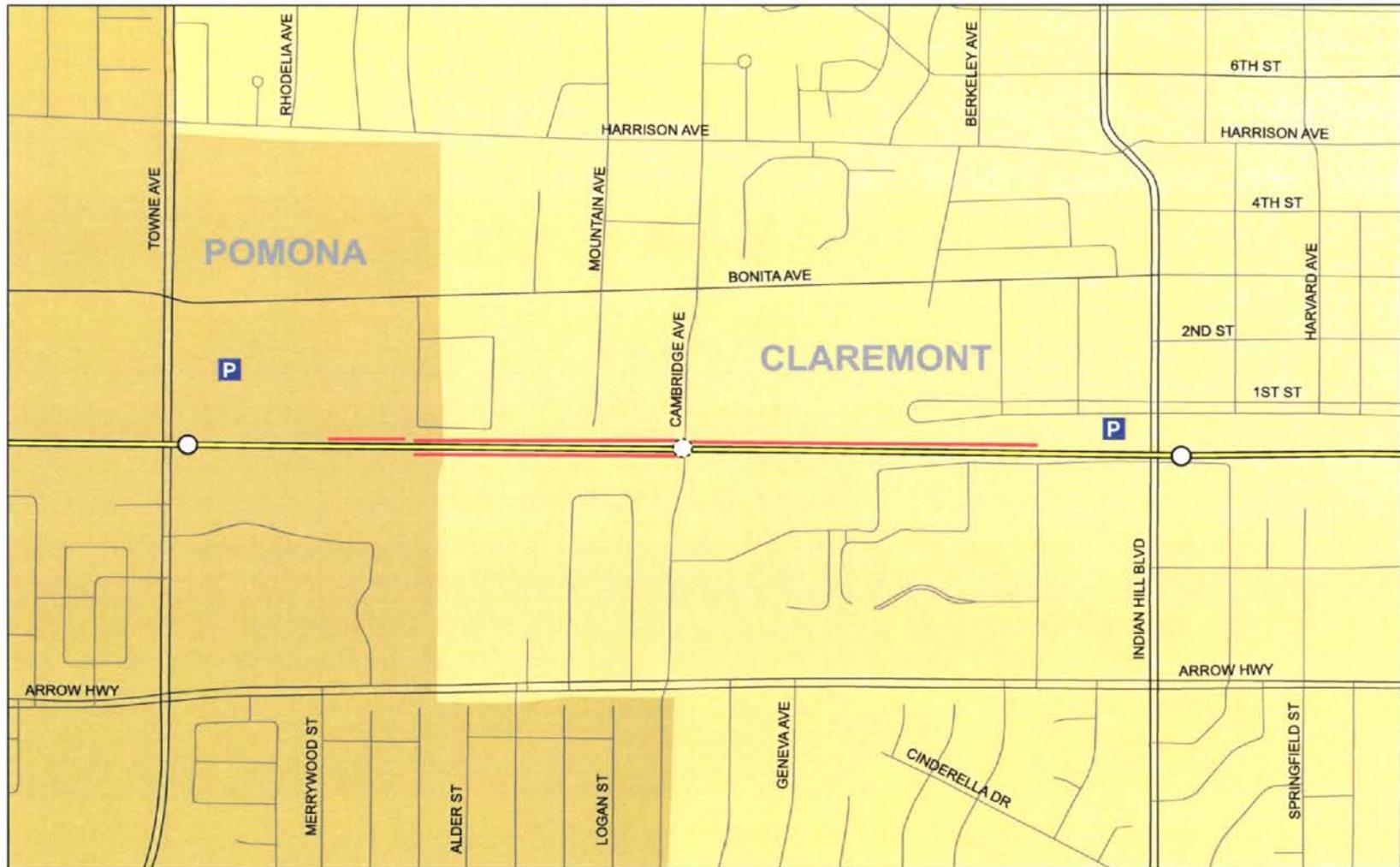


Figure 3-11.19: Preliminary Noise Impact Areas (11 of 13)



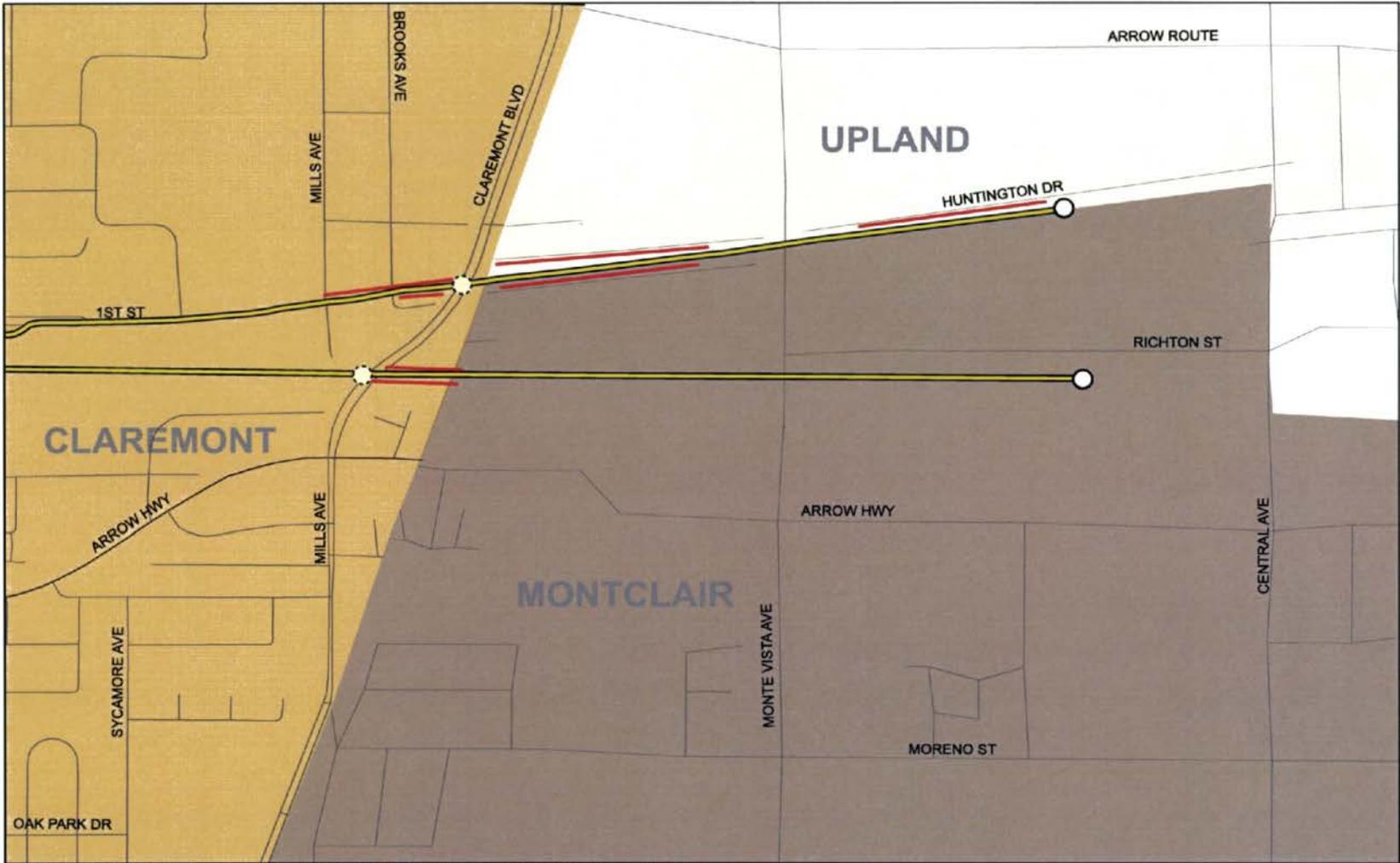
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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas



Figure 3-11.20: Preliminary Noise Impact Areas (12 of 13)



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Legend

- Gold Line Alignment
- Proposed Station
- Potential Parking
- Noise Impacts From Warning Devices
- Potential Noise Impact Areas

Figure 3-11.21: Preliminary Noise Impact Areas (13 of 13)

Vibration Impact Mitigation

Potential mitigation measures for reducing vibration impacts from LRT operations are described below. In general, vibration mitigation measures would occur with the rail right-of-way, rather than on private property.

- **LRT Speed Reductions in Sensitive Areas** - Speed reductions will always lower ground-borne vibration levels, but they are not always a feasible vibration control measure because of the negative impact on the LRT operating schedule. Thus, their impact on the operating schedule will need to be evaluated with respect to their potential vibration mitigation benefits.
- **Ballast Mats** - A ballast mat consists of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties and rail on top. The reduction in ground-borne vibration provided by a ballast mat is strongly dependent on the frequency content of the vibration and design and support of the mat.
- **Tire Shred or Recycled Rubber Chip Underlay:** A 12-inch-thick resilient layer of recycled rubber chips placed beneath the sub-ballast layer of standard open ballast and tie track could be incorporated into the track design. This mitigation method would provide results similar to ballast mats, and would also be strongly dependent on the frequency content of the vibration.
- **Floating Slabs** - Floating slabs consist of thick concrete slabs supported by resilient pads on a concrete foundation; the tracks are mounted on top of the floating slab. Most successful floating slab installations are in subways, and their use for at-grade track is less common. Although floating slabs are designed to provide vibration reduction at lower frequencies than ballast mats, they are extremely expensive.
- **Relocation of Crossovers or Special Trackwork** - Because the impacts of wheels over rail gaps at track crossover locations increases vibration by about 10 VdB, crossovers are a major source of vibration impact when they are located in sensitive areas. If crossovers cannot be relocated away from residential areas, another approach is to use spring-rail or moveable point frogs in place of standard rigid frogs at turnouts. These devices allow the flangeway gap to remain closed in the main traffic direction for revenue service trains.
- **Property Acquisitions or Easements** – Additional options for avoiding vibration impacts (and noise impacts also) are for the transit agency to purchase residences likely to be subject to severe impact by train operations or to acquire easements for such residences by paying the homeowners to accept the future train vibration conditions. These approaches are usually taken only in isolated cases where other mitigation options are infeasible, impractical, or too costly.

Vibration impacts that exceed FTA criteria are considered to be significant and to warrant mitigation, if reasonable and feasible. **Tables 3-11.24 and 3-11.27** indicate the civil stations along the corridor where mitigation has been recommended to reduce the vibration levels, for Segment 1 and Segment 2, respectively. At a minimum, mitigation would require the installation of ballast mats. However, more extensive mitigation may be required to adequately reduce the vibration levels to below the FTA vibration impact criterion. In addition, localized speed reductions may reduce vibration levels to below the FTA vibration impact criterion. Vibration mitigation will be addressed in more detail during final design.

Phase I — The Cities Affected and Proposed Measures

Since there are no noise and vibration impacts in Phase I cities as a result of the Triple Track configuration, no mitigation measures are proposed.

Phase II, Segment 1 — The Cities Affected and Proposed Measures

Noise

Table 3-11.22 lists the preliminary locations for potential noise barrier mitigation along Phase II, Segment 1, including the length of barrier in feet. Specific detail of noise barriers, including the height, would be determined during Preliminary Engineering, when more information is available. Noise barriers will be designed to adequately reduce the noise levels to below the FTA noise impact criteria. Table 3-11.23 lists preliminary locations of potential sound insulation for noise mitigation along Phase II, Segment 1, where noise barriers would not be practical or cost effective, primarily near grade crossings and where sound insulation would be necessary. Although the intent of sound insulation is to reduce forecasted noise to less than the impact threshold, there may be circumstances where impacts cannot be reduced to less than the threshold, such as close proximity of particular location to a grade-crossing.

| <p align="center">TABLE 3-11.22 PRELIMINARY LOCATIONS FOR POTENTIAL NOISE BARRIER MITIGATION TREATMENT PHASE II, SEGMENT 1 TRIPLE TRACK CONFIGURATION</p> | | | | | | |
|--|-------------------|---------------|---------------|---------------------|--------------------------------|-------------|
| Location | City | Side of Track | Civil Station | Approx. Length (ft) | Number of Impacts ¹ | |
| | | | | | Impact | Severe |
| San Luis Rey | Arcadia | South | 139 to 156 | 1700 | 11 | 4 |
| Cornell | Arcadia | North | 150 to 157 | 700 | 22 | 0 |
| 2 nd | Arcadia | North | 183 to 188 | 300 | Hotel | 0 |
| Arcadia High | Arcadia/ Monrovia | South | 191 to 217 | 2600 | 0 | 24 & 1 Park |
| Anita/ Alamilas/ Mayflower | Monrovia | South | 225 to 240 | 2100 | 9 | 12 |
| Montana/Diamond | Monrovia | North | 218 to 240 | 2200 | 8 | 58 |
| Mayflower | Monrovia | South | 241 to 246 | 500 | 0 | 40 |
| Hamilton | Duarte | North | 324 to 328 | 400 | 7 | 0 |
| Hamilton | Duarte | North | 333 to 338 | 500 | 7 | 0 |
| Duarte | Duarte | South | 316 to 337 | 2100 | 13 | 0 |
| Hamilton | Duarte | North | 339 to 359 | 2000 | 27 | 6 |
| Duarte | Duarte | South | 342 to 348 | 600 | 15 | 0 |

1. Number of impacts mitigated by the proposed noise barrier.

Source: Harris, Miller, Miller & Hanson, 2003

**TABLE 3-11.23
PRELIMINARY LOCATIONS FOR
POTENTIAL SOUND INSULATION MITIGATION TREATMENT LOCATIONS
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION**

| Location | City | Side of Track | Civil Station | Number of Impacts ¹ | |
|-----------|----------|---------------|---------------|--------------------------------|--------|
| | | | | Impact | Severe |
| Anita | Monrovia | South | 221 | 0 | 4 |
| Diamond | Monrovia | North | 231 | 0 | 5 |
| Diamond | Monrovia | North | 237 | 0 | 6 |
| Mayflower | Monrovia | South | 240 | 4 | 2 |
| Mayflower | Monrovia | North | 241 | 0 | 1 |
| Genoa | Monrovia | South | 250 | 0 | 20 |
| Duarte | Duarte | South | 315 | 4 | 0 |

1. Number of impacts mitigated by the proposed sound insulation.

Source: Harris, Miller, Miller & Hanson, 2003.

Vibration

Table 3-11.24 lists the locations for potential vibration mitigation along Phase II, Segment 1, including the length of mitigation in feet. At a minimum, vibration mitigation would require the installation of ballast mats. However, more extensive mitigation may be required to adequately reduce the vibration levels to below the FTA vibration impact criterion. Specific recommendations on vibration mitigation will be addressed in more detail during final design.

**TABLE 3-11.24
PRELIMINARY LOCATIONS FOR
POTENTIAL VIBRATION MITIGATION TREATMENT,
PHASE II, SEGMENT 1
TRIPLE TRACK CONFIGURATION**

| Location | City | Civil Station | Approx. Length (ft) | Number of Impacts ¹ |
|-----------|----------|---------------|---------------------|--------------------------------|
| Arboleda | Pomona | 34 to 41 | 700 | 15 |
| Foothill | Arcadia | 52 to 161 | 10900 | 192 |
| 2nd | Arcadia | 183 to 187 | 400 | 2 Hotels |
| 3rd | Arcadia | 197 to 206 | 900 | 34 & High School |
| Contented | Monrovia | 206 to 253 | 4700 | 313 |
| Hamilton | Duarte | 346 to 359 | 1300 | 21 |

1. Number of impacts mitigated by the proposed vibration mitigation.

Source: Harris, Miller, Miller & Hanson, 2003

Phase II, Segment 2 — The Cities Affected and Proposed Measures

Noise

Table 3-11.25 lists the preliminary locations for potential noise barrier mitigation along Phase II, Segment 2, including the approximate length of barrier in feet. Specific detail of noise barriers, including the height, need to be determined during Preliminary Engineering, when more information is available. Noise barriers will be designed to adequately reduce the noise levels to below the FTA noise impact criteria. **Table 3-11.26** lists preliminary locations of potential sound insulation for noise mitigation along Phase II, Segment 2, where noise barriers would not be practical or cost effective, primarily near grade crossings and where noise insulation would be necessary. Although the intent of sound insulation is to reduce forecasted noise to less than the impact threshold, there may be circumstances where impacts cannot be reduced to less than the threshold, such as a property in close proximity to an at-grade crossing.

| TABLE 3-11.25 PRELIMINARY LOCATIONS FOR POTENTIAL NOISE BARRIER MITIGATION TREATMENT, PHASE II, SEGMENT 2 TRIPLE TRACK CONFIGURATION | | | | | | |
|---|-----------|---------------|---------------|---------------------|--------------------------------|--------|
| Location | City | Side of Track | Civil Station | Approx. Length (ft) | Number of Impacts ¹ | |
| | | | | | Impact | Severe |
| 6 th / Lime/ Foothill | Azusa | South | 528 to 553 | 2500 | 35 + Med | 0 |
| San Gabriel | Azusa | North | 549 to 551 | 200 | 0 | 1 |
| 9th | Azusa | North | 573 to 601 | 2800 | 126 | 0 |
| Pasadena | Azusa | South | 582 to 585 | 300 | 0 | Park |
| Palm | Azusa | South | 602 to 606 | 400 | 8 | 0 |
| Palm | Azusa | North | 602 to 605 | 300 | 12 | 0 |
| 9th | Glendora | North | 612 to 638 | 2600 | 32 | 57 |
| 9th | Glendora | South | 614 to 637 | 2300 | 38 | 17 |
| Marcile | Glendora | South | 638 to 647 | 900 | 0 | 5 |
| Alosta | Glendora | South | 720 to 726 | 600 | 1 Hotel | 1 |
| Alosta | Glendora | South | 760 to 763 | 300 | 2 | 0 |
| Alosta | Glendora | South | 767 to 772 | 500 | 2 & 1 Hotel | 0 |
| St. Vladimir | Glendora | North | 771 to 776 | 500 | 6 | 0 |
| Compromise Line | Glendora | North | 783 to 787 | 400 | 0 | 5 |
| Remuda | Glendora | North | 794 to 816 | 2200 | 8 | 19 |
| Gladstone | Glendora | South | 847 to 849 | 200 | 1 | 1 |
| Gladstone | San Dimas | South | 850 to 853 | 300 | 4 | 0 |
| Gladstone | San Dimas | North | 850 to 854 | 400 | 4 | 0 |
| Highland | San Dimas | North | 862 to 875 | 1300 | 35 | 2 |
| Walnut | San Dimas | North | 920 to 930 | 1000 | 96 | 0 |
| 1st | La Verne | North | 998 to 1010 | 1200 | 10 | 10 |
| 1st | La Verne | North | 1011 to 1016 | 500 | 10 | 0 |
| Univ. La Verne | La Verne | North | 1024 to 1029 | 500 | Park | 0 |
| White | La Verne | North | 1049 to 1052 | 300 | 3 | 0 |
| Sierra | La Verne | South | 1074 to 1077 | 300 | 4 | 0 |

TABLE 3-11.25 *continued*
PRELIMINARY LOCATIONS FOR
POTENTIAL NOISE BARRIER MITIGATION TREATMENT,
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATION

| Location | City | Side of Track | Civil Station | Approx. Length (ft) | Number of Impacts ¹ | |
|-------------|-----------|---------------|---------------|---------------------|--------------------------------|--------|
| | | | | | Impact | Severe |
| Bonita | Claremont | South | 1149 to 1153 | 400 | 16 | 0 |
| Bonita | Claremont | North | 1163 to 1181 | 1800 | 108 | 0 |
| *Claremont | Claremont | North | 1226 to 1233 | 700 | 7 | 0 |
| *Claremont | Claremont | North | 1235 to 1241 | 600 | 10 | 0 |
| *Claremont | Claremont | South | 1230 to 1233 | 300 | 2 | 0 |
| *Claremont | Claremont | South | 1234 to 1241 | 700 | 6 | 0 |
| *Claremont | Claremont | North | 1257 to 1269 | 1200 | 5 | 10 |
| **Claremont | Claremont | South | 1229 to 1232 | 300 | 8 | 0 |
| **Claremont | Claremont | North | 1230 to 1233 | 300 | 2 | 0 |

1. Number of impacts mitigated by the proposed noise barrier.

* These noise-sensitive locations only apply to the Baseline Alternative (north of the Montclair Station Park and Ride).

** These noise-sensitive locations only apply to the Option G Alternative (south of the Montclair Station Park and Ride).

TABLE 3-11.26
PRELIMINARY LOCATIONS FOR
POTENTIAL SOUND INSULATION MITIGATION TREATMENT,
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATION

| Location | City | Side of Track | Civil Station | Number of Impacts ¹ | |
|--------------|----------|---------------|---------------|--------------------------------|-----------|
| | | | | Impact | Severe |
| 6th | Azusa | South | 524 to 526 | 5 | 0 |
| San Gabriel | Azusa | North | 552 | 16 | 0 |
| Dalton | Azusa | South | 570 to 573 | 4 | 0 |
| Pasadena | Azusa | South | 574 to 577 | 0 | 18 |
| Palm | Azusa | South | 593 to 601 | 1 School | 0 |
| Marcile | Glendora | South | 638 to 647 | 0 | 10 |
| Foothill | Glendora | South | 672 to 679 | 1 School & 1 Medical | 1 Medical |
| Grande | Glendora | North | 670 | 0 | 1 Medical |
| Grande | Glendora | North | 675 to 685 | 11 | 0 |
| Vermont | Glendora | South | 687 | 4 | 0 |
| Glendora | Glendora | North | 700 to 712 | 10 | 17 |
| Pasadena | Glendora | South | 708 to 711 | 1 School & 1 Medical | 0 |
| Lemon | Glendora | North | 712 to 734 | 10 | 28 |
| Glenwood | Glendora | North | 734 to 740 | 0 | 8 |
| Lemon | Glendora | North | 740 to 758 | 7 | 22 |
| St. Vladimir | Glendora | North | 767 to 771 | 0 | 6 |

TABLE 3-11.26 *continued*
**PRELIMINARY LOCATIONS FOR
 POTENTIAL SOUND INSULATION MITIGATION TREATMENT,
 PHASE II, SEGMENT 2
 TRIPLE TRACK CONFIGURATION**

| Location | City | Side of Track | Civil Station | Number of Impacts ¹ | |
|-----------------|-----------|---------------|---------------|--------------------------------|--------|
| | | | | Impact | Severe |
| Compromise Line | Glendora | North | 775 to 783 | 0 | 8 |
| Eucla | San Dimas | South | 888 | 1 Hotel | 0 |
| Univ. La Verne | La Verne | North | 1030 to 1035 | 48 & 1 School | 0 |
| Bonita | Claremont | North | 1159 to 1163 | 0 | 8 |

1. Number of impacts mitigated by the proposed sound insulation.

Source: Harris, Miller, Miller & Hanson, 2003

Vibration

Table 3-11.27 lists the preliminary locations for potential vibration mitigation along Phase II, Segment 2, including the approximate length of mitigation in feet. At a minimum, vibration mitigation would require the installation of ballast mats. However, more extensive mitigation may be required to adequately reduce the vibration levels to below the FTA vibration impact criterion. Specific recommendations on vibration mitigation will be addressed in more detail during Preliminary Engineering.

TABLE 3-11.27
**PRELIMINARY LOCATIONS FOR
 POTENTIAL VIBRATION MITIGATION TREATMENT,
 PHASE II, SEGMENT 2
 TRIPLE TRACK CONFIGURATION**

| Location | City | Civil Station | Approx. Length (ft) | Number of Impacts ¹ |
|---------------------------------|-----------|---------------|---------------------|--|
| 6 th / Lime/Foothill | Azusa | 524 to 553 | 2900 | 80 & 1 Medical |
| Dalton/ Pasadena/ 9th | Azusa | 566 to 612 | 4600 | 251 |
| 9th/ Ranger/ Ashworth | Glendora | 612 to 646 | 3400 | 152 |
| Foothill | Glendora | 670 to 688 | 1800 | 12 & 1 School & 3 Medical |
| Glendora to I-210 | Glendora | 700 to 816 | 11600 | 185 & 2 Hotels & 1 Medical & 1 School |
| Gladstone | Glendora | 847 to 849 | 200 | 2 |
| 1st | La Verne | 999 to 1016 | 1700 | 30 |
| Univ. La Verne | La Verne | 1029 to 1031 | 200 | School |
| Garey | Pomona | 1103 to 1107 | 400 | 54 |
| Roderick | Pomona | 1125 to 1130 | 500 | 6 |
| Bonita | Pomona | 1145 to 1163 | 1800 | 92 |
| Bonita | Pomona | 1168 to 1180 | 1200 | 88 |
| *Claremont | Montclair | 1228 to 1232 | 400 | 10 |

TABLE 3-11.27¹ continued
PRELIMINARY LOCATIONS FOR
POTENTIAL VIBRATION MITIGATION TREATMENT,
PHASE II, SEGMENT 2
TRIPLE TRACK CONFIGURATION

| Location | City | Civil Station | Approx. Length (ft) | Number of Impacts ¹ |
|---------------|-----------|---------------|---------------------|--------------------------------|
| **Claremont | Claremont | 1230 to 1233 | 300 | 2 |
| **Claremont | Montclair | 1235 to 1240 | 500 | 21 |
| **Monte Vista | Montclair | 1257 to 1268 | 1100 | 15 |

1. Number of impacts mitigated by the proposed vibration mitigation.

* These locations only apply to the Baseline Alternative (north of the Montclair Station Park and Ride).

** These locations only apply to the Option G Alternative (south of the Montclair Station Park and Ride).

Source: Harris, Miller, Miller & Hanson, 2003

Summary of Long Term Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

Based on initial forecasts, for Segments 1 and 2 of the Triple Track configuration, there is a total of approximately 44,800 feet of noise barrier needed for noise mitigation and 286 residences where sound insulation would be needed to provide mitigation. Combinations of potential vibration mitigation measures described in this section along approximately 51,500 feet of the alignment would provide mitigation for the 1575 identified vibration impacts.

Summary of Long Term Mitigation Measures for Built LRT Alternative to Maintenance Facility, Triple Track Configuration

Based on initial forecasts, for Segment 1 of the Triple Track configuration, there would be approximately 15,700 feet of noise barrier needed to mitigate 263 noise impacts and 46 residences that would need sound insulation mitigation. Combinations of potential vibration mitigation measures described in this section along about 18,900 feet of the alignment would provide mitigation for the 575 identified vibration impacts in Segment 1.

d. LRT, Double Track Configurations

Potential mitigation measures for reducing noise impacts from LRT operations for the Double Track configurations are the same as described for the Triple Track configuration.

Based on the initial results of the noise assessment, potential mitigation measures have been identified. The primary mitigation measure would be the construction of sound barrier walls to shield areas where impact is projected. **Tables 3-11.28 and 3-11.31** indicate the approximate noise barrier locations, lengths, and side of track as well as the number of moderate and severe impacts that would be reduced for Segment 1 and Segment 2, respectively. However, because barriers would not be practical for shielding receptors near grade crossings from the train and warning signal noise, sound insulation may need to be applied to such residences. **Tables 3-11.29 and 3-11.32** indicate areas that may be candidates for sound

insulation for Segment 1 and Segment 2, respectively. Although the intent of sound insulation is to reduce forecasted noise to less than the impact threshold, there may be circumstances where impacts cannot be reduced to less than the threshold.

A number of residential areas on the corridor have existing noise barriers/privacy walls. The noise impact analysis did not include any noise reduction from existing walls along the corridor. The existing barriers were not included because it is not possible to assess the effectiveness of any barriers/privacy walls without more detailed plan and profile mapping of the corridor. In addition, many of the walls may not be effective as noise barriers due to construction, height, or any gaps that are present. During the final design of the project, the effectiveness of the existing barriers/privacy walls should be assessed and incorporated into any mitigation recommendations. It may be determined that a number of the existing barriers are effective for mitigation, or that some may only need to be repaired or raised slightly to provide the appropriate level of noise reduction. Thus, the recommendations in **Table 3-11.28 and 3-11.31** could range from new noise barriers to slight modifications of existing walls to no action needed to provide adequate noise reduction.

Vibration Impact Mitigation

Potential mitigation measures for reducing vibration impacts from LRT operations for Double Track configurations are the same as described for the Triple Track configuration.

Phase I — The Cities Affected and Proposed Measures

Since there are no noise and vibration impacts in Phase I cities as a result of the Double Track configuration, no mitigation measures are proposed.

Phase II, Segment 1 — The Cities Affected and Proposed Measures

Noise

Although the Double Track configuration would generate different noise levels at specific locations, compared to the Triple Track configuration, the locations of impacts and the degree of effect (impact or severe) are the same. Accordingly, Figures 3-11.9 through 3-11.18 show the locations of forecasted noise impacts and of potential mitigation for any of the LRT configurations.

Table 3-11.28 lists the preliminary locations for potential noise barrier mitigation along Phase II, Segment 1, including the approximate length of barrier in feet. Specific detail of noise barriers, including the height, need to be determined during Preliminary Engineering, when more information is available. Noise barriers will be designed to adequately reduce the noise levels to below the FTA noise impact criteria. **Table 3-11.29** lists preliminary locations of potential sound insulation for noise mitigation along Phase II, Segment 1, where noise barriers would not be practical or cost effective, primarily near grade crossings and where noise insulation would be necessary. Although the intent of sound insulation is to reduce forecasted noise to less than the impact threshold, there may be circumstances where impacts cannot be reduced to less than the threshold, such as property in close proximity to an at-grade crossing.

**TABLE 3-11.28
PRELIMINARY LOCATIONS FORPOTENTIAL NOISE BARRIER MITIGATION TREATMENT
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Side of Track | Civil Station | Approx, Length (ft) | Number of Impacts ¹ | |
|----------------------------|-------------------|---------------|---------------|---------------------|--------------------------------|-------------|
| | | | | | Impact | Severe |
| San Luis Rey | Arcadia | South | 139 to156 | 1700 | 11 | 4 |
| Cornell | Arcadia | North | 150 to 157 | 700 | 22 | 0 |
| 2nd | Arcadia | North | 183 to 188 | 300 | Hotel | 0 |
| Arcadia High | Arcadia/ Monrovia | South | 191 to 217 | 2600 | 0 | 24 & 1 Park |
| Anita/ Alamitas/ Mayflower | Monrovia | South | 225 to 240 | 2100 | 9 | 12 |
| Montana/Diamond | Monrovia | North | 218 to 240 | 2200 | 8 | 58 |
| Mayflower | Monrovia | South | 241 to 246 | 500 | 0 | 40 |
| Hamilton | Duarte | North | 324 to 328 | 400 | 7 | 0 |
| Hamilton | Duarte | North | 333 to 338 | 500 | 7 | 0 |
| Duarte | Duarte | South | 316 to 337 | 2100 | 13 | 0 |
| Hamilton | Duarte | North | 339 to 359 | 2000 | 22 | 11 |
| Duarte | Duarte | South | 342 to 348 | 600 | 15 | 0 |

1. Number of impacts mitigated by the proposed noise barrier.

**TABLE 3-11.29
PRELIMINARY LOCATIONS FOR
POTENTIAL SOUND INSULATION MITIGATION TREATMENT
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Side of Track | Civil Station | Number of Impacts ¹ | |
|-----------|----------|---------------|---------------|--------------------------------|--------|
| | | | | Impact | Severe |
| Anita | Monrovia | South | 221 | 0 | 4 |
| Diamond | Monrovia | North | 231 | 0 | 5 |
| Diamond | Monrovia | North | 237 | 0 | 6 |
| Mayflower | Monrovia | South | 240 | 4 | 2 |
| Mayflower | Monrovia | North | 241 | 0 | 1 |
| Genoa | Monrovia | South | 250 | 0 | 20 |
| Duarte | Duarte | South | 315 | 4 | 0 |

1. Number of impacts mitigated by the proposed sound insulation.

Vibration

Table 3-11.30 lists the preliminary locations for potential vibration mitigation along Phase II, Segment 1, including the approximate length of mitigation in feet. At a minimum, vibration mitigation would require the installation of ballast mats. However, more extensive mitigation may be required to adequately reduce the vibration levels to below the FTA vibration impact criterion. Specific recommendations on vibration mitigation will be addressed in more detail during Preliminary Engineering.

**TABLE 3-11.30
PRELIMINARY LOCATIONS FOR
POTENTIAL VIBRATION MITIGATION TREATMENT
PHASE II, SEGMENT 1
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Civil Station | Approx. Length (ft) | Number of Impacts ¹ |
|-----------|----------|---------------|---------------------|--------------------------------|
| Arboleda | Pomona | 34 to 41 | 700 | 15 |
| Foothill | Arcadia | 52 to 161 | 10900 | 192 |
| 2nd | Arcadia | 183 to 187 | 400 | 2 Hotels |
| 3rd | Arcadia | 197 to 206 | 900 | 34 & 1 School |
| Contented | Monrovia | 206 to 253 | 4700 | 313 |
| Hamilton | Duarte | 346 to 359 | 1300 | 21 |

1. Number of impacts mitigated by the proposed vibration mitigation.

Phase II, Segment 2 — The Cities Affected and Proposed Measures

Noise

Table 3-11.31 lists the preliminary locations for potential noise barrier mitigation along Phase II, Segment 2, including the approximate length of barrier in feet. Specific detail of noise barriers, including the height, need to be determined during Preliminary Engineering, when more information is available. Noise barriers will be designed to adequately reduce the noise levels to below the FTA noise impact criteria. Table 3-11.32 lists locations of potential sound insulation for noise mitigation along Phase II, Segment 2, where noise barriers would not be practical or cost effective, primarily near grade crossings and where noise insulation would be necessary. Although the intent of sound insulation is to reduce forecasted noise to less than the impact threshold, there may be circumstances where impacts cannot be reduced to less than the threshold, such as a property in close proximity to an at-grade crossing.

**TABLE 3-11.31
PRELIMINARY LOCATIONS FOR
POTENTIAL NOISE BARRIER MITIGATION TREATMENT
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Side of Track | Civil Station | Approx. Length (ft) | Number of Impacts ¹ | |
|----------------------------------|----------|---------------|---------------|---------------------|--------------------------------|--------|
| | | | | | Impact | Severe |
| 6 th / Lime/ Foothill | Azusa | South | 528 to 553 | 2500 | 35 + Med | 0 |
| San Gabriel | Azusa | North | 549 to 551 | 200 | 0 | 1 |
| 9th | Azusa | North | 573 to 601 | 2800 | 126 | 0 |
| Pasadena | Azusa | South | 582 to 585 | 300 | 0 | Park |
| Palm | Azusa | South | 602 to 606 | 400 | 8 | 0 |
| Palm | Azusa | North | 602 to 605 | 300 | 12 | 0 |
| 9th | Glendora | North | 612 to 638 | 2600 | 32 | 57 |

TABLE 3-11.31 *continued*
PRELIMINARY LOCATIONS FOR
POTENTIAL NOISE BARRIER MITIGATION TREATMENT
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS

| Location | City | Side of Track | Civil Station | Approx. Length (ft) | Number of Impacts ¹ | |
|-----------------|------------------|---------------|---------------|---------------------|--------------------------------|--------|
| | | | | | Impact | Severe |
| 9th | Glendora | South | 614 to 637 | 2300 | 38 | 17 |
| Marcile | Glendora | South | 638 to 647 | 900 | 0 | 5 |
| Alosta | Glendora | South | 720 to 726 | 600 | Hotel | 1 |
| Alosta | Glendora | South | 744 to 746 | 200 | 3 | 0 |
| Alosta | Glendora | South | 758 to 763 | 500 | 5 | 0 |
| Alosta | Glendora | South | 767 to 772 | 500 | 2 + Hotel | 0 |
| St. Vladimir | Glendora | North | 771 to 776 | 500 | 6 | 0 |
| Compromise Line | Glendora | North | 783 to 787 | 400 | 0 | 5 |
| Alosta | Glendora | South | 787 to 795 | 800 | 4 + Park | 0 |
| Remuda | Glendora | North | 794 to 816 | 2200 | 8 | 19 |
| Canyon Meadows | Glendora | South | 807 to 811 | 400 | 2 | 0 |
| Gladstone | Glendora | South | 847 to 849 | 200 | 1 | 1 |
| Gladstone | San Dimas | South | 850 to 853 | 300 | 4 | 0 |
| Gladstone | San Dimas | North | 850 to 854 | 400 | 4 | 0 |
| Highland | San Dimas | North | 862 to 875 | 1300 | 35 | 2 |
| Village | San Dimas | South | 868 to 873 | 500 | Hotel | 0 |
| Walnut | San Dimas | North | 920 to 930 | 1000 | 64 | 0 |
| 1st | La Verne | North | 998 to 1010 | 1200 | 10 | 10 |
| 1st | La Verne | North | 1011 to 1016 | 500 | 10 | 0 |
| Univ. La Verne | La Verne | North | 1024 to 1029 | 500 | Park | 0 |
| White | La Verne | North | 1049 to 1052 | 300 | 3 | 0 |
| Sierra | La Verne | South | 1074 to 1077 | 300 | 4 | 0 |
| Bonita | Pomona/Claremont | North | 1144 to 1159 | 1500 | 56 | 0 |
| Bonita | Claremont | North | 1163 to 1181 | 1800 | 108 | 0 |
| *Claremont | Claremont | North | 1226 to 1233 | 700 | 7 | 0 |
| *Claremont | Claremont | North | 1235 to 1241 | 600 | 10 | 0 |
| *Claremont | Claremont | South | 1230 to 1233 | 300 | 2 | 0 |
| *Claremont | Claremont | South | 1234 to 1241 | 700 | 6 | 0 |
| *Claremont | Claremont | North | 1257 to 1269 | 1200 | 5 | 10 |
| **Claremont | Claremont | South | 1229 to 1232 | 300 | 8 | 0 |
| **Claremont | Claremont | North | 1230 to 1233 | 300 | 2 | 0 |

1. Number of impacts mitigated by the proposed noise barrier.

* These noise-sensitive locations only apply to the Baseline Alternative (north of the Montclair Station Park and Ride).

** These noise-sensitive locations only apply to the Option G Alternative (south of the Montclair Station Park and Ride).

Source: Harris, Miller, Miller & Hanson, 2003.

**TABLE 3-11.32
PRELIMINARY LOCATIONS FOR
POTENTIAL SOUND INSULATION MITIGATION TREATMENT,
PHASE II, SEGMENT 2
DOUBLE TRACK CONFIGURATIONS**

| Location | City | Side of Track | Civil Station | Number of Impacts ¹ | |
|-----------------|-----------|---------------|---------------|--------------------------------|-----------|
| | | | | Impact | Severe |
| 6 th | Azusa | South | 524 to 526 | 5 | 0 |
| San Gabriel | Azusa | North | 552 | 16 | 0 |
| Dalton | Azusa | South | 570 to 573 | 4 | 0 |
| Pasadena | Azusa | South | 574 to 577 | 0 | 18 |
| Palm | Azusa | South | 593 to 601 | 1 School | 0 |
| Marcile | Glendora | South | 638 to 647 | 0 | 10 |
| Foothill | Glendora | South | 672 to 679 | 1 School & 1 Medical | 1 Medical |
| Grande | Glendora | North | 670 | 0 | 1 Medical |
| Vermont | Glendora | South | 687 | 4 | 0 |
| Glendora | Glendora | North | 700 to 712 | 10 | 17 |
| Pasadena | Glendora | South | 708 to 711 | 1 School & 1 Medical | 0 |
| Lemon | Glendora | North | 712 to 734 | 10 | 28 |
| Glenwood | Glendora | North | 734 to 740 | 0 | 8 |
| Lemon | Glendora | North | 740 to 758 | 7 | 22 |
| St. Vladimir | Glendora | North | 767 to 771 | 0 | 6 |
| Compromise Line | Glendora | North | 775 to 783 | 0 | 8 |
| Gladstone | San Dimas | South | 850 | 0 | 4 |
| Eucla | San Dimas | South | 888 | Hotel | 0 |
| Eucla | San Dimas | North | 890 | 4 | 0 |
| Univ. La Verne | La Verne | North | 1030 to 1035 | 48 & 1 School | 0 |
| Bonita | Claremont | North | 1159 to 1163 | 0 | 8 |

1. Number of impacts mitigated by the proposed sound insulation.

Vibration

Table 3-11.33 lists the preliminary locations for potential vibration mitigation along Phase II, Segment 2, including the approximate length of mitigation in feet. At a minimum, vibration mitigation would require the installation of ballast mats. However, more extensive mitigation may be required to adequately reduce the vibration levels to below the FTA vibration impact criterion. Specific recommendations on vibration mitigation will be addressed in more detail during Preliminary Engineering.

| TABLE 3-11.33 PRELIMINARY LOCATIONS FOR POTENTIAL VIBRATION MITIGATION TREATMENT PHASE II, SEGMENT 2 DOUBLE TRACK CONFIGURATIONS | | | | |
|---|-----------|---------------|---------------------|---------------------------------------|
| Location | City | Civil Station | Approx. Length (ft) | Number of Impacts ¹ |
| 6th/ Lime/Foothill | Azusa | 524 to 553 | 2900 | 80 & 1 Medical |
| Dalton/ Pasadena/ 9th | Azusa | 566 to 612 | 4600 | 251 |
| 9th/ Ranger/ Ashworth | Glendora | 612 to 646 | 3400 | 152 |
| Foothill | Glendora | 670 to 688 | 1800 | 12 & 1 School & 3 Medical |
| Glendora to I-210 | Glendora | 700 to 816 | 11600 | 185 & 2 Hotels & 1 Medical & 1 School |
| Gladstone | Glendora | 847 to 849 | 200 | 2 |
| 1st | La Verne | 999 to 1016 | 1700 | 30 |
| Univ. La Verne | La Verne | 1029 to 1031 | 200 | 1 School |
| Garey | Pomona | 1103 to 1107 | 400 | 54 |
| Roderick | Pomona | 1125 to 1130 | 500 | 6 |
| Bonita | Pomona | 1145 to 1163 | 1800 | 92 |
| Bonita | Pomona | 1168 to 1180 | 1200 | 88 |
| *Claremont | Montclair | 1228 to 1232 | 400 | 10 |
| **Claremont | Claremont | 1230 to 1233 | 300 | 2 |
| **Claremont | Montclair | 1235 to 1240 | 500 | 21 |
| **Monte Vista | Montclair | 1257 to 1268 | 1100 | 15 |

1. Number of impacts mitigated by the proposed vibration mitigation.
 * These locations only apply to the Baseline Alternative (north of the Montclair Station Park and Ride).
 ** These locations only apply to the Option G Alternative (south of the Montclair Station Park and Ride).

Source: Harris, Miller, Miller & Hanson, 2003.

Summary of Long Term Mitigation Measures for Full Build LRT Alternative, Double Track Configurations

Based on the initial assessment, for Segments 1 and 2 of the Double Track configuration without freight operations, there is a total of approximately 48,000 feet of potential noise barrier needed for noise mitigation and 283 residences that would have sound insulation mitigation. Combinations of potential

vibration mitigation measures described in this section along about 51,500 feet of the alignment would provide mitigation for the 1575 identified vibration impacts.

For the Double Track configuration with time separated freight service, the impacts and mitigation may be different than the existing freight service. Since the existing freight trains do not operate under a scheduled service, the change to impact and mitigation measures cannot be quantified. If freight train service occurred entirely during the nighttime hours, than there would be no change to the impact or mitigation described for the Double Track configuration because that analysis already included the penalties associated with nighttime operation.

Summary of Long Term Mitigation Measures for Built LRT Alternative to Maintenance Facility, Double Track Configurations

Based on initial assessment, for Segment 1 of the Double Track configuration with no freight operations, approximately 15,700 feet of noise barrier would be needed to mitigate 263 noise impacts and 46 residences would need sound insulation mitigation. Combinations of potential vibration mitigation measures described in this section along about 18,900 feet of the alignment would provide mitigation for the 575 identified vibration impacts. For the Double Track configuration with time separated freight service entirely during the nighttime hours, than there would be no change to the impacts or mitigation because that analysis already included the penalties associated with nighttime operation.

3-11.4 Impact Results with Mitigation

The following sections report the result of complying with regulatory requirements and proposed mitigation measures. The intent of this section is to summarize where identified impacts have been eliminated or reduced to less than adverse/less than significant levels, or whether there may be remainder impacts.

3-11.4.1 Construction Period

Construction period impacts would be eliminated or reduced to less than adverse/less than significant levels by constructing during daytime hours, following typical contractor conditions that include measures to limit the noise generated by equipment as discussed in Section 3-11.2.6, and the additional measures to mitigate impacts identified in Section 3-11.3.1. As a result of these conditions, construction period impacts would be not adverse under NEPA and not significant under CEQA.

a. No Build Alternative

For the No Build Alternative, only the planned construction of the Eastside LRT Extension would include construction-period noise impacts. These impacts are addressed in the Draft Supplemental Environmental Impact Statement/Draft Subsequent Environmental Impact Report for that project (FTA and LACMTA 2001). For the other elements of the No Build Alternative it is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment. Under this work approach, coupled with the additional measures to mitigate impacts identified in Section 3-11.3.1 would result in construction period impacts that would be not adverse under NEPA and not significant under CEQA.

b. TSM Alternative

Phase I — The Cities Affected and the Results of Construction Period Mitigation Measures

For elements of the TSM Alternative it is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment. Under this work approach, coupled with the additional measures to mitigate impacts identified in Section 3-11.3.1 would result in construction period impacts that would be not adverse under NEPA and not significant under CEQA in the cities in Phase I or Phase II.

c. LRT, Triple Track Configuration

Phase I — The Cities Affected and the Results of Construction Period Mitigation Measures

Phase I includes the cities of Los Angeles, South Pasadena and Pasadena. There are no elements of the Triple Track configuration in the cities in Phase I. There would be no construction period noise and vibration impacts in Phase I cities as a result of the Triple Track configuration, so no mitigation measures were required.

Summary of Results of Construction Period Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

For the elements of the Triple Track configuration, it is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment. Under this work approach, coupled with the additional measures to mitigate impacts identified in Section 3-11.3.1 would result in construction period impacts that would be not adverse under NEPA and not significant under CEQA to any of the cities in Phase II Segments 1 and 2.

Summary of Results of Construction Period Mitigation Measures for Build LRT Alternative to Maintenance Facility, Triple Track Configurations

Construction period impacts would be eliminated or reduced to less than adverse/less than significant levels for the Triple Track configuration for the Build Alternative to Maintenance Facility. It is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment. Under this work approach, coupled with the additional measures to mitigate impacts identified in Section 3-11.3.1 would result in construction period impacts that would be not adverse under NEPA and not significant under CEQA to any of the cities in Phase II Segment 1.

d. LRT, Double Track Configurations

Phase I — The Cities Affected and the Results of Construction Period Mitigation Measures

Phase I includes the cities of Los Angeles, South Pasadena and Pasadena. There are no elements of the Double Track configurations that affect the Phase I cities during construction and thus no mitigation was required.

Summary of Results of Construction Period Mitigation Measures for Full Build LRT Alternative, Double Track Configurations

For the elements of the Double Track configurations, it is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment. Under this work approach, coupled with the additional measures to mitigate impacts identified in Section 3-11.3.1 would result in construction period impacts that would be not adverse under NEPA and not significant under CEQA to any of the cities in Phase II Segments 1 and 2.

Summary of Results of Construction Period Mitigation Measures for Built LRT Alternative to Maintenance Facility, Double Track Configurations

For the elements of the Double Track configurations, it is assumed that any construction would occur during daytime hours, and under typical contractor conditions that include measures to limit the noise generated by equipment. Under this work approach, coupled with the additional measures to mitigate impacts identified in Section 3-11.3.1 would result in construction period impacts that would be not adverse under NEPA and not significant under CEQA to any of the cities in Phase II Segment 1.

3-11.4.2 Long Term

a. No Build Alternative

No long-term impacts were identified for the No Build Alternative and thus no mitigation measures were required. Impacts would remain as less than adverse under NEPA and less than significant under CEQA.

b. TSM Alternative

No long-term impacts were identified for the TSM Alternative and thus no mitigation measures were required. Impacts would remain as less than adverse under NEPA and less than significant under CEQA.

c. LRT, Triple Track Configuration

Phase I — The Cities Affected and the Results of Long Term Mitigation Measures

Phase I includes the cities of Los Angeles, South Pasadena and Pasadena. No long-term effects on the noise or vibration environments in Phase I cities were identified as a result of the Triple Track

configuration and thus no mitigation was required. Impacts would remain less than significant under NEPA and less than adverse under CEQA.

Summary of Results of Long Term Mitigation Measures for Full Build LRT Alternative, Triple Track Configuration

For cities in Segments 1 and 2 of the Full Build Alternative, Triple Track configuration, it is expected that noise and vibration impacts can be mitigated by the proposed measures, with the possible exception of properties located in closed proximity to at-grade crossings.

Summary of Results of Construction Period Mitigation Measures for Built LRT Alternative to Maintenance Facility, Triple Track Configurations

For cities in Segment 1 of the Built LRT Alternative to Maintenance Facility, Triple Track configuration, it is expected that noise and vibration construction impacts can be mitigated by the proposed mitigation measures, with the possible exception of properties located in closed proximity to at-grade crossings..

d. LRT, Double Track configurations

Phase I — The Cities Affected and the Results of Long Term Mitigation Measures

Phase I includes the cities of Los Angeles, South Pasadena, and Pasadena. No long-term effects on the noise or vibration environments in Phase I cities were identified as a result of the Triple Track configuration and thus no mitigation was required. Impacts would remain less than significant under NEPA and less than adverse under CEQA.

Summary of Results of Long Term Mitigation Measures for Full Build LRT Alternative, Double Track Configurations

For cities in Phase II Segments 1 and 2, for the Double Track configuration without freight service, it is expected that noise and vibration impacts can be mitigated by the proposed measures, with the possible exception of properties located in closed proximity to at-grade crossings. For Segment 1 and 2 of the Double Track configurations with freight service separated in time, the analysis already includes the effect of freight trains operating during nighttime hours; impacts under this scenario would also be mitigated by the proposed mitigation measures.

Summary of Results of Long Term Mitigation Measures for Built LRT Alternative to Maintenance Facility, Double Track Configurations

For cities in Phase II Segment 1, for the Double Track configuration without freight service, it is expected that noise and vibration impacts can be mitigated by the proposed measures, with the possible exception of properties located in closed proximity to at-grade crossings. For Segment 1 and 2 of the Double Track configurations with freight service separated in time, the analysis already includes the effect of freight trains operating during nighttime hours; impacts under this scenario would also be mitigated by the proposed mitigation measures.

