4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section examines the environmental consequences associated with the proposed Project, as described in Chapter 2.0 Alternatives Considered.

Contents of Environmental Analysis

The 17 environmental issue areas analyzed in Sections 4.1 through 4.17 are listed below:

4.1 Land Use/Neighborhoods
4.2 Land Acquisition/Displacement and Relocation
4.3 Equity and Environmental Justice Considerations
4.4 Visual Quality
4.5 Air Quality
4.6 Noise and Vibration
4.7 Geology, Soils, and Seismicity
4.8 Exposure to Hazardous Substances
4.9 Water Resources
4.10 Biological Resources
4.11 Energy Resources
4.12 Safety and Security
4.13 Historic, Archaeological, and Paleontological Resources
4.14 Parklands and Community Facilities
4.15 Construction Impacts
4.16 Division #11 Operations and Maintenance Facility Expansion
4.17 Other CEQA Determinations

Analysis of the subsection topics listed above is organized by the following structural headings:

Affected Environment. This discussion describes the existing physical environment or baseline setting wherein the proposed Project would be placed. Any applicable regulatory information, which may include government rules, regulations, plans, and policies applicable to the proposed Project and topic area, are also included in this discussion.

Impact Assessment. This section begins with a description of methodology for each environmental topic area and the means by which the analysis was undertaken. The anticipated changes that would result from implementation of the proposed Project are evaluated and a determination is made as to the degree of change from baseline conditions described in the Affected Environment discussion.

Mitigation Measures. For any significant impacts identified, mitigation measures that would reduce or eliminate the impact are listed.

CEQA Determination. Thresholds are presented for CEQA evaluation purposes. Anticipated changes that would result from implementation of the proposed Project are compared to the thresholds. Impacts identified fall within one of the following categories:

- *Less-Than-Significant Impact*: Results in no substantial adverse change to existing environmental conditions;

- *Significant Mitigable Impact*: Constitutes a substantial adverse change to existing environmental conditions that can be mitigated to less-than-significant levels by implementation of feasible mitigation measures;

- *Significant Unavoidable Impact*: Constitutes a substantial adverse change to existing environmental conditions that cannot be fully mitigated by implementation of all feasible mitigation measures; and

- *Beneficial Impact*: Results in a positive change to environmental conditions.

Also included in this section is "Significance Remaining After Mitigation." This final discussion states the effectiveness of mitigation measures in reducing the impacts identified. A final determination is made as to whether an identified impact can be reduced to a less-than-significant level, or remains significant and unavoidable after mitigation.

4.1 LAND USE/NEIGHBORHOODS

The purpose of this section is to provide baseline data on the existing land use characteristics of the Mid-City/Westside Transit Corridor Project area, to assess whether the proposed Project is consistent with applicable land use plans and policies, and to identify any potentially significant land use changes resulting from implementation of the proposed Project, and determine any necessary Project mitigation measures for land use/neighborhood impacts.

4.1.1 AFFECTED ENVIRONMENT

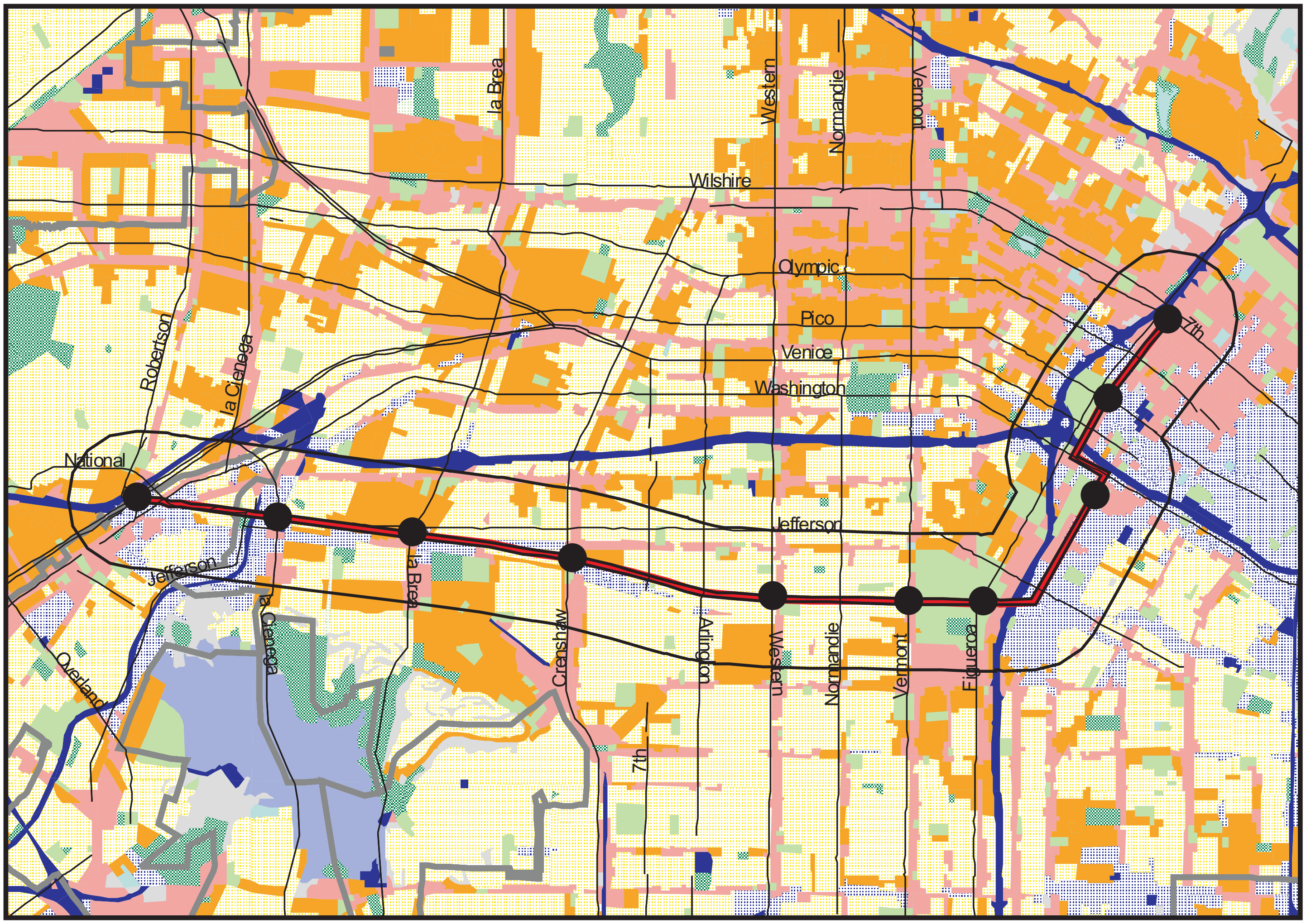
The Mid-City/Exposition LRT Project alignment runs through two local jurisdictions: the City of Los Angeles and Culver City. The City of Los Angeles jurisdiction falls within the entire Downtown Los Angeles Connection subarea, including all design options, the entire Mid-Corridor subarea and portions of the West End subarea. The Culver City jurisdiction falls within a portion of the West End subarea, from Ballona Creek to the city limit line south of Venice Boulevard.

For land use planning purposes, the City of Los Angeles is divided into 35 community planning districts. For each of these districts, a community plan has been prepared to establish land use designations, policies, and implementation programs. These individual plans are considered collectively to be part of the *Land Use Element* of the *Los Angeles General Plan* and are means through which citywide land use policies are applied to specific development proposals. **Figure 4.1-1** illustrates current land use designations for the entire Mid-City/Exposition LRT alignment.

The Mid-City/Exposition LRT Project lies within four Community Plan areas in the City of Los Angeles: Central City, Southeast Los Angeles, South Los Angeles, and West Adams and Palms Mar Vista Del Rey. These community plans coincide with all subareas of the alignment and contain numerous land use and transportation policies that are mixed-use and transit supportive.

The four Community Plans along the alignment discuss goals and objectives for developing strong and competitive commercial sectors. Development would include a mixture of land uses, promote economic vitality, and serve the needs of the community through well designed, safe, and accessible areas, while preserving historic and cultural character. The Plans indicate that new development should be focused in existing commercial areas. In addition, each of the Plans discuss goals, objectives, and policies for developing a public transit system that improves mobility with convenient alternatives to automobile travel, fostering of transportation demand strategies, the development of non-motorized transportation options, and the coordination of activities with other jurisdictions. Pertinent policies identified within each Community Plan are presented below.

For the purposes of this section, the Mid-City/Exposition LRT Project is subdivided into three subareas: a Downtown Los Angeles Connection subarea, a Mid-Corridor subarea, and a West End subarea. The Downtown Los Angeles Connection subarea consists of the Mid-City/Exposition corridor north and east of Vermont Avenue. This subarea is located in the City Center community and includes the 7th Street/Metro Center, Grand, Hill/21st Streets, USC/Exposition Park, and Vermont station areas. The Mid-Corridor subarea runs from the west of Vermont Station, along Exposition Boulevard, up to the La Cienega Station. This subarea traverses the communities of Southeast Los Angeles, South Los Angeles, and West Adams and includes the Western, Crenshaw, and La Brea station areas. The West End subarea runs from the La Cienega to the LRT's termination at Venice/Robertson Station. This subarea begins in the West Adams community of Los Angeles City, but enters Culver City at Syd Kronenthal Park. The La Cienega and Venice/Robertson Stations are the station areas in this subarea.



SOURCE: ESRI, SCAG

LEGEND:

- Agriculture
- Open Space & Recreation
- Commercial
- Extraction
- Industrial
- Rural Density Residential
- Low Density Residential
- Medium to High Density Residential
- Public Facilities & Institutions
- Transportation & Utilities
- Vacant
- Water & Floodways

Metro

NORTH

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.1-1

EXISTING LAND USE

The proposed Project is located near a number of regional destinations and activity centers including: Los Angeles Civic Center, Staples Center, Los Angeles Convention Center, Shrine Auditorium, University of Southern California, Exposition Park, the al-Kattab Mosque, California African-American Museum, Natural History Museum, Aerospace Museum, Crenshaw Plaza Mall, Magic Johnson Theaters, Kenneth Hahn State Recreational Area, Downtown Culver City, Culver Studios, and Sony Studios. The Project would connect residential neighborhoods to Downtown Los Angeles and Culver City.

Land use impacts could occur due to conflicts of location of stations, parking facilities, and bikeways.

4.1.1.1 Existing Land Use

Downtown Los Angeles Connection

The corridor subarea begins at 7th and Flower Streets in a dense, high-rise commercial area of downtown Los Angeles. As the corridor subarea continues south down Flower Street and then Hill Street land uses transition to low-scale light industrial buildings. As the LRT begins its course west at the USC/Exposition Park and Vermont Stations, land use changes from the dense commercial (Downtown) to varied institutional uses (primarily USC) and regional recreational centers (Coliseum and Exposition Park).

Station Areas. Land use information around stations is provided for areas within a quarter-mile radius. The land use character of each station area is as follows:

7th Street/Metro Center. This is an existing station currently used by the Metro Red and Metro Blue Line currently located within the City of Los Angeles. This station is surrounded by the dense downtown commercial core of Los Angeles with numerous high-rise office and hotel towers immediately surrounding the site. The I-110 (Harbor) Freeway traverses this station area in a north-south direction to the west of the station. The Central Library and Pershing Square are both located approximately two blocks from this station location.

Pico Station. This is an existing station currently used by the Metro Blue Line located within the City of Los Angeles. This area is typified by low-rise commercial and industrial uses along with medium to high density residential uses. The station location is directly adjacent to the Los Angeles Convention Center and Staples Center. The California Medical Hospital Center is located approximately two blocks southeast of the station location. Low-rise commercial uses front both sides of Figueroa Street just west of the station.

Grand Station. This is an existing station currently used by the Metro Blue Line located within the City of Los Angeles. This area is typified by low-rise commercial and industrial uses. The Los Angeles Trade Technical College and Los Angeles Mart are located within one block and two blocks, respectively, of the station. Two freeways, I-110 and I-10, traverse north-south, east-west respectively, and west and south of the proposed station just outside of the quarter-mile station area.

Hill Street/21st Street Station. This is a proposed station under the LPA. This station would be located just over a quarter-mile southwest of the I-10 Freeway and east of the I-110 Freeway. Industrial uses are primarily located in the southern half of the area. The northern half of the station area would be split between commercial uses in the east and open space in the west. There is a sliver of low density residential uses in the southern edge. The Los Angeles Trade Technical College Campus, Orthopedic Hospital, and Magnet School are located to the west of the proposed station.

USC/Exposition Park Station. This is a proposed station under the LPA. This station would be located to the south of the Rose Garden of Exposition Park and northwest of Trousdale Way. This is a proposed station under the LPA. Located on the western edge of the I-110 Freeway, this station is directly adjacent to the USC campus and Exposition Park. East of the freeway, the area contains low-rise industrial uses. West of the freeway, low- to mid-rise commercial uses front both sides of Figueroa Street with some high-density residential located on the south of this street. West of this area is the dense campus of USC, located north of Exposition Boulevard, and the multi-activity center area of Exposition Park, located south of Exposition Boulevard. Exposition Park contains the Los Angeles Coliseum, the Aerospace Museum, the Natural History Museum, the California African-American Museum, the Los Angeles Sports Arena, and several other activity centers.

Vermont Station. This is a proposed station under the LPA. This station would be located on the western edge of the USC campus and Exposition Park, within the City of Los Angeles. Commercial land uses front onto the western edge of the Vermont/Exposition intersection and extend north and south along Vermont Avenue. Interspersed with the commercial uses are numerous high-density residential uses. West of this intersection are low-density residential neighborhoods fronting onto Exposition Boulevard and extending north and south. The Dawa Center of Masjid Umar Mosque would be located in this station area.

Mid-Corridor

The Mid-Corridor subarea begins at the Vermont Station where land uses consist of varied institutional uses (primarily USC) and regional recreational centers (Exposition Park). The remainder of the this corridor subarea is a mix of industrial and single- and multi-family residential uses interspersed with commercial centers at the major north-south intersections.

Station Areas. Land use information around stations is provided for areas within a quarter-mile radius. The development character of each station area is as follows:

Western Station. This is a proposed station under the LPA. This station would be located within the City of Los Angeles. Commercial uses front Western Avenue extending north and south of the station throughout the one-quarter mile station area. High-density residential uses are located in the southwest quadrant of the station area, south of Exposition Boulevard and west of Western Avenue. Low-density residential neighborhoods occupy the remainder of the station area. The Foshay Middle School is located on the northeast corner of Western Avenue and Exposition Boulevard.

Crenshaw Station (Parking Facilities). This is a proposed station under the LPA. This station would be located within the City of Los Angeles. The immediate vicinity of the station site is surrounded by industrial uses (to the east along Exposition Boulevard) and commercial uses (to the north and south along Crenshaw Boulevard). High-density residential abuts the industrial northeast of Exposition Boulevard. Low-density residential neighborhoods comprise the remainder of the one-quarter mile station area. The dominant adjacent land use is the West Angeles Church of God in Christ cathedral.

La Brea Station. This is a proposed station under the LPA located within the City of Los Angeles. Industrial land uses front onto Exposition Boulevard east of La Brea Avenue. Commercial uses front onto Exposition Boulevard west of the station area and along both sides of La Brea Avenue south of Exposition Boulevard. Rancho Cienega Sports Center Park is located east of La Brea Avenue and south of Exposition Boulevard immediately adjacent to the right-of-way (ROW). A public high school is located immediately east of this park. Baldwin Hills Recreation Park is located along the south side of Exposition mid-way between this station and the La Cienega station site. High-density residential comprises the southwest portion of the station area and is located to the north of the commercial areas abutting the north side of Exposition Boulevard.

West End

This subarea begins in a commercial center at the intersection of Jefferson and La Cienega Boulevards. Immediately following this commercial center is an area with open space and single-family residential uses to the north and light commercial and industrial to the south. As the corridor approaches its end, it transitions to a mix of residential, commercial, and light industrial uses.

Station Areas. Land use information around stations is provided for areas within a quarter-mile radius. The development character of each station area is as follows:

La Cienega Station (Parking Facilities and Transit Center). This is a proposed station under the LPA located within the City of Los Angeles. Industrial land uses abut Exposition Boulevard to the east of La Cienega Boulevard and comprise a large portion of the station area north and south of Exposition Boulevard to the west of La Cienega Boulevard. There is a mixture of commercial and high-density residential south of Jefferson Boulevard along La Cienega Boulevard. Some low-density residential neighborhoods are located north of Jefferson Boulevard and east of La Cienega Boulevard. Ballona Creek traverses the station area in a north-south direction to La Cienega Boulevard. As mentioned above, Baldwin Hills Recreation Park is located along the south side of Exposition Boulevard mid-way between this station and the La Brea station site.

Venice/Robertson Boulevards (Parking Facilities and Transit Center). This is a proposed station under the LPA. This is a bi-jurisdictional station that would be located in both the City of Los Angeles and Culver City. The northern half of this station area is primarily industrial and commercial uses. The Santa Monica Freeway traverses the northwestern edge of the station area in a northeast to southwest direction. Venice Boulevard is bordered by commercial uses that fan out in a southwesterly direction from Robertson Boulevard. Inside this commercial use area is a small pocket park. The southeast quadrant also houses commercial uses. The northeast and southeast edges of the station area house low-density residential areas.

4.1.1.2 Regional Plans

The Southern California Association of Governments (SCAG) has developed a comprehensive regional growth and development plan. The regional policies relating to this Project and a discussion of the Project's consistency with these policies are listed in **Table 4.1-1** in "4.1.2 Impact Assessment."

4.1.1.3 Plans and Policies Applicable to the Locally Preferred Alternative

Los Angeles General Plan Framework. The *Los Angeles General Plan Framework* (*Framework*), adopted in December 1996, is intended to guide the City's long-range growth and development through the year 2010. The *Framework* establishes citywide planning policies regarding land use, housing development, transportation, and provision of infrastructure and public services. The *Framework*'s transportation policies seek to develop transit alignments and station locations that maximize transit service in activity centers. Together, the *Framework*'s land use and transportation policies encourage development in these "targeted growth areas" by allowing transit-oriented development than in non-targeted areas and calling for streamlined transportation analysis and mitigation procedures. The purpose of these development modes is to allow the maintenance of existing land uses that are not located next to public transit in order to preserve existing neighborhoods.

Three broad themes run throughout the *General Plan Framework*: sustained mobility with greater accessibility, economic opportunity, and environmental quality. Major land use and transportation policies include:

- Expand neighborhood transportation services and programs to enhance neighborhood accessibility.
- Provide improved transportation services to support citywide economic development activities related to economic revitalization initiatives.
- Promote the development of transportation facilities and services that encourage transit ridership, including enhanced transit services, improved transit safety and merchant incentives.
- Support development in regional centers, community centers, major economic activity centers, and along mixed-use boulevards as designated in the Community Plans.
- Encourage and seek the formation of public/private partnerships when developing centers and districts and provide appropriate transportation facilities and programs.
- Actively seek opportunities for joint development projects that integrate land use and transportation facilities.
- Promote the development of transit alignments and station locations that maximize transit service to activity centers and which permit the concentration of development around transit stations.
- Promote the provision of shuttles and other services that increase access to and within regional centers and major economic activity areas to encourage growth and to mitigate traffic impacts of that growth.
- Promote the enhancement of transit access to neighborhood districts, community and regional centers, and mixed-use boulevards.
- Enhance pedestrian circulation in neighborhood districts, community centers, and appropriate locations in regional centers, and along mixed-use boulevards; promote direct pedestrian linkages between transit portals/platforms and adjacent commercial development through facilities orientation and design.Centers Concept. The *Framework's* land use policies designate the number and type of existing activity centers as focal points for future growth. Linking "centers" is a major objective of the transportation element of the *General Plan Framework*, also known as the centers concept. The categories of centers, in order of increasing size, are neighborhood districts, community centers, and regional centers. The *Framework* designates regional centers as hubs for bus and rail transit. The area around Exposition Boulevard and Figueroa Avenue is designated as a Regional Center.

The *Framework's* transportation policies seek to develop transit alignments and station locations that maximize transit service in activity centers. Together, the *Framework's* land use and transportation policies encourage development in targeted growth areas by allowing more intense development than in non-targeted areas and calling for streamlined traffic analysis and mitigation procedures.

General Plan Land Use-Transportation Element. The Land Use/Transportation Policy, adopted November 1993, is a joint effort of the Los Angeles County Metropolitan Transportation Authority (Metro) and the City of Los Angeles to coordinate land use and transportation investment decisions. The Policy seeks to establish transit centers and station areas as focal points for the future growth of Los Angeles. The Policy fosters the development of higher-density, mixed-use projects within one quarter mile of rail and major bus facilities. Mixed-use projects include commercial, residential, civic and employment-generating uses. The policy recognizes a variety of station area types, ranging from a Neighborhood Center to a Major Urban Center. Levels of development would be consistent with these station area types to protect lower-density neighborhoods from encroachment. A secondary area extending to one half mile from rail and major bus facilities serves as an area of transition while protecting and preserving surrounding low density neighborhoods from encroachment of incompatible uses. This policy recognizes that not all stations are planned for intense growth.

The Land Use/Transportation Policy is a long-term strategy for integrating land use, housing, transportation and environmental policies into the development of a city form that complements and maximizes the utilization of the region's transit system. Among the objectives of the Land Use/Transportation Policy are:

- Focus future growth of the City around transit stations;
- Increase land use intensity in transit station, areas, where appropriate'
- Create a pedestrian oriented environment in the context of an enhanced urban environment;
- Accommodate mixed commercial/residential use development;
- Provide for greater localized employment;
- Provide for a wide variety of housing for a substantial portion of the projected citywide population; and
- Protect and preserve existing single-family neighborhoods.

The Transportation Element of the General Plan establishes the following policies applicable to the proposed Project:

- Policy 2.13(4) and P16: Establish the Downtown Los Angeles to Exposition Park corridor as a priority for high capacity transit service (Pico/Flower Blue Line station to Exposition/Vermont)
- Policy 2.13c(3): Establish the following priority corridors for Alternative Rail Technology (ART) for Exposition Boulevard (Vermont/Exposition to Colorado/17th Streets in Santa Monica)
- Policy P16h: Actively support Alternative Rail Technology (ART) and/or busways utilizing publicly-owned railroad rights-of-way to extend transit service along the priority corridors set forth in Policy 2.13c of this Element.

The City of Los Angeles General Plan Framework establishes the Mid-City/Exposition LRT Project as a priority corridor set to commence high capacity transit service and develop programs to foster transit ridership along its corridor post-2010.

Residential/Accessory Services (RAS) Zones. A new section has been added to the Los Angeles Municipal Code to SEC.12.10.5. RAS3 and RAS4 Residential/Accessory Services. The purpose of RAS Zones is to provide a mechanism to increase housing opportunities, enhance neighborhoods, and revitalize older commercial corridors. The RAS3 and RAS4 Zones are intended as tools to accommodate projected population growth in mixed use and residential projects that is compatible with existing residential neighborhoods along transportation corridors.

Many transportation corridors in the Study Area are compatible with RAS ordinance requirements and would be able to increase the residential component of these corridors by supporting more walking, bicycling and transit use and potentially reducing the need to drive to these services. Based on existing conditions along the Project alignment, potential opportunities for the use of this ordinance at station areas exist in the City of Los Angeles. These opportunities would be explored under station area planning efforts conducted during Preliminary Engineering Design.

Mixed-Use Ordinance. The Mixed-Use Ordinance of the Los Angeles Municipal Code, adopted in November 1991, sets guidelines for mixed-use commercial/residential developments throughout the city and in proximity to station areas. The Ordinance permits a floor area ratio (FAR) up to three times the buildable lot area in Height District No. 1, and a FAR of twelve times the buildable lot area in Districts Nos. 2, 3, 4 within 1,500 feet of a transit facility. The Ordinance stipulates that any floor area above the maximum allowed by the plan or zone shall be used solely for residential development.

Los Angeles County Metropolitan Transportation Authority (LACMTA) Systemwide Parking Policy. Metro is currently in the process of adopting a system-wide parking policy. One of the elements of the parking policy is to address areas where parking demands meet or exceed ninety percent of current supply.

Options in the policy include demand pricing, developing new parking facilities, and emphasizing non-parking programs such as walking and bicycling at Metro Rail and Metro Rapid stations. The Mid-City/Exposition LRT Project would consider these policy options where station parking facilities are provided.

4.1.1.4 Plans and Polices Applicable to the Proposed Project's Segments

Downtown Los Angeles Connection

Central City Community Plan. The Central City Community Plan provides guidelines for the Downtown Los Angeles Connection core of Los Angeles, with the Harbor Freeway (I- I 10) on the west, Sunset Boulevard on the north, Alameda Street to the east, and the Santa Monica Freeway (I-10) to the south. This Plan contains goals, objectives, and policies relative to the development of Central City and the integration of transit into this framework. These include:

- Provide an integrated transportation system which will allow for efficient movement of people and goods while enhancing the environment, giving special attention to separation of the pedestrian and the automobile (Goal 5);
- This Plan for Los Angeles Central City is a key part of the Los Angeles General Plan, which proposes a series of major Centers having high density residential and commercial uses at locations throughout the City connected by a rapid transit system and separated by low density residential development and open spaces (Policy 1).;
- A vastly improved public transportation system, including rapid transit between Central City and other Centers, as well as better bus service between Central City and other areas, must be provided to reduce the environmental impact of the present transportation system which is based chiefly on the private automobile (Policy 1-Public Transportation);
- Downtown Los Angeles Connection rapid transit stations and lines are an integral part of a regional rapid transit system as proposed by the Rapid Transit Plan (under study by the City Planning Department) (Policy 2 - Public Transportation); and
- Various means of consolidating commuters within their own communities, such as park-and-ride lots and dial-a-ride service, should be developed to feed subscription bus, public bus, and rapid transit lines (Policy 6-Public Transportation).

Mid-Corridor

Southeast Los Angeles Community Plan. The Southeast Los Angeles Community Plan discusses the intensification of land uses in conjunction with transit. The Plan in general provides for preservation of the existing residential neighborhoods throughout the area, retaining existing single-family districts and multi-family clusters. The Plan states that only areas around proposed transit stations and along transit corridors would realize any significant changes in densities. This would occur as existing properties zoned for multi-family development, which contain a mix of densities, continue to build out to their maximum potential.

The Plan discusses the inter-connectivity between residential uses and the availability of transit systems (Objective 1-2). The objective is to locate new housing in a manner that reduces vehicular trips and makes it accessible to services and facilities. The policy supporting this objective indicates that to achieve this, higher residential densities should be located near commercial centers, mass transit stations, and major bus routes where public service facilities, utilities, and topography will accommodate this development. The Plan designates lands for higher residential densities within transit oriented districts (TODs) and along transit corridors.

The commercial land use policies reflect the need to generate a variety of new commercial uses in the community to facilitate convenient shopping and easy access to professional services. New and rehabilitated office space can be established in the commercial "centers" and areas designated for mixed use, proposed transit oriented districts and Pedestrian Oriented Districts (PODs).

Plan policy provides for the development of single or aggregated parcels for mixed-use commercial and residential development. These structures would normally incorporate retail, office, and/or parking on lower floors and residential units on the upper floors. The intent is to provide housing in close proximity to jobs, to reduce vehicular trips, to reduce congestion and air pollution, to assure adequate sites for housing, and to stimulate PODs to enhance the quality of life in the Plan area. While the Plan does not mandate mixed-use projects, it encourages them in certain commercially designated areas, such as in PODs and in TODs.

Vermont/Western Transit Oriented District. The purpose of this adopted transit oriented district (TOD) specific plan is to promote more alternative forms of mobility other than single auto driving. The sections that specifically relate to encouraging a more pedestrian and transit-oriented environment are under *Section 2 Purpose*. This section encourages transit supportive goals by:

- Part C: Establishing a clean, safe, comfortable, and pedestrian oriented community environment for residents to shop in and use the public community services in the neighborhood.

- Part E: Guide all development, including uses, location, height, and density, to assure compatibility of uses to provide for the consideration of transportation and public facilities, aesthetics, landscaping, open space, and the economic and social well-being of area residents.

- Part G: Create a transit friendly area by requiring conformance to pedestrian oriented design guidelines that establish building facade treatments, landscape standards, criteria for shade-producing building overhangs and awnings, street lighting, and security lighting for streets, alleys, sidewalks, and other pedestrian areas that adjoin new development.

South Los Angeles. The South Los Angeles Community Plan contains all of the same goals, objectives, policies, and programs listed above in the Southeast Community Plan. In addition, the Plan also contains the following:

- Goal 12 in this Plan encourages the development of a public transit system that improves mobility with convenient alternatives to automobile travel. Service improvements and/or increased service frequency is to occur along transit corridors at transit nodes where frequent activity occurs. A number of these corridors have been identified in the Congestion Management Program for Los Angeles County. These include: Arlington Boulevard, Figueroa Street, Jefferson Boulevard, Normandie Avenue, Pico Boulevard, and Washington Boulevard. Amenities aimed at supporting transit use are encouraged near these locations include such things as pedestrian-friendly crossings, walkways, adequate bus bays or curb lengths, and bus rider boarding/transfer areas.

West Adams-Baldwin Hills-Leimert Park Community Plan. The West Adams-Baldwin Hills-Leimert Park Community Plan contains all of the same goals, objectives, policies, and programs listed above in the Southeast Community Plan. In addition, the Plan also contains the following:

- Identifies the Mid-City/Exposition light rail and bus feeder system as a major capital improvement to the area. In the plan, the West Adams-Baldwin Hills-Leimert Community Plan Transportation section. The plan has a goal of developing a "public transit system that improves mobility and accessibility with convenient alternatives to automobile travel" (Goal 8);

- Encourages the provision safe, attractive and clearly identifiable transit stops with user-friendly design amenities (Policy 8-2.5); and
- Discusses the Exposition Right-of-Way Project as a means of connecting the community with the Exposition Park/Coliseum regional centers. Four transportation modes are cited as under consideration for this Project light rail transit, trolley bus, transitway, and bike path. In addition, the Plan notes potential to improve levels of service along major east/west arterials and provide congestion relief in the east/west corridor paralleling the route between Exposition Park/Coliseum and the City of Santa Monica. Land use changes can be expected to occur along these transit corridors during the life of this Community Plan. The Plan is consistent with the Citywide Land Use/Transportation Policy by allowing for an increase in residential densities near transit stations and by allowing mixed-use projects near stations. It does this by establishing Transit Oriented Districts (TODs) around stations and providing encouragement to such increases of densities and commuter related businesses and services within these Districts.

West End

City of Culver City General Plan. The City of Culver City General Plan's Land Use, Circulation, Noise and Open Space Elements contain policies that relate to transit, land use, and the integration of the two. Some of these policies are listed below. It is clear from many of the City's general plan policies a take into account future transit improvements within the Mid-City/Exposition Corridor. The City has identified measures that provide for the system and ensure that the system is accommodated within the existing community without significant disruption and environmental impacts.

City of Los Angeles policies such as the General Plan Framework, Land Use/Transportation Element of the General Plan, Centers Concept and RAS ordinance apply to the eastern end of the West End subarea before Syd Kronenthal Park. This subarea is within the City of Los Angeles.

Land Use Element

- Policy 23.G - Set specific criteria to minimize and mitigate potential safety, noise, access, and aesthetic impacts to the McManus and Lucerne-Higuera (Rancho Higuera) neighborhoods from the construction and operation of transit within the Mid-City/Exposition ROW along National Boulevard.

Circulation Element

- Policy 1.H - Examines opportunities for peak period on-street parking restrictions and commensurate off-street parking development on congested arterials provided these parking reductions do not injure the economic viability of adjacent businesses.
- Policy 2.A - Support, with conditions, development of fixed guideway transit in the Transit Corridors.
- Policy 2.B - Support the design and operation of public transit systems that ensure the comfort and safety of all transit passengers.
- Policy 2.C - Maintain levels of transit service that are adequate to meet and encourage ridership demand.
- Policy 2.F - Increase transit service to enhance central Culver City's pedestrian oriented character.
- Policy 2.H - Encourage public transit links to sites of high trip generating uses to maximize transit use by patrons and employees.
- Policy 2.I - Encourage potential joint Metro-private development of a transit station within Culver City, provided there is adequate mitigation of access, safety, noise, and aesthetic issues.

- Policy 2.J - Encourage the location of transit stations accessible to employees of the industrial and commercial business areas of Culver City, but which would not intrude upon the residential neighborhoods.
- Policy 2.K - Support Metro funding to enhance feeder service to Metro rail stations.
- Policy 2.L - Provide sound walls or other effective noise mitigation measures along roadways and transit corridors that border on residential neighborhoods and noise sensitive land uses.
- Policy 2.M - Require adherence to design criteria and performance standards for City support of regional transit system expansion affecting the City.
- Policy 2.N - Prohibit at-grade crossings of light rail transit within Culver City.
- Policy 2.O - Prohibit at-grade or elevated alignments of light rail transit adjacent to residential neighborhoods.
- Policy 3.D - Seek public and private contributions to provide support facilities for bicycle users such as racks, secure storage, drinking fountains, etc., where bikeways connect to turn-outs, parks, and other open space areas, as appropriate.
- Policy 3.F - Encourage the inclusion of a bike path within the Mid-City/Exposition Right-of-Way and any future transit corridors with adequate Right-of-Way to safely support both uses.
- Policy 4. G - Establish pedestrian access across existing barriers such as freeways, Ballona Creek, and along uninterrupted blocks, and require links across potential future access barriers (such as the Mid-City/Exposition LRT Project).
- Policy 6.A - Reexamine City parking standards on a regular basis to ensure a balance between sufficiency and restrictiveness, and periodically update the standards to reflect conditions at that time.
- Policy 6.C - Establish allowable parking requirements to provide adequate but not excessive parking, particularly in areas with transit orientation, pedestrian access, and ridesharing programs.
- Policy 8.D - Apply design criteria and performance standards to ensure that transit expansion impacts on the City's neighborhoods are minimized and mitigated.

Noise Element

- Policy 3.A - Participate with regional transportation agencies in the planning and development of future transportation corridors, including mass transportation, to include noise abatement measures that comply with Culver City standards.
- Measure 2 - Coordinate with Metropolitan Transportation Authority (Metro) to ensure that the noise mitigation measures are integrated into the design of future light rail projects near noise sensitive land uses. The City should encourage the use of equipment, which includes the latest in proven noise reduction technology.

Open Space Element

- Policy 2.F - Develop a Class I bike path along National Boulevard in the Mid-City/Exposition Right-of-Way to connect to the Ballona Creek bike path.
- Policy 2.J - Develop a safe and convenient pedestrian and bicycle link between the Lucerne-Higuera neighborhood, south of National Boulevard, and Syd Kronenthal Park.

4.1.2 IMPACT ASSESSMENT

Methodology

This section provides a discussion of existing land uses along the Mid-City/Exposition LRT Project and highlights the pertinent land use regulations currently in place. Sensitive land uses (e.g., schools, recreational areas, religious buildings) within or adjacent to the Study Area are also identified. The discussion of existing land uses is based on an evaluation of the Thomas Guide street maps, the Metropolitan Los Angeles Central and Western Area street map, aerial photographs, field reconnaissance, and community meetings.

4.1.2.1 Regional Land Use

No Action. The No Action Alternative would be inconsistent with SCAG's Growth Management Policies to Improve the Regional Standard of Living Policy (3.05), Growth Management Policies Related to Improve the Regional Quality of Life Policy (3.12), Regional Transportation Plan Transportation Control Measure Policy (4.04), and Open Space Chapter Ancillary Goals Policy (9.02).

LPA. **Table 4.1-1** provides a comparison of policies from SCAG's Regional Comprehensive Plan and Guide (RCPG) to the proposed Project. As illustrated in **Table 4.1-1**, the proposed Mid-City/Exposition LRT Project is consistent with all applicable SCAG plans and policies.

Downtown Los Angeles Connection Options. The design options for the Downtown Los Angeles Connection alignment would all be compatible will all SCAG policies.

La Cienega Station Parking Options. The La Cienega Station Parking Options would be compatible with all SCAG policies.

Jefferson Boulevard Design Options. The design options for the bridge would all be compatible will SCAG policies.

Venice/Robertson Design Options. The Venice/Robertson Design Options would be compatible with all SCAG policies.

Phased Implementation. Impacts would be the same as those described for the LPA and as described below in **Table 4.1-1.** The Vermont, Crenshaw, and La Cienega Segments would both be compatible with SCAG policies.

TABLE 4.1-1: COMPARISON OF THE PROPOSED PROJECT TO SCAG REGIONAL POLICIES		
Policy Type and Goals	Conclusion	Discussion
GROWTH MANAGEMENT CHAPTER		
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.	Consistent with this policy.	The Project is an improvement to regional transportation systems and supports SCAG's regional growth policies.
GROWTH MANAGEMENT POLICIES TO IMPROVE THE REGIONAL STANDARD OF LIVING		
3.05 Encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities.	Consistent with this policy.	The proposed Project is a transit corridor that would stabilize existing land uses and promote increased development near mass transit, thus reducing environmental impacts normally associated with growth.
3.10 Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.	Consistent with this policy.	The Project proponents have worked closely with the City of Los Angeles and Culver City to expedite the processing of the proposed Project.
GROWTH MANAGEMENT POLICIES RELATED TO IMPROVE THE REGIONAL QUALITY OF LIFE		
3.12 Encourage existing or proposed local jurisdiction's programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.	Consistent with this policy.	The proposed Project is a mass transit corridor which would provide the opportunity for a reduction in auto trips and vehicle miles traveled, and create opportunities for residents to have alternative means of transportation.
3.13 Encourage local jurisdiction's plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.	Consistent with this policy.	The proposed Project increases accessibility to urbanized areas and will absorb some of the negative environmental impacts associated with infill growth by reducing auto trips and vehicle miles traveled.
3.14 Support local plans to increase density of future development located at strategic points along regional commuter rail, transit systems, and activity centers.	Consistent with this policy.	The proposed Project would support increased density around the transit corridor where appropriate and increase accessibility to commercial and activity centers.
3.15 Support local jurisdictions' strategies to establish mixed-use clusters and other transit oriented developments around transit stations and along transit corridors.	Consistent with this policy.	The proposed Project would support transit oriented development, inclusive of residential and commercial uses, along the entire transit corridor.
3.16 Encourage developments in and around activity centers, transportation corridors, underutilized infrastructure systems, and areas needing recycling and redevelopment.	Consistent with this policy.	The proposed Project would support development in and around the proposed transportation corridor.

TABLE 4.1-1: COMPARISON OF THE PROPOSED PROJECT TO SCAG REGIONAL POLICIES		
Policy Type and Goals	Conclusion	Discussion
3.18 Encourage planned development in locations least likely to cause environmental impact.	Consistent with this policy.	The proposed Project would encourage increased development, where appropriate, along a mixed-use corridor that connects many commercial centers. The urban nature of most of the corridor reduces the potential for environmental impacts.
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.	Consistent with this policy.	The proposed Project does not jeopardize the preservation of any vital resources.
3.21 Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.	Consistent with this policy.	The proposed Project includes measures to preserve and protect cultural and archaeological resources.
3.22 Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.	Consistent with this policy.	The proposed Project would contain provisions to safeguard against these hazards.
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.	Consistent with this policy.	This EIS/EIR contains mitigation measures to reduce noise. The proposed Project would not cause any biological and ecological impacts. It would be built in accordance with all current earthquake standards and emergency plans would be submitted for approval to applicable agencies prior to operations.
GROWTH MANAGEMENT POLICIES RELATED TO SOCIAL, POLITICAL, AND CULTURAL EQUITY		
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.	Consistent with this policy.	The proposed Project would improve access to mass transit for many low-income and primarily minority populations. Thus improving equal access to employment opportunities, cultural centers, and commercial centers.
REGIONAL TRANSPORTATION PLAN		
4.01 Transportation Investments shall be based on SCAG's adopted Regional Performance Indicators.	Consistent with this policy.	The proposed Project would be responsive to SCAG's Regional Performance Indicators.
4.02 Transportation Investments shall mitigate environmental impacts to an acceptable level.	Consistent with this policy.	Transportation mitigation measures are included in this EIS/EIR to mitigate environmental impacts to acceptable levels.
4.04 Transportation Control Measures shall be a priority.	Consistent with this policy.	The Project is a designated Transportation Control Measure.

TABLE 4.1-1: COMPARISON OF THE PROPOSED PROJECT TO SCAG REGIONAL POLICIES		
Policy Type and Goals	**Conclusion**	**Discussion**
4.16 Ensuring safety, maintenance and efficacy of operations on the existing multi-modal transportation system will be RTP priorities and will be balanced against the need for system expansion investments.	Consistent with this policy.	The Project is planned within the existing regional transportation system and is vital to ensure, safety, adequate maintenance and operational efficiency in the existing multi-modal transportation system.
AIR QUALITY CHAPTER CORE ACTIONS		
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.	Consistent with this policy.	The proposed Project would incorporate all applicable source reduction and control measures including AQMD Rule 403 - Fugitive Dust Control, and would strive to identify other programs and actions throughout the life of the proposed Project so that options to command and control regulations can be assessed.
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.	Consistent with this policy.	The interrelationship between air quality, land use, transportation, and economic relationships was considered throughout the analysis contained in this EIS/EIR to minimize conflicts.
OPEN SPACE CHAPTER ANCILLARY GOALS		
9.02 Increase the accessibility to open space lands for outdoor recreation.	Consistent with this policy.	The proposed Project increases access to recreation centers such as Exposition Park and Baldwin Hills Recreation Park.
9.05 Minimize potentially hazardous developments in hillsides, canyons, areas susceptible to flooding, earthquakes, wildfire and other known hazards, and areas with limited access for emergency equipment.	Consistent with this policy.	The proposed Project would comply with all regulations that apply to development in these areas.
SOURCE: SCAG Regional Comprehensive Plan, April 2001, Regional Transportation Plan, 2004, and Terry A. Hayes Associates LLC, March 2004.		

4.1.2.2 Local Land Use

No Action. The No Action Alternative would not provide transit infrastructure that supports the "Centers Concept." The No Action Alternative would not support the goals and objectives of the City of Los Angeles General Plan Framework.

LPA. In general, the development of a transit system along the Mid-City/Exposition LRT Project, is a compatible and desired land use. The following analysis is broken down by geographic subarea of the Project alignment.

Downtown Los Angeles Connection

Division of an Established Community. The proposed Project would not divide an existing community as there are limited residential uses in the area. Street running LRT allows for pedestrians and vehicles to cross the tracks at designated intersections.

Applicable Land Use Policies. As described by the City Center Community Plan policies listed above, the development of a transit system along the Downtown Los Angeles Connection subarea of the Mid-City/Exposition LRT Project is a compatible and desired land use. The goals of the Mid-City/Exposition LRT Project promote specific policies including Policy 1, which aims to vastly improve public transportation system, to reduce environmental impacts of the present transportation system, and Policy 2, which seeks to develop rapid transit stations and lines to improve regional rapid transit systems.

Adjacent or Surrounding Land Uses. This subarea is urban in nature. Review of the existing land uses with respect to the proposed Project shows that there are no compatibility issues along the Downtown Los Angeles Connection subarea. Loss of parking on Hill Street is discussed and mitigated in Section 3.3 Parking. Nuisance impacts on sensitive receptors resulting from LRT operations and stations are discussed in other applicable sections of the Final EIS/EIR (i.e., Sections 3.2 Traffic, 4.5 Air Quality, and 4.6 Noise and Vibration).

Mid-Corridor

Division of an Established Community. The proposed Project would include street closures at 2nd and 33rd Avenues, south of the ROW. Access to these streets would still be maintained through routing of traffic within local streets. The proposed Project would also maintain a vehicular and a pedestrian crossing at both Raymond and Denker Avenues would also be part of the Project to preserve access on both sides of Exposition Boulevard in this area. An alternate pathway between the north and south sides of the ROW Arlington Boulevard would also be available. This community access is supplemented by the Project's integral bikeway. These bike lanes parallel to the LRT route creates additional opportunities particularly for cyclist and pedestrians to access their respective communities for more than a mile in east-west direction. No adverse impacts are anticipated to the established community.

Applicable Land Use Policies. The community plans Southeast Los Angeles, South Los Angeles, and West Adams that pertain to the Mid-Corridor segment all support the intensification of land uses in conjunction with improved mass transit. The plans promote inter-connectivity between residential uses and transit systems, and set as a goal the development of new housing close to transit lines so as to reduce vehicle trips while promoting growth. The proximity of the Project alignment and stations to residences between Vermont Avenue and Crenshaw Boulevard helps to accomplish this goal. Primary goals in each plan include measures to reduce vehicle trips, traffic congestion, and air pollution while enhancing the job opportunities and quality of life in the area. The Mid-City/Exposition LRT Project is consistent with all of these plans and promotes the Community's primary goals.

Adjacent or Surrounding Land Uses. The proposed Project will be built on an existing transportation ROW alongside existing land uses. The proposed Project is part of a designated transit corridor adopted by the City of Los Angeles General Plan Framework Transportation Element. The transit corridor is also recognized as part of the South Los Angeles and West Adams Community Plans in the area. The transit corridor is also part of the adopted Vermont/Western Transit Oriented District Plan, which includes all existing uses along the proposed Project's alignment within this Plan. The existing Exposition ROW was built years ago, prior to the construction of current adjacent land uses.

The institutional land uses at the intersection of Exposition Boulevard and Vermont Avenue are part of the urban character of this area. The Mid-City/Exposition LRT Project is compatible with the urban setting at this location. The proposed Mid-City/Exposition LRT stations at Vermont Avenue, Crenshaw Boulevard, and La Brea Avenue have been placed away in areas with predominately industrial or commercial uses to minimize disruption to local sensitive land uses.

West End

Division of an Established Community. The proposed Project would not cause a physical division of an established community. Bicycle lanes and pedestrian crosswalks will be provided at street level along the alignment east of Ballona Creek. West of Ballona Creek in Culver City, pedestrian crossings will be provided near Wesley Street and Eastham to connect pedestrians south of National Boulevard to Syd Kronenthal Park.

Applicable Land Use Policies. The Culver City General Plan outlines the following policies: Policy 2.N states that at-grade crossings of light rail transit are prohibited within Culver City, Policy 2.O states that at-grade and elevated light rail alignments are prohibited adjacent to residential neighborhoods, and Policy 2.M requires adherence to design criteria and performance standards for the City support of regional transit system expansion.

The proposed Project would not be inconsistent to Policy 2.N for the alignment east of Wesley Street. The proposed Project will remove an existing at-grade crossing at Hayden Avenue, such that there will be no at-grade crossings from the eastern city limit at the Ballona Creek to Wesley Street. The proposed Project would be inconsistent with Policy 2.N for at-grade crossings at Washington and National Boulevards. However, Culver City does not have jurisdiction over light rail at-grade crossings. The California State Public Utilities Commission (PUC) has asserted sole discretion over light rail grade crossings pursuant to Public Utilities Code Section 1202. Further, the recent decision of <u>Santa Clara Valley Transportation Authority v. Public Utilities Commission.</u> (2004) 124 Cal.App.4th 346 indicates that Metro may have exclusive jurisdiction over the Exposition LRT's crossing itself, with the possible exception of safety requirements. In either case, Culver City would not have jurisdiction over the Exposition LRT's crossings, and the Culver City General Plan would not be applicable to the Project. One threshold of significance addresses land use plans, which reads: "Inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project;" Since Culver City does not have jurisdiction over the Exposition LRT's crossings, the Culver City General Plan is not applicable and there is no significant impact on land use as a result of the Project's inconsistency with the Culver City's General Plan.

Inconsistencies to Policy 2.O would only occur if the grade separation of the Jefferson Boulevard Design Option is still elevated west of Fay Avenue in Culver City. However, the proposed Project shows all design options for an elevated alignment dropping to an at-grade alignment east of Fay Avenue. From this point to Wesley Street, the alignment would be built within a graded and landscaped parkway so that the LRT trackway would be shielded from residential areas. As the trackway would be shielded from view and no elevated LRT alignments would be located directly adjacent to residential neighborhoods, the Project would be consistent with Policy 2.N and 2.O of the Culver City General Plan.

Incompatibility with Adjacent or Surrounding Land Uses. The proposed Project would be incompatible with one other proposed land use in the West End subarea of the alignment. The proposed parking structure and transit center located next to the La Cienega Station at Jefferson and La Cienega Boulevards would be on the same site as a proposed city air treatment facility. Mitigation measures **LU1** and **LU2** would provide station area design guidelines, feasibility studies and programming to accommodate the transportation facility and the air treatment facility adjacent to each other on the same site. It would also to ensure that screening and/or use separation are implemented as part of the proposed Project.

Downtown Los Angeles Connection Options. There would be no conflicts with local land use policies or surrounding land uses for any of the design options and no impact is anticipated.

La Cienega Station Parking Options. The Southwest Corner Option would construct a parking facility and transit center, consisting of a parking structure and an off-street and on-street transit center with multiple bus stops and amenities. Buses would access the center from both La Cienega and Jefferson Boulevards. This use would not conflict with local land use policies or zoning requirements.

It should be noted, however, that there are land uses in the immediate vicinity of the parking facility and transit center that are not semi-industrial or warehouse in nature. There are several structures that have been converted to office or "creative space" uses similar to the Hayden Tract area located just to the west in Culver City. The proposed parking facility and transit center would be situated adjacent to one of these industrial-to-office conversion projects just to the south. The office development is located on industrially-zoned land. Currently, Metro is also relocating the Division 6 bus operations and maintenance facility to a site on the south side of this converted office development. An environmental impact report has been prepared for this relocation, and the Metro Board has approved the relocation in 2004. With implementation of the Southwest Corner option, the predominant land use in the immediate area would be transit-related and may create conflicts with the continued redevelopment of the area to office type uses. Mitigation measure **LU3** addresses this impact and ensures coordinated land use planning between Metro and the City of Culver City.

The No Parking Option would redirect parking demand to Crenshaw station. Parking is proposed at Crenshaw as part of the LPA. This option would increase the number of vehicles parking at Crenshaw Station, but would not introduce any new land use conflicts. No land use impact is anticipated from the No Parking option.

Jefferson Boulevard Design Options. The widening option to the north or south of Jefferson Boulevard would not conflict with local land use policies. Widening to the north would require the acquisition land north of Jefferson Boulevard. (Impacts related to this acquisition are discussed in Section 4.2 Land Acquisition, Displacement, and Relocation.) Removal of the existing buildings on the acquired parcel would not create any new land use incompatibilities. It is probable that only a portion of the acquired parcel would be required to create additional traffic lanes on Jefferson Boulevard. The remaining area would not likely be large enough to be redeveloped with new uses and would remain vacant. As discussed in Section 4.4 Visual Quality, to improve the appearance of this remaining area, the unused portion of the acquired parcel would need to be adequately landscaped or screened. (See Section 4.4 Visual Quality for relevant mitigation.)

Widening of Jefferson Boulevard to the south would use Metro-owned ROW. This option would place Jefferson Boulevard adjacent to an existing storage facility. No incompatibilities or local land use conflicts would arise from this option.

Local land use impacts would not occur in Culver City with the implementation of either bridge design option. This bridge would be elevated over Ballona Creek and would come down to a graded and landscaped parkway just east of Fay Avenue in Culver City. The alignment will not be elevated in front of the residential area in Culver City. The design options would be consistent with Policy 2.O of the Culver City General Plan.

Venice/Robertson Design Options. The ROW Station option would situate the Venice/Robertson station within several hundred feet of East Culver City residences located along Helms Avenue. A station location in this area would introduce a high activity land use and could result in land use conflicts related to parking, noise, and light (see Sections 3.3 Parking, 4.4 Visual Quality, and 4.6 Noise and Vibration).

The North of ROW Station options require the acquisition of an existing businesses. The impacts related to this acquisition are discussed in Section 4.2 Land Acquisition, Displacement, and Relocation. The North of ROW options would occur as part of a potential transit-oriented development (TOD) to be implemented in conjunction with the City of Culver City. As part of a comprehensive development concept for the area west of Wesley Street, if selected, the chosen North of ROW option would be designed according to local land use policies and integrated into the existing uses and landscape. Mitigation measure **LU4** ensures coordinated land use planning would occur between Metro and the City of Culver City. No conflicts with local land use plans or surrounding land uses are anticipated.

The Aerial Station option would be situated in the same location as the at-grade terminus station under the LPA. This is a commercial, semi-industrial area and no land use incompatibilities or conflicts with local plans are anticipated. It is likely, given the on-going coordination between Culver City and the Metro, that the areas adjoining the elevated station would be redeveloped as a transit-oriented district consistent with City goals and objectives. Mitigation measure **LU5** would ensure that Metro and Culver City engage in station area planning jointly.

Phased Implementation. In constructing and operating the Vermont Segment of the Mid-City/Exposition LRT, no inconsistencies with local land use policy or conflicts with surrounding land uses would occur. Implementing the Crenshaw and La Cienega Segments would also produce no inconsistences or conflicts with local land use policy.

4.1.3 MITIGATION MEASURES

LU1 Station area design guidelines shall be prepared prior to construction phase of the Project to accommodate the air treatment facility within or adjacent to the La Cienega Station parking facility and transit center.

LU2 Architectural feasibility studies and programming shall be conducted prior to construction phase of the Project to accommodate the parking facility, transit center and other transit oriented uses with existing plans for the air treatment facility at the same location. Architectural programming and feasibility studies should provide screening and/or use separation between the air treatment facility and transit oriented uses, so that these measures will be implemented during Final Design.

LU3 If the parking option for the southwest corner of La Cienega and Jefferson Boulevards is selected, station area design guidelines shall be prepared prior to construction phase of the Project to integrate the Parking Facility and Transit Center with city plans for future development. Metro and the City of Los Angeles will coordinate these guidelines for land use compatibility.

LU4 If the North of ROW Station Option A, B, or C is selected for the interim western terminus, station area design guidelines shall be prepared prior to construction phase of the Project. Metro and Culver City will coordinate guidelines to integrate the station as an interim station within Culver City's transit oriented development process. These guidelines would be compatible to city land use plans.

LU5 If the Aerial Station Option is selected for the interim western terminus, Metro will coordinate with Culver City regarding station area planning to ensure land use compatibility prior to construction of the Project.

4.1.4 CEQA DETERMINATION

According to CEQA, land use impacts would be considered significant if the proposed Project has the potential to result in:

- Physical division of an established community;

- Inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project; or
- Incompatibility with adjacent and surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use.

No Action. The No Action alternative would not result in land use impacts.

LPA. The proposed Project would not cause a physical division of an established community, because it allows for pedestrian and vehicle crossings at designated intersections and would be built on the existing ROW. Second and Third Avenues would be closed. Motorist and pedestrians would no longer be able to cross north-south over the ROW. However, other north-south streets would be opened as designated ROW crossings.

Transit operations and station compatibility impacts would be less than significant in commercial areas and significant in residential neighborhoods. These impacts are summarized in **Table 4.1-2**.

TABLE 4.1-2: SUMMARY OF IMPACTS TO LAND USE

Mid-City/ Exposition Project Subarea	Division of an established community	Inconsistency with applicable land use policies	Incompatibility with adjacent or surrounding land uses	Proposed Mitigation
Downtown Los Angeles Connection	No	No	No	None
Mid-Corridor	No	No	No	None
West End	No	No	Yes	See 4.1.3 Mitigation Measures above, **LU1** through **LU5**.

SOURCE: Terry A. Hayes Associates LLC, 2004

Community plans and specific land use policies for the three subareas of the route are described in detail in "4.1.2 Impact Assessment." As shown in **Table 4.1-2**, no local land use impacts would occur in the Downtown Los Angeles Connection or Mid-Corridor subarea. In the West End, the proposed Project would be inconsistent with Policy 2.N for an at-grade alignment at Washington and National Boulevards. However, as described above in Section 4.1.2, West End - *Applicable Land Use Policies*, Culver City does not have the jurisdiction to enforce Policy 2.N. Therefore, this inconsistency would not result in an adverse impact.

An incompatibility would occur with the proposed La Cienega Station parking facility and transit center and a City of Los Angeles air treatment facility. Mitigation measures **LU1** and **LU2** address this impact.

Downtown Los Angeles Connection Options. There would be no conflicts with regional land use policies, local land use policies or surrounding land uses for any of the design options. No impact is anticipated.

La Cienega Station Parking Options. The Southwest Corner Option would construct a parking facility and transit center, consisting of a parking structure and an off-street and on-street transit center with multiple bus stops and amenities. Buses would access the center from both La Cienega and Jefferson Boulevards. This use would not conflict with local land use policies or zoning requirements.

It should be noted, however, that there are land uses in the immediate vicinity of the parking facility and transit center that are not semi-industrial or warehouse in nature. There are several structures that have been converted to office or "creative space" uses similar to the Hayden Tract area located just to the west in Culver City. The proposed parking structure and parking facility and transit center would be situated adjacent to one of these industrial-to-office conversion projects just to the south. The office development is located on industrially-zoned land. Currently, the Metro is also relocating the Division 6 bus operations and maintenance facility to a site on the south side of this converted office development. An environmental impact report has been prepared for this relocation, and the Metro Board has approved the relocation in 2004. With implementation of the Southwest Corner Option, the predominant land use in the immediate area would be transit-related and may create conflicts with the continued redevelopment of the area to office type uses. Mitigation measure **LU3** addresses this impact.

The No Parking Option would redirect parking demand to Crenshaw Station. Parking is proposed at Crenshaw as part of the LPA. This option would increase the number of vehicles parking at Crenshaw Station, but would not introduce any new land use conflicts. No land use impact is anticipated from the No Parking Option.

Jefferson Boulevard Design Options. The widening option to the north or south of Jefferson Boulevard would not conflict with local land use policies. Widening to the north would require the acquisition land north of Jefferson Boulevard. (Impacts related to this acquisition are discussed in Section 4.2 Land Acquisition, Displacement, and Relocation.) Removal of the existing buildings on the acquired parcel would not create any new land use incompatibilities. It is probable that only a portion of the acquired parcel would be required to create additional traffic lanes on Jefferson Boulevard. The remaining area would not likely be large enough to be redeveloped with new uses and would remain vacant. As discussed in Section 4.4 Visual Quality, to improve the appearance of this remaining area, the unused portion of the acquired parcel would need to be adequately landscaped or screened. See Section 4.4 Visual Quality for relevant mitigation.

Widening of Jefferson Boulevard to the south would use Metro-owned ROW. This option would place Jefferson Boulevard adjacent to an existing storage facility. No incompatibilities or local land use conflicts would arise from this option.

Local land use impacts would not occur in Culver City with the implementation of either bridge design option. This bridge would be elevated over Ballona Creek and would come down to a graded and landscaped parkway just east of Fay Avenue in Culver City. The alignment will not be elevated in front of the residential area in Culver City. The design options would be consistent with Policy 2.O of the Culver City General Plan. No land use impacts are anticipated.

Venice/Robertson Design Options. The ROW Station Option would situate the Venice/Robertson station within several hundred feet of East Culver City residences located along Helms Avenue. A station location in this area would introduce a high activity land use and could result in land use conflicts related to parking, noise, and light (see Sections 3.3 Parking, 4.4 Visual Quality, and 4.6 Noise and Vibration).

The North of ROW station options require the acquisition of an existing business. The impacts related to this acquisition are discussed in Section 4.2 Land Acquisition, Displacement, and Relocation. If selected, the chosen North of ROW option would occur as part of a potential transit-oriented development (TOD) to be implemented in conjunction with the City of Culver City. As part of a comprehensive development concept for the area west of Wesley Street, and per mitigation measure **LU4**, the North of ROW option would be designed according to local land use policies and integrated into the existing uses and landscape. No conflicts with local land use plans or surrounding land uses are anticipated.

The Aerial Station Option would be situated in the same location as the at-grade terminus station under the LPA. This is a commercial, semi-industrial area and no land use incompatibilities or conflicts with local plans are anticipated. It is likely, given the on-going coordination between Culver City and the Metro, that the areas adjoining the elevated station would be redeveloped as a transit-oriented district consistent with City goals and objectives. Mitigation measure **LU5** would ensure that Metro and Culver City engage in joint station area planning for land use compatibility.

Phased Implementation. In constructing and operating the Vermont Segment of the Mid-City/Exposition LRT, no inconsistencies with local land use policy or conflicts with surrounding land uses would occur. Implementation of the Crenshaw Segment and the La Cienega Segment would also be consistent with local land use policy.

Significant Impacts Remaining after Mitigation. Implementation of mitigation measure **LU1** through **LU5** would result in a less-than-significant impact on land use for the LPA and associated design options.

4.2 LAND ACQUISITION, DISPLACEMENT AND RELOCATION

This section addresses the land ownership and leasing agreements that will change due to the proposed Project. Although the Mid-City/Exposition LRT Project maximizes the use of publically-owned rights-of-ways (ROWs), this analysis discusses the proposed Project's impacts to persons and businesses with leases of Metro-owned property along the transit corridor and to privately owned properties.

4.2.1 AFFECTED ENVIRONMENT

For purposes of the discussion of potential land acquisition impacts, the affected environment is limited to the areas within and directly adjacent to the Exposition Corridor.

In 1991, Metro acquired railroad ROW throughout the Los Angeles area from the Southern Pacific Transportation Company. As part of this process, Metro inherited lease agreements entered into by the railroad. Since acquiring the ROW, Metro has entered into additional land leases and has granted certain temporary and permanent easements. A number of commercial and industrial businesses along the Exposition ROW entered into lease agreements to expand their sites for parking, storage, and/or building improvements.

As shown in **Table 4.2-1**, approximately 43 percent of leases within the Exposition ROW are on a month-to-month basis while approximately 57 percent are annual or longer term leases. About 21 percent of the leases involve business purposes such as patron and employee parking, access, storage and lay-down areas, access from one side of the ROW to the other, and temporary buildings. In addition to leases, the Metro under the provisions of its ROW Protection Guidelines, has also granted licenses for beautification and landscaping improvements.

TABLE 4.2-1: EXPOSITION ROW LEASE SUMMARY

Subarea	Total	Type of ROW Use				Lease Terms	
		Utilities	Business Purposes /a/	Signs and Billboards	Misc. Easements	Month -to-Month	Annual or Longer Term
Downtown Los Angeles Connection	11	2	1	4	4	2	9
Mid-Corridor	41	10	6	22	3	4	37
West End	37	14	12	2	9	32	5
TOTAL	**89**	**23**	**19**	**28**	**16**	**38**	**51**
PERCENT	**100.0%**	**25.8%**	**21.3%**	**31.4%**	**17.9%**	**42.7%**	**57.3%**

/a/ Includes, parking, storage, lay-down, buildings, and beautification.
SOURCE: Metro Real Estate Department and Terry A. Hayes Associates LLC, 2004

4.2.2 IMPACT ASSESSMENT

Methodology

To assess the potential acquisition of private property, preliminary engineering drawings identifying the detailed location of the guideway alignment and stations were reviewed to identify properties not located on public rights of way that would be needed for the proposed Project and the alternative design options. To estimate the effect of non-renewal of Metro leases within the Exposition railroad ROW, the lease database maintained by the Metro Real Estate Department was reviewed. Business disruption due to a loss of parking is addressed separately in Section 3.3 Parking.

4.2.2.1 Acquisition of Property

No Action. The No Action Alternative would not result in any land acquisition impacts.

LPA. In order to construct the Hill Street Locally Preferred Alternative, 23 parcels along the Exposition ROW would need to be acquired in part and two parcels in full. Properties would be required to house traction power substations (TPSS), as alternate TPSS sites, for cul-de-sac construction, for street widening, to accommodate a new parking facility and transit center, to accommodate a signal case, and for the bikeway. The acquisitions range in size from 23 square feet to several thousand square feet. If a design option is selected at one of the proposed locations, the acquisition requirements would shift. **Table 4.2-2** lists the parcel number, location, and the current and intended use of the properties required to construct the LPA as well as the various design options proposed along the alignment. The table also refers the reader to the appropriate figure displaying the location of the property to be acquired. If a parcel appears in the table more than once, it is because it would be used for different design options requiring different square footage. Note that in the West End subarea, there are three North of ROW Options - A, B, and C. The table shows one column for “North of ROW” options, and the letter accompanying the figure number in the first columns identifies which option requires the acquisition listed.

Figures 4.2-1 through **4.2-17** depict the area to be acquired at each location. The properties on 3rd Avenue shown in the **Table 4.2-2** may not be required if the City of Los Angeles determines that this street may be closed without constructing a cul-de-sac. Metro would coordinate with the City of Los Angeles during final design to assess the possibility of closing 3rd Avenue without creating a cul-de-sac.

TABLE 4.2-2: PROPERTIES TO BE ACQUIRED ALONG LPA ALIGNMENT

Figure No.	Assessor's Parcel Number	Address	Total Size of Parcel & Current Use	Required Acquisition	Future LRT Use	Alternatives			
WEST END						LPA	Aerial Station	North of ROW	In ROW
4.2-1	4312-014-031	8803 Washington Blvd	5828 sf Parking & small building	2,475 sf	Street widening	P	X	X	X
4.2-1	4312-014-030	National and Washington Blvd (No available address)	2,605 sf Parking	550 sf	Street widening	P	X	X	X
4.2-1	4312-014-029	National and Washington Blvds (No available address)	2,997 sf Parking	550 sf	Street widening	P	X	X	X
4.2-1	4312-014-058	8824 National Blvd	14,902 sf Warehouse	1,650 sf	Street widening	P	X	X	X
4.2-1	4312-014-027	8828 National Blvd	2,250 sf Small office & warehouse	550 sf	Street widening	P	X	X	X
4.2-1	4312-014-059	8830 National Blvd	5,952 sf Harry's Art Showroom & Storage Lot	750 sf	Street widening	P	X	X	X
4.2-1	4312-014-024	8836 National Blvd	2,500 sf Finish First Fine Furniture Refinisher	250 sf	Street widening	P	X	X	X
4.2-1	4312-014-023	8838 National Blvd	2,496 sf Parking for Finish First	125 sf	Street widening	P	X	X	X

TABLE 4.2-2: PROPERTIES TO BE ACQUIRED ALONG LPA ALIGNMENT									
Figure No.	Assessor's Parcel Number	Address	Total Size of Parcel & Current Use	Required Acquisition	Future LRT Use	Alternatives			
WEST END						LPA	Aerial Station	North of ROW /a/	In ROW
4.2-1	4312-028-038	8786 Washington Blvd	21,142 sf Spartan Supply Company	2,926 sf The building on the northwest corner would have to be relocated on-site. Parking spaces would be taken.	Street widening and bikeway	P	X	X	X
4.2-2A	4312-028-020	8770 Washington Blvd	36,160 sf Spartan Supply Company	36,160 sf	LRT Station	X	X	F	X
4.2-2A	4312-028-038	8786 Washington Blvd	21,142 sf Spartan Supply Company	21,142 sf	LRT Station	X	X	F	X
4.2-2A	4312-028-021	3429 Wesley St.	10,900 sf Spartan Supply Company	10,900 sf	LRT Station	X	X	F	X
4.2-2A	4312-028-022	3429 Wesley St.	8,976 sf Spartan Supply Company	8,976 sf	LRT Station	X	X	F	X
4.2-2A	4312-028-023	3431 Wesley St.	6,177 sf Parking for adjacent recording studio	520 sf	LRT Station	X	X	P	X
4.2-2B	4312-028-024	3440 Wesley St.	22,375 sf An auto body shop; vacant lots	23,375 sf	LRT Station	X	X	F	X

TABLE 4.2-2: PROPERTIES TO BE ACQUIRED ALONG LPA ALIGNMENT

Figure No.	Assessor's Parcel Number	Address	Total Size of Parcel & Current Use	Required Acquisition	Future LRT Use	Alternatives			
WEST END						LPA	Aerial Station	North of ROW /a/	In ROW
4.2-2B	4312-028-025		7,500 sf Vacant lot	7,500 sf	LRT Station	X	X	F	X
4.2-2B	4312-028-026		7,500 sf Vacant lot	7,500 sf	LRT Station	X	X	F	X
4.2-2C	4312-028-024	3441 Wesley St.	22,375 sf Auto body shop	23,375 sf	LRT	X	X	F	X
4.2-2C	4312-028-023	3431 Wesley St.	6,177 sf Parking for adjacent studio	6,177 sf	LRT station	X	X	F	X
4.2-2C	4312-028-901	Wesley St. (No available address)	4,154 sf Parking lot for local business	4,154 sf	LRT Station	X	X	F	X
4.2-3	4312-028-901	Wesley St. (No available address)	4,154 sf Parking lot for local business	1,634 sf Three of nine spaces would be taken.	Cul-de-sac construction due to street closure.	P	P	P	P

TABLE 4.2-2: PROPERTIES TO BE ACQUIRED ALONG LPA ALIGNMENT

Figure No.	Assessor's Parcel Number	Address	Total Size of Parcel & Current Use	Required Acquisition	Future LRT Use	Alternatives			
LA CIENEGA/JEFFERSON BOULEVARDS						LPA	Widen Jefferson Blvd. To the north	Widen Jefferson Blvd. to the south	SW Parking Option
4.2-4	5047-018-901	3410 S. La Cienega Blvd	54,298 sf City of Los Angeles East Central Interceptor Sewer	36,000 sf	Parking facility and transit center developed with the City of Los Angeles.	P	X	X	X
4.2-5	4205-033-006	3351 La Cienega Pl.	34,066 sf Light industrial uses - Jefferson Recycling Facility, Rick & Son Automotive Service, Batz Auto Upholstery	34,066 sf	Street widening	X	F	X	X
4.2-6	4205-032-001	3401 S. La Cienega Blvd	153,748 sf Public Storage Facility	153,768 sf	La Cienega Station parking facility and transit center	X	X	X	F
MID-CORRIDOR						LPA			
4.2-7	5046-010-008	3433 Farmdale Avenue	16,918 sf Northwest Towing and Storage Company	3,683 sf Part of the company's auto storage area would be taken	TPSS site #6	P			
4.2-8	5044-019-002	2827 Exposition Pl.	4,543 sf Property used by adjacent business for storing trucks.	4,543 sf	TPSS site #5	F			

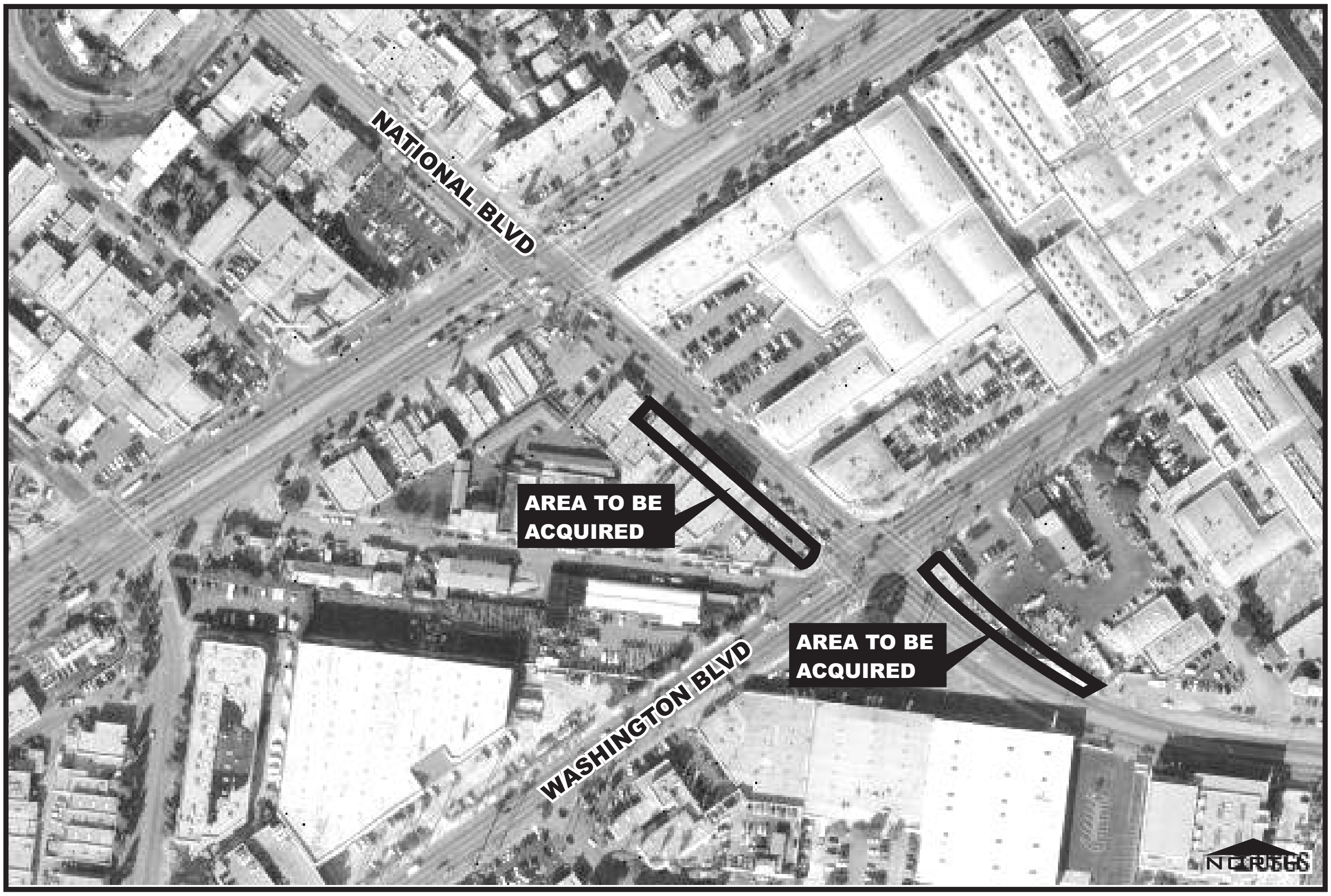
TABLE 4.2-2: PROPERTIES TO BE ACQUIRED ALONG LPA ALIGNMENT									
Figure No.	Assessor's Parcel Number	Address	Total Size of Parcel & Current Use	Required Acquisition	Future LRT Use	Alternatives			
MID-CORRIDOR						LPA			
4.2-9	5042-007-014	3741 3rd Ave.	4,800 sf Residential property	293 sf A portion of the yard would be taken.	Cul-de-sac construction due to street closure	P			
4.2-9	5042-007-015	3745 3rd Ave.	4800 sf Residential property	23 sf A portion of the yard would be taken.	Cul-de-sac construction due to street closure	P			
4.2-9	5042-008-001	3740 3rd Ave.	4800 sf Residential property	114 sf A portion of the yard would be taken.	Cul-de-sac construction due to street closure	P			
4.2-9	5042-008-002	3744 3rd Ave.	4800 sf Residential property	150 sf A portion of the yard would be taken.	Cul-de-sac construction due to street closure	P			
4.2-10	5042-008-907	3790 2nd Avenue	6,669 sf Vacant, City of Los Angeles East Central Interceptor Sewer Site	2,990 sf	TPSS site #4	P			
4.2-10	5042-010-007	3788 Arlington Ave.	5,042 sf Commercial property, Right on Market	788 sf A portion of the current parking area would be taken.	Street widening	P			

TABLE 4.2-2: PROPERTIES TO BE ACQUIRED ALONG LPA ALIGNMENT

Figure No.	Assessor's Parcel Number	Address	Total Size of Parcel & Current Use	Required Acquisition	Future LRT Use	Alternatives			
MID-CORRIDOR						LPA			
4.2-10	5042-010-008	3798 Arlington Ave.	5,314 sf Commercial property, Right on Market	431 sf A portion of current parking area would be taken.	Street widening	P			
4.2-11	5041-030-033	3763 Normandie Ave.	3,953 sf Residential property	3,953 sf The yard and the house occur on two separate parcels. The yard would be taken.	TPSS site #3	F			
4.2-12	5037-015-030	1077 W. 38th St.	84,056 sf Private property	100 sf Portion of landscaping between wall enclosing property and sidewalk.	Signal Case	P			
4.2-13	5037-018-044	3775 Vermont Ave.	18,200 sf Gas station driveway	197 sf	Street widening	P			

TABLE 4.2-2: PROPERTIES TO BE ACQUIRED ALONG LPA ALIGNMENT									
Figure No.	Assessor's Parcel Number	Address	Total Size of Parcel & Current Use	Required Acquisition	Future LRT Use	Alternatives			
DOWNTOWN LOS ANGELES CONNECTION						LPA	Hill St. Couplet	Flower St.	Alt. TPSS
4.2-13	5039-002-028	3667 McClintock Ave. (at Vermont Ave.)	380,853 sf USC Campus	938 sf	Street widening	P	P	P	X
4.2-14	5037-029-018	S. 3601 Flower St.	14,156 sf Building, USC-owned property.	14,156 sf	TPSS site #2, pump station, construction staging	X	X	X	F
4.2-14	5037-030-021	S. Flower St. and 37th St. (No address available)	10,721 sf Industrial use	TBD	TPSS Site #2 and pump station	P	P	P	X
4.2-15	5126-011-900	419 Washington Blvd.	17,688 sf LA Trade Tech College-owned. This site is currently vacant.	3,038 sf	TPSS Site #1	P	X	P	X
4.2-16	no parcel no.	18th St.	Portion of highway, State of California /b/	9,120 sf	Alternate TPSS Site #1	X	X	X	P
--	no parcel no.	18th St.	Portion of highway, State of California /b/	2,660 sf	Right track	X	P	X	X
--	no parcel no.	17th St.	Portion of highway, State of California /b/	3,745 sf	Left track	X	P	X	X
4.2-17	5134-008-006	I-10 Freeway/ Flower St.	75,609 sf Light industrial use. This business would be displaced.	32,091 sf	Left track/ TPSS Site #1	X	P	X	X

Note: P = Partial take; F = Full take; sf = square feet. TBD = To be determined
/a/ A portion of a highway easement or right-of-way would be acquired without detriment to the function of the highway.
/b/ There are three North of ROW options. The letter accompanying the Figure number in the first column denotes for which North of ROW option the acquisition is required - A, B, or C.
SOURCE: Real Estate Department and DMJM Harris, 2004.



VENICE/ROBERTSON STATION LPA

To accommodate the at-grade crossing of Washington and National Boulevards by the Locally Preferred Alternative, National Boulevard would have to be widened at the intersection of Washington Boulevard. Approximately 2,926 square feet would be acquired on the southeast corner and approximately 6,900 square feet would be acquired on the northwest corner.

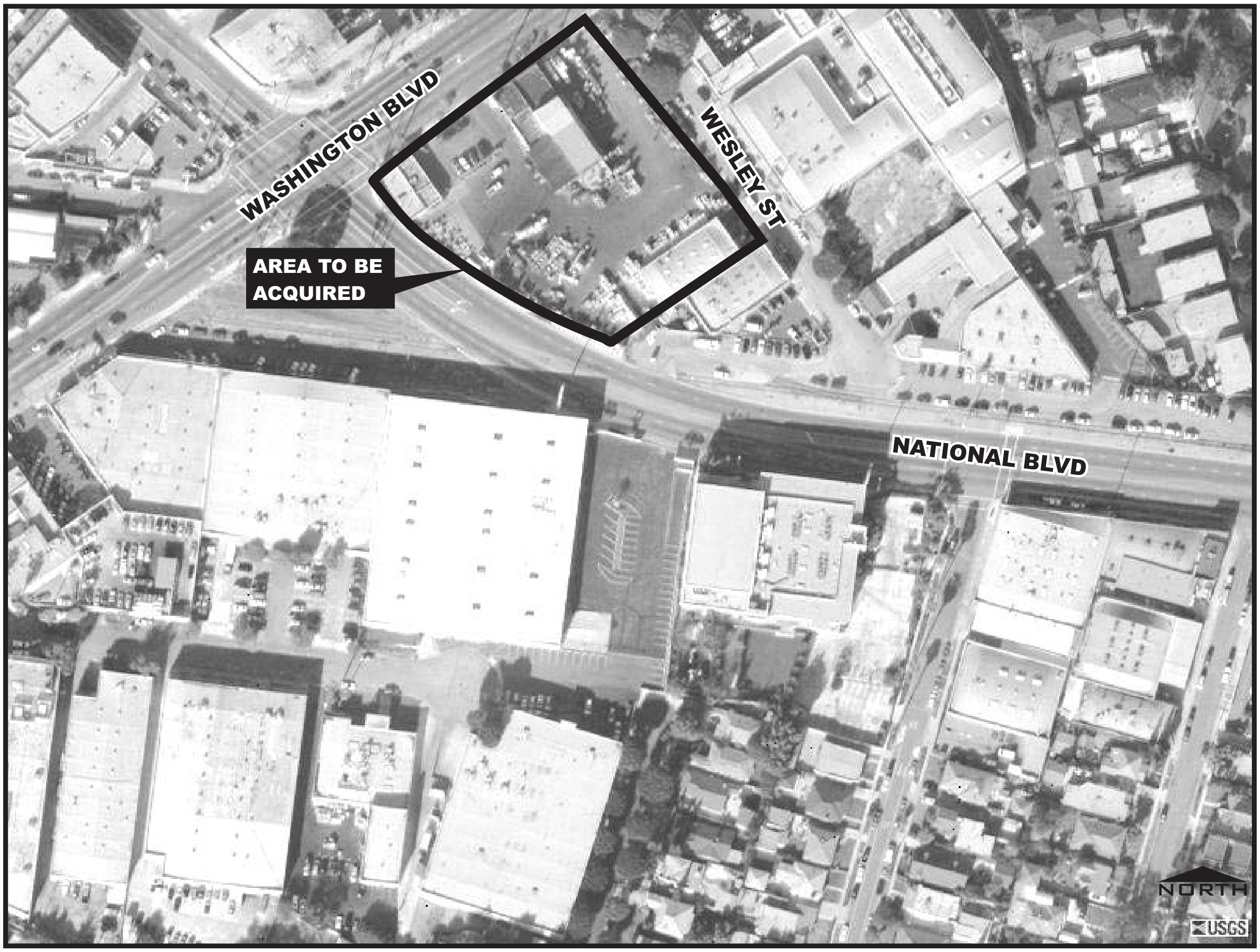
If one of the design options which would not require an at-grade crossing of Washington and National Boulevards is adopted , no widening of National Boulevard would be required.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-1

WASHINGTON BOULEVARD & NATIONAL BOULEVARD



VENICE/ROBERTSON NORTH-OF-ROW STATION OPTION A

The Spartan Supply Company is currently located on this parcel. A full take would acquire four full parcels for a total of 83,048 square feet. The Spartan Supply Company would be displaced and would receive relocation assistance from Metro. This particular taking is required only for the North of ROW Station Option A.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-2A

WASHINGTON & NATIONAL BOULEVARDS - NORTH OF ROW DESIGN OPTION A

VENICE/ROBERTSON NORTH-OF-ROW STATION OPTION B

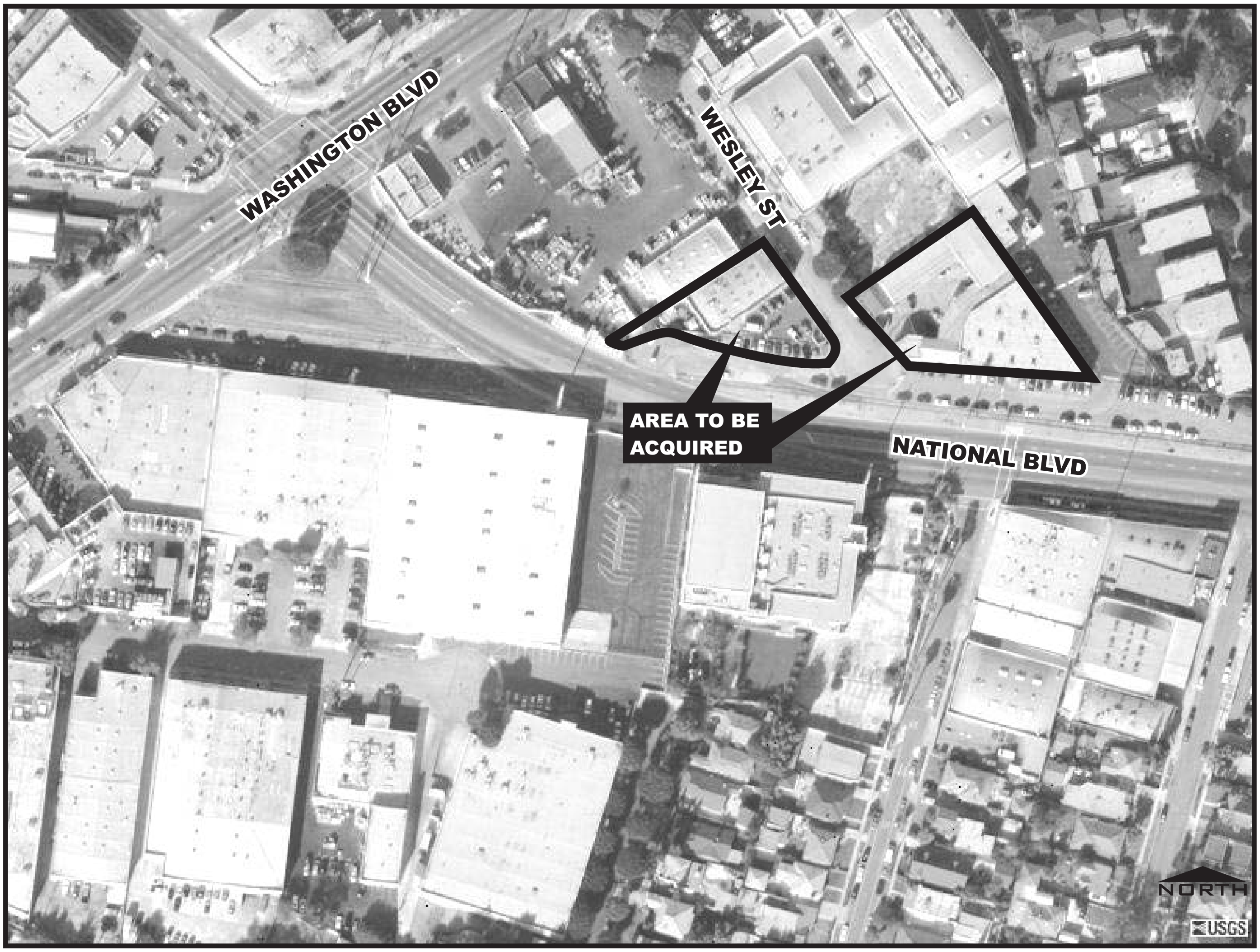
An auto-body shop and a vacant lot on the east side of Wesley Street are currently located on this parcel. This particular taking is only required for the North of ROW Station Option B.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-2B

WASHINGTON & NATIONAL BOULEVARDS - NORTH OF ROW DESIGN OPTION B



VENICE/ROBERTSON NORTH-OF-ROW STATION OPTION C

A recording studio and associated parking lot on the west side of Wesley Street are currently located on these two parcels. A sliver of the parcel on the eastside of Wesley Street would be required resulting in a full take of this parcel. This particular taking is only required for the North of ROW Station Option C.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-2C

WASHINGTON & NATIONAL BOULEVARDS - NORTH OF ROW DESIGN OPTION C

WESLEY STREET CUL-DE-SAC RELOCATION/RECONSTRUCTION
VENICE/ROBERTSON STATION LPA
This would be a partial take of a city property used for parking by the adjacent sound studio. A sound studio is currently located on the adjacent parcel, and the acquisition would remove three of the studio's nine parking spaces. The take would be approximately 1,634 square feet.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-3

WESLEY STREET & NATIONAL BOULEVARD

LA CIENEGA STATION LPA
This a vacant site owned by the City of Los Angeles and used as a site for the East Central Interceptor Sewer Project Air Treatment Facility. Metro would work in cooperation with the City of Los Angeles to develop the site as a parking facility and transit center. If the Southwest Corner Parking Option were selected, this taking would not be required.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-4

3410 S. LA CIENEGA BOULEVARD

JEFFERSON BOULEVARD NORTH WIDENING DESIGN OPTION

In order to construct the LRT grade separation at La Cienega Boulevard, Jefferson Boulevard would need to be widened to maintain an adequate number of traffic lanes. One bridge design option would widen Jefferson Boulevard to the north and acquire one large parcel on the northwest corner of La Cienega and Jefferson Boulevards. This taking would not be necessary if the South Widening Option were selected.

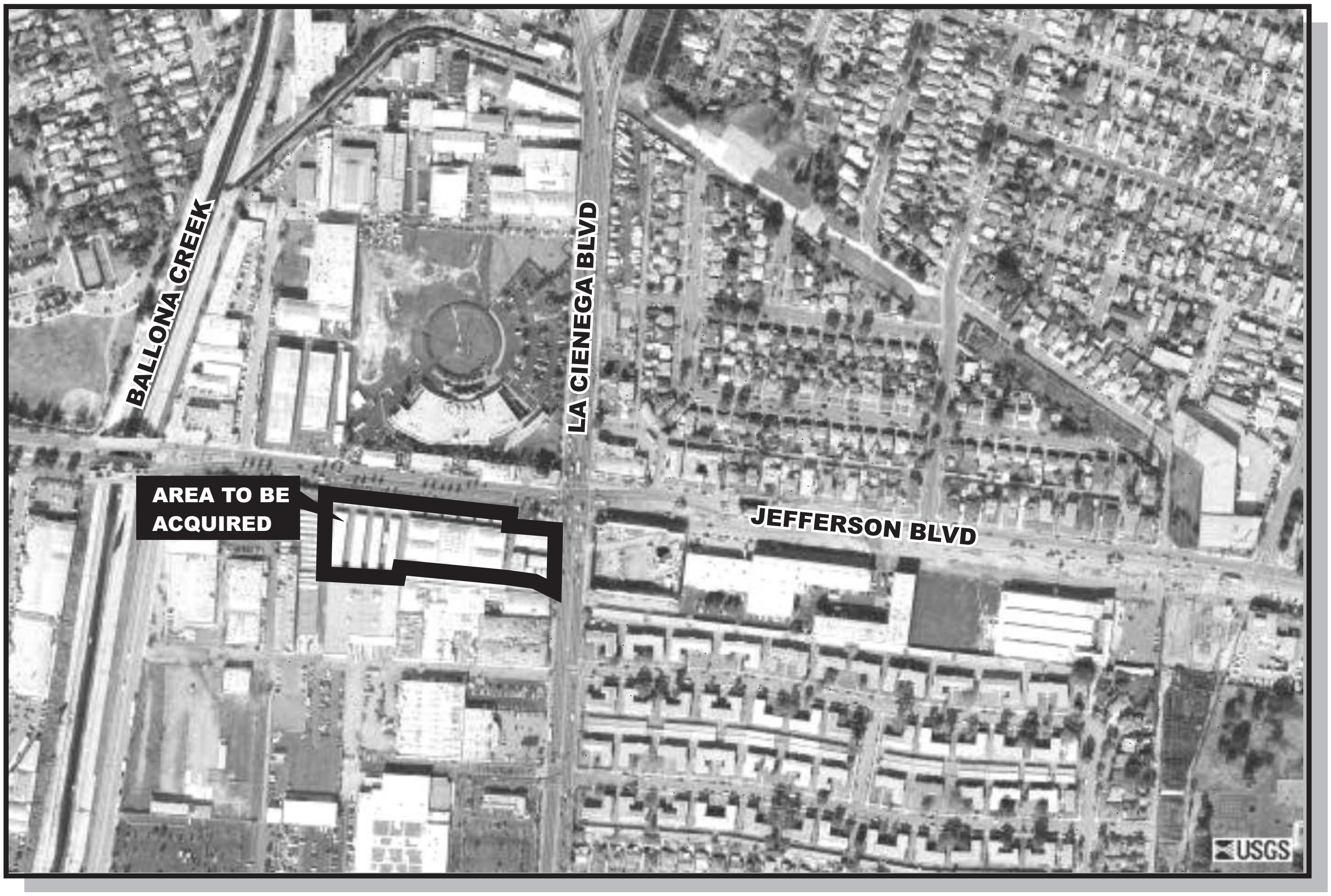
This taking would not be necessary if the South Widening Option were selected.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-5

JEFFERSON & LA CIENEGA BOULEVARDS - NORTH WIDENING OPTION



LA CIENEGA STATION SOUTHWEST PARKING DESIGN OPTION

To construct a parking facility and transit center at the southwest corner of La Cienega and Jefferson Boulevards, Metro would need to acquire a parcel of over 150,000 square feet. The Public Storage facility currently on this site would be displaced. This site would only be acquired if the City of Los Angeles-owned parcel on the southeast corner is not available for the LRT Project. This taking would not be required if the ECIS site on the opposite side of La Cienega Boulevard (see Figure 4.2-4), were selected for the parking facility.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-6

3401 S. LA CIENEGA BOULEVARD

FARMDALE AVENUE

The Northwest Towing and Storage Company is currently located on this parcel. A partial take (3,683 square feet) of this property would be required. The business would not be displaced as a result of the acquisition, however, the company's auto storage/parking area would be reduced in size. This site would be used for TPSS site #6.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-7

3433 FARMDALE AVENUE

9TH AVENUE

This is a commercial property. The parcel to be acquired is used to store trucks for the adjacent business and is approximately 4,543 square feet. The business would not be displaced, but the truck storage area would be reduce in size. This site would be used for TPSS site #5.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-8

2827 EXPOSITION PLACE

3RD AVENUE CUL-DE-SAC/STREET CLOSURE

Four partial takes are required on 3rd Avenue just south of the Exposition ROW. Third Avenue would be closed as a result of the Project, and a portion of the yards from four neighboring residential properties, two on the east side of the street and two on the west side, would be required to construct a cul-de-sac. If the City of Los Angeles and Metro conclude a cul-de-sac is not necessary, then this acquisition would not occur.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-9

3RD AVENUE & EXPOSITION BOULEVARD

ARLINGTON AVENUE

A convenience store is currently located on the east side of Arlington Avenue. The need to widen the street by 1,219 square feet would displace some parking spaces for the store.

A portion of the 2nd Avenue and Exposition Boulevard property would be acquired to house a traction power sub-station. This is a vacant site owned by the City of Los Angeles and utilized as a site for the East Central Interceptor Sewer project. The take would be approximately 2,990 square feet.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-10
3790 2ND AVENUE,
3788 ARLINGTON AVENUE &
3798 ARLINGTON AVENUE

NORMANDIE AVENUE

This is a residential property. 3,953 square feet of the yard and garden area would be required. The home on this property would not be displaced. This site would be used for TPSS site #3.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-11

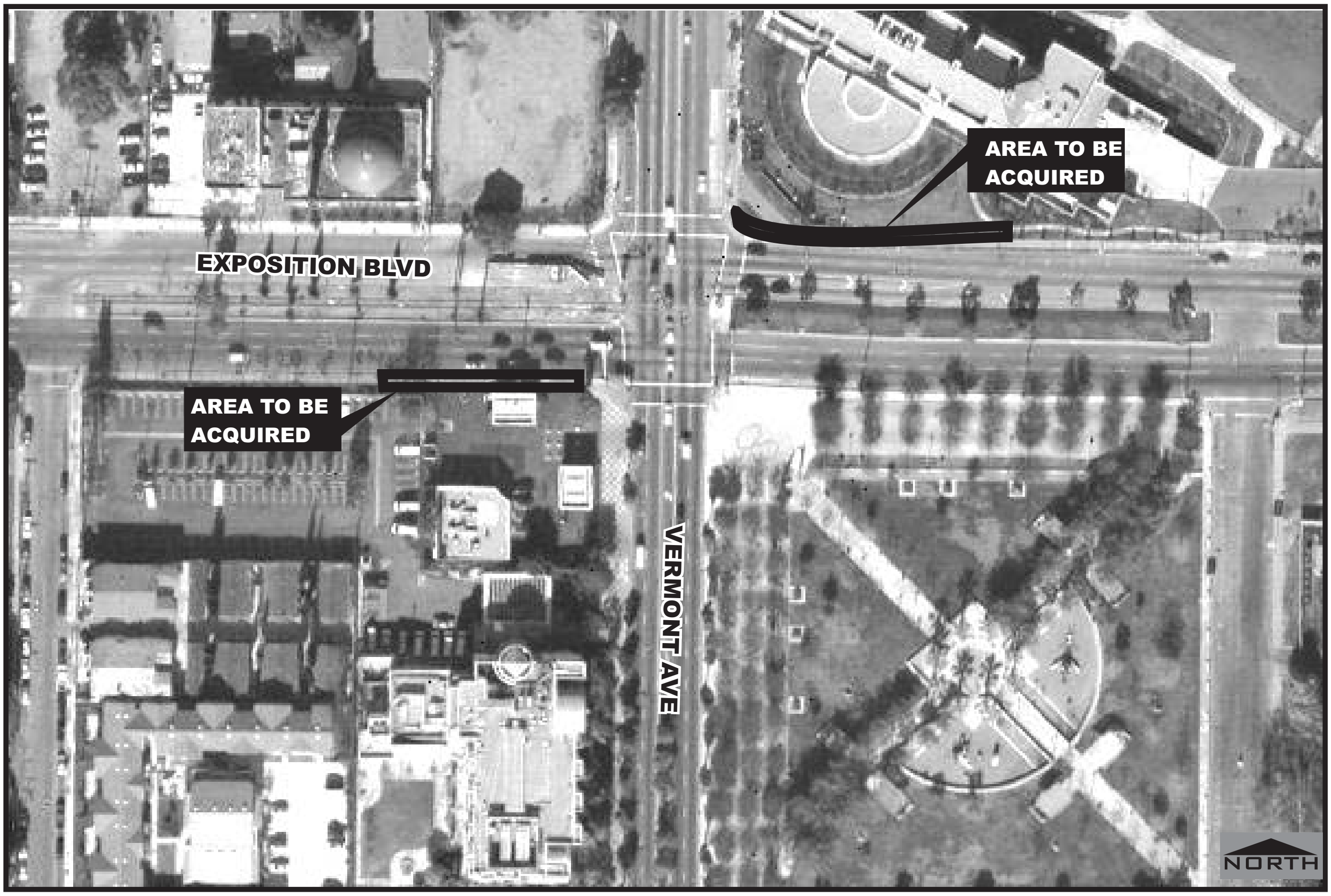
3763 NORMANDIE AVENUE

SOUTH CATALINA STREET

A small portion (100 square feet) of this private property would be acquired to house a signal case. No business or residence would be affected.

FIGURE 4.2-12

1077 W. 38TH STREET



VERMONT AVENUE INTERSECTION WIDENING

An approximate 197-square-foot sliver would be acquired from the gas station on the southwest corner of Vermont Avenue and Exposition Boulevard. From the northeast corner, an approximate 938-square-foot sliver would be acquired from the University of Southern California.

FIGURE 4.2-13
3775 VERMONT AVENUE &
3667 MCCLINTOCK AVENUE
(AT VERMONT AVENUE)

FLOWER & FIGUEROA STREETS

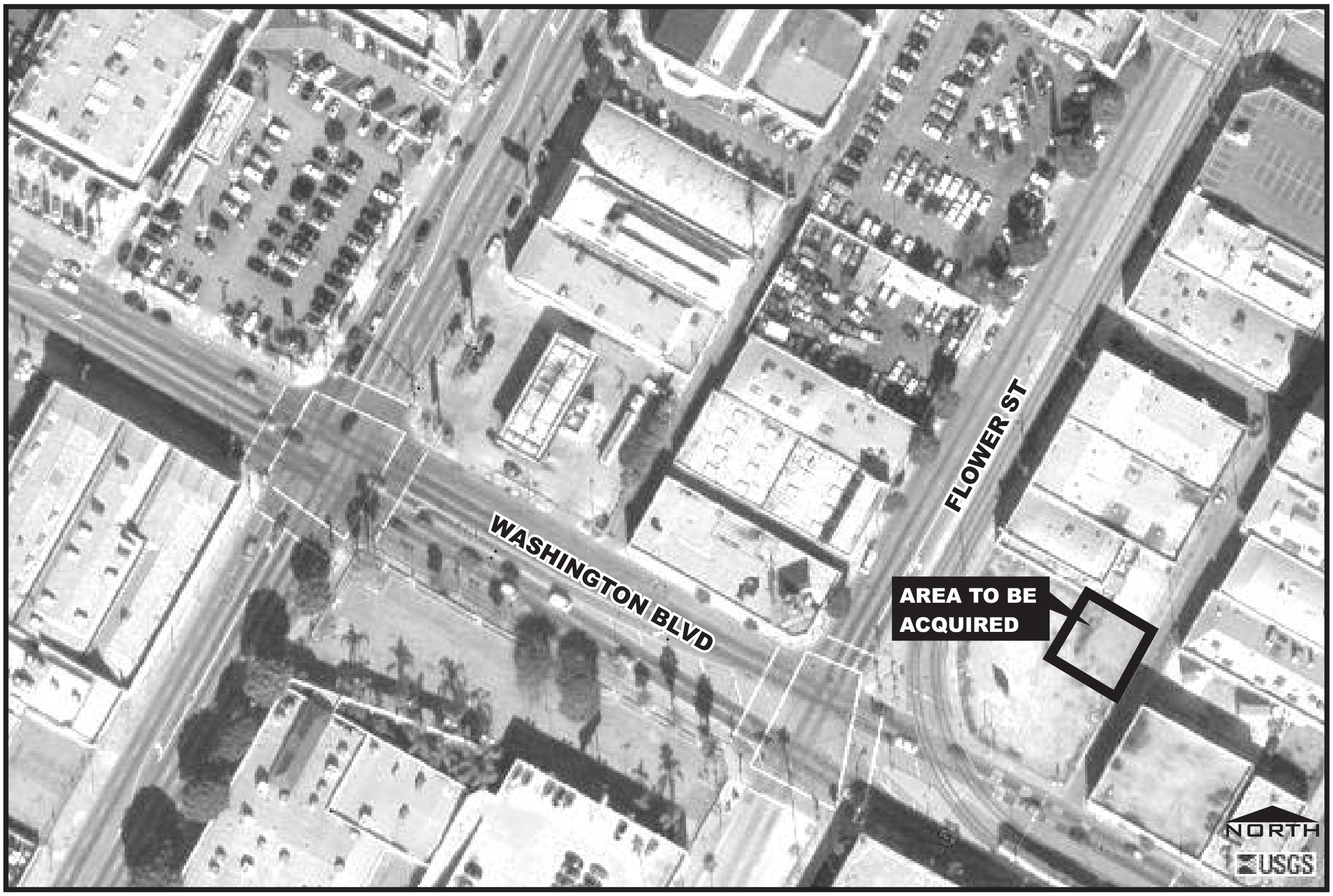
The site just west of the I-110 Freeway would house a TPSS site and a pump station. The triangle-shaped property is owned by USC and is improved with one building. This parcel would be acquired as an alternate TPSS site and a pump station. It is likely that all of the Downtown Los Angeles Connection Options - the LPA, Flower Street, and Hill Street Couplet - would use one of these sites.

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

Metro

FIGURE 4.2-14

FIGUEROA AND FLOWER STREETS



FLOWER STREET DESIGN OPTION & LPA
WASHINGTON BOULEVARD TPSS SITE

This parcel is owned by LA Trade Technical College and does not contain any permanent structures. It is used for building trade classes. A 3,038-square-foot area would be acquired. This site would be used for TPSS site #). This site would be required for the LPA and the Flower Street Design Option; it would not be required for the Hill Street Couplet.

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

FIGURE 4.2-15

419 WASHINGTON BOULEVARD

ALTERNATE SITE FOR ALL DOWNTOWN LOS ANGELES DESIGN OPTIONS

FLOWER AND 18TH STREETS

This parcel serves as an alternate for TPSS site #1. The parcel is approximately 9,120 square feet and is located under the elevated I-10 Freeway. The parcel is owned by the California Department of Transportation. The site would also be required for the Hill Street Couplet Design Option.

FIGURE 4.2-16

FLOWER STREET & 18TH STREET

HILL STREET DESIGN OPTION ACQUISITION

Land use on the parcel and in the surrounding area is characterized by light industrial and commercial development. The parcel is improved with two buildings. One building, on the western boarder of the parcel, along Flower Street, would be acquired and the business would be displaced, if the Hill Street Couplet Design Option is selected.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.2-17

I-10 FREEWAY, FLOWER STREET & VENICE BOULEVARD

The two properties shown in **Table 4.2-3** would also be required for the Project and are not located adjacent to the proposed alignment. One would be used for mid-day storage while the other would be used as a maintenance and storage yard.

TABLE 4.2-3: PROPERTIES TO BE ACQUIRED OUTSIDE THE LPA ALIGNMENT				
Assessor's Parcel Numbers	Nearest Cross Street	Future LRT Use	Approx. Area of Acquisition (acres)	Current Use on Parcel
1. 5129-014-903, 5129-014-804 5118-025-902 5118-025-083	Long Beach Blvd between Washington Blvd. and 24th Street	Midday LRT Vehicle Storage	1.4	Abandoned railroad track.
2. 7140-014-805 7140-014-806 7140-014-809 /a/	Isolated SCE ROW in City of Carson between the L.A. River and 710 Freeway adjacent to Division 11	Maintenance and Storage Yard	15	Southern California Edison Power line and lease for use as horse stable.

/a/ Use of property may be acquired through a long-term ground lease from Southern California Edison.
SOURCE: Real Estate Department, 2004

All of the property acquisition listed in **Tables 4.2-2** and **4.2-3** would be accomplished through partial takes when feasible, rather than full takes, and an effort made to thus limit displacement. For all of the property acquisition, relocation assistance and compensation would be provided by Metro as required by federal and state law. The details of applicable state and federal law regarding relocation assistance and compensation for property acquisition are described below.

Regulatory Framework. The *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended (Uniform Act) and Title 9 CFR, Part 24 as amended February 3, 2005 mandates that certain relocation services and payments by Metro be made available to eligible residents, businesses, and nonprofit organizations displaced as a direct result of projects undertaken by a federal agency or with federal financial assistance. The Uniform Act provides for uniform and equitable treatment for persons displaced from their homes and businesses and establishes uniform and equitable land acquisition policies.

The State of California's revised Government Code Section 7260, et seq. which brings the *California Relocation Act* (California Act) into conformity with the Uniform Act., applies 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 acquisition by agreement to avoid litigation and relieve congestion in the courts, and (3) promote confidence in the public land acquisitions. Owners of private property have federal and state constitutional guarantees that their property will not be taken or damaged for public use unless they first receive just compensation. Just compensation is measured by the "fair market value" of the property taken, where "fair market value" is considered to be the:

> "highest price on the date of valuation that would be agreed to by a seller, being willing to sell, but under no particular or urgent necessity for so doing, nor obliged to sell; and a buyer, being ready, willing and able to buy but under no particular necessity for so doing, each dealing with the other with the full knowledge of all the uses and purposed for which the property is reasonably adaptable and available." (Code of Civil Procedure Section 1263.320a)

Where acquisition and relocation are unavoidable, Metro would follow the provisions of the Uniform Act, as amended, and implemented pursuant to the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the Department of Transportation, dated February 3, 2005. Metro would apply acquisition and relocation policies to assure compliance with the Uniform Act and Amendments. All real property acquired by Metro would be appraised to determine its fair market value. Just compensation, which shall not be less than the approved appraisal made to each property owner, would be offered by Metro. Each homeowner, renter, business, or nonprofit organization displaced as a result of the project would be given advanced written notice and would be informed of the eligibility requirements for relocation assistance and payments.

Downtown Los Angeles Connection Options. Acquisition required for the design options in this portion of the route are shown in **Table 4.2-2**. Acquisition of property required for the Hill Street Couplet Design Option would displace one business. Relocation assistance provided by Metro would be the same as that described for the LPA (**Figure 4.2-16**).

As with the LPA, the Flower Street alignment would require the acquisition of property from Los Angeles Trade Technical College campus for a TPSS. (**Figure 4.2-15**) An alternative site proposed for this TPSS is owned by the California Department of Transportation (**Figure 4.2-14**).

La Cienega Station Parking Options. As shown above in **Table 4.2-2**, the Southwest Parking option would require the acquisition of an approximately 153,768 square-foot-parcel on the southwest corner of La Cienega and Jefferson Boulevard. Currently, there is a Public Storage facility on this site. This business would be displaced with implementation of this parking option. Relocation assistance provided by Metro would be the same as described for the LPA (**Figure 4.2-6**).

Jefferson Boulevard Design Options. The South Widening option would not require any acquisition. The bridge would be extended onto Metro-owned ROW and a right-turn lane for eastbound Jefferson Boulevard would be constructed underneath the bridge. The North Widening option, however, would require the acquisition of a 32,746 square-foot parcel. Three businesses would be displaced as a result of the North Widening option: Jefferson Recycling Facility, Rick & Son Automotive Service, and Batz Auto Upholstery (**Figure 4.2-5**).

Venice/Robertson Design Options. The ROW and Aerial Station options would not require the acquisition of property. The North of ROW Station Option A would require partial takes of six parcels where two businesses are currently located. Option B would require the acquisition of three parcels where one business is currently located. Option C would require the take of three full parcels, displacing two business. Relocation assistance provided by Metro would be the same as described for the LPA (**Figure 4.2-2**).

Phased Implementation. Phasing the implementation of the Mid-City/Exposition LRT operations would require the same properties to be acquired for the LPA. As the Project would occur in phased segments, the acquisition process would be spread but over a longer period of time. The Vermont Segment would affect the takes shown in **Table 4.2-2** for the Downtown Los Angeles Connection. The Crenshaw Segment, would affect all the takes shown for the Mid-Corridor Subarea through 9th Avenue. The La Cienega Segment would require the takes shown for the entire Mid-Corridor Subarea. Relocation assistance provided by Metro would be the same as described for the LPA.

4.2.2.2 ROW Leases

No Action. The No Action Alternative would not terminate any ROW leases.

LPA. There are a total of 38 month to month leases and 51 annual or longer leases currently using Exposition ROW land. These leases will be terminated to accommodate the route alignment and track way, stations, parking, and traction powered substations. The majority of the ROW leases allow for Metro to terminate the lease with 90 days notice, or less.

Entities with longer term leases displaced by the proposed Project may be entitled to relocation assistance under the Uniform Act or California Act due to the termination of their lease agreements with Metro. However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with Metro contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project.

Downtown Los Angeles Connection Options. There are a total of 11 leases in the ROW between Hill and Figueroa Streets. The Hill Street Couplet Design Option would require the termination of all of them. No ROW leases would be affected by the Flower Street Eastside Design Option, as it would be below ground between Flower and Figueroa Streets. As described for the LPA, entities with longer term leases displaced by the proposed Project may be entitled to relocation assistance under the Uniform Act or California Act due to the termination of their lease agreements with . However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with Metro contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project.

La Cienega Station Parking Options. The parking options would not affect any ROW leases.

Jefferson Boulevard Design Options. The selection of the design option would not have bearing on the number of leases terminated in this area. All of the ROW leases would be terminated under all of the design options. As described for the LPA, entities with longer term leases displaced by the proposed Project may be entitled to relocation assistance under the Uniform Act or California Act due to the termination of their lease agreements with . However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with Metro contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project.

Venice/Robertson Design Options. All of the design options would require the termination of ROW leases. As described for the LPA, entities with longer term leases displaced by the proposed Project may be entitled to relocation assistance under the Uniform Act or California Act due to the termination of their lease agreements with Metro. However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with Metro contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project.

Phased Implementation. Phased implementation of the Project would result in termination of ROW leases just as described for the LPA. However, with implementation of the Vermont Segment, tenants of ROW property between Vermont Avenue and La Cienega Boulevard could maintain their leases for a longer period of time than under the LPA. No leases west of La Cienega Boulevard would be affected by Phased Implementation.

4.2.2.3 ROW Licenses

No Action. The No Action Alternative would not result in any displacement or relocation impacts.

LPA. has granted licenses within the Exposition ROW to allow landscaping and beautification under the provisions of the ROW protection guidelines. It is expected that these licenses would be terminated under the terms of the license.

Downtown Los Angeles Connection Options. No ROW licenses exist along any of the three proposed design options in the Downtown Los Angeles Connection portion of the route. No impact would occur.

La Cienega Station Parking Options. No ROW licenses would be affected by the parking options. No impact would occur.

Jefferson Boulevard Design Options. No ROW licenses exist in the vicinity of the proposed Jefferson Boulevard Design Options. No impact would occur.

Venice/Robertson Design Options. No ROW licenses would be affected by the Venice/Robertson Design Options. No impact would occur.

Phased Implementation. Construction and operation of the Downtown Los Angeles Connection portion of the LRT route would not affect any ROW licenses. As with the LPA, upon construction and operation of the Mid-Corridor portion, any licenses granted within the Exposition ROW would be terminated under the terms of the license.

4.2.3 MITIGATION MEASURES

LADR1 Metro shall provide relocation assistance and compensation per the Uniform Relocation Assistance and Real Property Acquisition Policies Act and the California Relocation Act to those who are displaced or whose property is acquired as a result of the Mid-City/Exposition LRT Project.

LADR2 Metro shall coordinate with the City of Los Angeles during final design of the Mid-City/Exposition LRT Project to assess the feasibility of closing 3rd Avenue without creating a cul-de-sac, thereby eliminating the need to acquire portions of private property.

4.2.4 CEQA DETERMINATION

According to CEQA, a significant land acquisition and displacement impact may occur when:

- Real property is acquired and business, residential owners or tenants are required to relocate;
- Long-term leases are terminated prior to their original expiration date for the purpose of constructing a transit service improvement and supporting infrastructure (the expiration of month-to-month leases or leases where relocation waivers have been executed would not be considered significant); or
- A business operation is disrupted due to the loss of needed parking, access or storage areas.

LPA. "4.2.1 Impact Assessment" provides a detailed description of the property acquisition required for the proposed Project and associated design options. Refer to **Tables 4.2-2** and **4.2-3** and **Figures 4.2-1** through **4.2-17** for full explanations and representations of acquisition. The partial and full acquisition of property and related displacement would be considered a significant impact.

Furthermore, 38 month to month leases and 51 annual or longer-term leases currently using Exposition ROW land would have to be terminated. As stated above in "4.2.1 Impact Assessment," certain lease agreements with Metro contain a provision wherein the tenant acknowledges that they are not entitled to relocation benefits if the lease is terminated for a public transit project. However, in the case of a long term lease where no provision exists and the lease is terminated before its original expiration date, then a significant impact would result.

Downtown Connection Options. Table 4.2-2 describes the acquisition required for design options. The acquisition of property for the Hill Street Couplet Design Option would displace one business. Partial property acquisition and business displacement would represent a significant impact.

There are a total of 11 leases in the ROW between Hill and Figueroa Streets. The Hill Street Couplet Design Option would require the termination of all of them. No ROW leases would be affected by the Flower Street Design Option, as it would be below ground between Flower and Figueroa Streets. As stated above in "4.2.1 Impact Assessment," certain lease agreements with Metro contain a provision wherein the tenant acknowledges that they are not entitled to relocation benefits if the lease is terminated for a public transit project. However, in the case of a long term lease where no provision exists and the lease is terminated before its original expiration date, then a significant impact would result.

La Cienega Station Parking Options. The Southwest Parking option would require the acquisition of an approximately 153,768-square-foot-parcel on the southwest corner of La Cienega and Jefferson Boulevard. Currently, there is a Public Storage facility on this site. This business would be displaced with implementation of this parking option which would result in a significant impact **Figure 4.2-6** shown above). Relocation assistance provided by Metro would be the same as described for the LPA. The La Cienega parking options would not affect any ROW leases or licenses.

Jefferson Boulevard Design Options. The South Widening option would not require any acquisition. The bridge would be extended onto Metro-owned ROW and a right-turn lane for eastbound Jefferson Boulevard would be constructed underneath the bridge. The North Widening option, however, would require the acquisition of a 32,746 square-foot parcel. Three businesses would be displaced as a result of the North Widening option: Jefferson Recycling Facility, Rick & Son Automotive Service, and Batz Auto Upholstery (**Figure 4.2-5** shown above). A significant impact would result due to this displacement. Relocation assistance provided by Metro would be the same as described for the LPA.

All of the ROW leases in the area of the Jefferson Boulevard Design Options would be terminated. As described for the LPA, entities with longer term leases displaced by the proposed Project may be entitled to relocation assistance under the Uniform Act or California Act due to the termination of their lease agreements with Metro. However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with Metro contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project. No significant impact would occur under this circumstance. However, in the case of a long term lease where no provision exists and the lease is terminated before its original expiration date, then a significant impact would result.

The design options would not affect any ROW licenses.

Venice/Robertson Design Options. The ROW and Aerial Station options would not require the acquisition of property. The North of ROW Station Option A would require partial takes of six parcels and result in the displacement of the Spartan Supply Company, a roofing and lumber company. Options B and C would require full takes, and each option would displace a business. Relocation assistance provided by Metro would be the same as described for the LPA (**Figure 4.2-2** shown above).

All of the design options would require the termination of ROW leases. As described for the LPA, entities with longer term leases displaced by the proposed Project may be entitled to relocation assistance under the Uniform Act or California Act due to the termination of their lease agreements with Metro.

However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with Metro contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project. No significant impact would occur under this circumstance. However, in the case of a long term lease where no provision exists and the lease is terminated before its original expiration date, then a significant impact would result.

The station design options would not affect any ROW licenses.

Phased Implementation. Phasing the implementation of the Mid-City/Exposition LRT operations would require the same properties to be acquired as the LPA but over a longer period of time. Significant impacts related to property acquisition would result.

Significant Impacts Remaining after Mitigation. Application by Metro of Federal and State acquisition and relocation programs, policies, and procedures, as stipulated in mitigation measure **LADR1** would result in relocation impacts deemed to be less-than-significant under CEQA after mitigation. Measure **LADR2** would ensure that acquisition on 3rd Avenue is avoided if at all possible, and impacts related to this area would be less than significant.

4.3 EQUITY AND ENVIRONMENTAL JUSTICE CONSIDERATIONS

On February 4, 1994, an "Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was issued. This order is designed to focus Federal attention on environmental and human health conditions in minority communities and low-income communities and states 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." This Order is intended to guard against discrimination in Federal Programs substantially affecting human health and the environment and to provide for access to information and public participation relating to such matters.

In response to the Executive Order, the US Department of Transportation (USDOT) issued an *Order to Address Environmental Justice in Minority Populations and Low-Income Populations*. This order, issued in April 1995, sets guidelines to ensure that all federally funded transportation-related programs, policies, or activities having the potential to adversely affect human health or the environment involve a planning and programming process that explicitly considers the effects on minority populations and low-income populations.

4.3.1 AFFECTED ENVIRONMENT

4.3.1.1 Los Angeles County

As of the 2000 U.S. Census, 9,519,338 persons live in Los Angeles County. Approximately 69 percent of the Los Angeles County population is characterized as minority. The largest minority population is Hispanic, making up approximately 45 percent of the total population. According to the 2000 U.S. Census, less than 18 percent of Los Angeles County is low-income. Proposed Project impacts on adjacent sites was determined based on these minority and low-income population levels.

During the environmental analysis of each topic listed in Chapter 4.0 Affected Environment and Environmental Consequences, the analysts considered whether there would be a disproportionate impact in any of the sensitive census tracts. The following sections discuss the findings.

4.3.1.2 Project Study Area

Computations for **Table 4.3-1** are derived from the 2000 U.S. Census, which uses the Health and Human Services figures to determine poverty levels. In the 2000 U.S. Census, 96.6 percent of the corridor's population (213,556 persons) were evaluated for poverty status. As shown in the table below, approximately 91 percent of the Mid-City/Exposition LRT Project's population belongs to a minority group and 32 percent are living below the poverty threshold. Both of these figures are well above the County-level impact thresholds. Therefore, the Project area, as a whole, would be sensitive to environmental justice issues.

TABLE 4.3-1: MID-CITY/EXPOSITION CORRIDOR DEMOGRAPHIC DATA		
Total Persons		220,982
Total Households		75,598
Race	% of Total Pop.	Persons
White	9.1%	20,191
Black or African American	29.1%	64,412
American Indian or Native Alaskan	0.2%	527
Asian	6.6%	14,594
Native Hawaiian and Other Pacific Islander	0.1%	325
Some Other Race	0.4%	776
Two or more Races	1.9%	4,217
Hispanic or Latino	52.5%	115,940
Total Minority Population	90.9%	200,791
Annual Income	% of Total Pop.	Total
Less than $10,000	24.8%	18,760
Between $10,000 and $14,999	9.5%	7,166
Between $15,000 and $19,999	8.1%	6,151
Between $20,000 and $24,999	7.9%	5,967
Between $25,000 and $29,999	7.6%	5,771
Between $30,000 and $39,999	11.3%	8,561
Between $40,000 and $59,999	13.5%	10,231
Between $60,000 and $99,999	11.6%	8,772
Over $100,000	4.5%	3,382
Median Income		$25,245
Poverty Levels	% of Total Pop.	Total
Population below Poverty Threshold	32.3%	68,890
Population above Poverty Threshold	67.7%	144,666
SOURCE: 2000 U.S. Census.		

4.3.1.3 Station Areas

The census tracts within a half-mile radius around the station areas were evaluated for socioeconomics impacts. The results are summarized in **Table 4.3-2**.

TABLE 4.3-2: STATION AREA DEMOGRAPHICS						
Station Area	Census Tracts Affected	% Minority	Largest Minority Group (%of Total Population)	Median Income	% of Population Below Poverty Threshold	Sensitive to Environmental Justice Concerns
7th/Flower Street	2077.10 and 2092	93.8 %	Hispanic/Latinos (72.3%)	$13,194	45.3%	Yes
Pico Blvd/ Flower Street	2077.10, 2079, 2240.10, and 2242	91.8%	Hispanic /Latinos (68.0%)	$18,258	45.3%	Yes
Washington Blvd/ Grand Ave	2240.10, 2240.20, and 2242	96.8%	Hispanic /Latinos (89.3%)	$19,060	38.6%	Yes
Hill Street /21st Street	2240.10, 2240.20, 2242, and 2244.20	96.2%	Hispanic /Latinos (88.4%)	$19,233	36.3%	Yes
USC/ Exposition Park	2227, 2246, 2247, 2311, and 2312.20	77.6%	Hispanic /Latinos (53.3%)	$15,305	47.0%	Yes
Vermont Ave.	2226, 2227, and 2312.20	96.6%	Hispanic /Latinos (59.5%)	$20,729	41.9%	Yes
Western Ave	2220, 2225, 2313, and 2314	97.9%	Hispanic /Latinos (53.2%)	$27,899	29.4%	Yes
Crenshaw Blvd	2193, 2195, 2200, and 2432	98.2%	Black / African American (64.2%)	$30,485	17.7%	Yes
La Brea	2197, 2198, and 2201	97.4%	Hispanic /Latinos (52.9%)	$30,730	22.8%	Yes
La Cienega	2199, 2201, and 7024	84.2%	Hispanic /Latinos (47.2%)	$34,981	23.3%	Yes
Venice Blvd/ Robertson Blvd	2697, 2698, 2701, 2702, and 7024	67.9%	Hispanic /Latinos (34.8%)	$39,002	17.0%	No
SOURCE: Terry A Hayes Associates LLC and 2000 U.S. Census						

As **Table 4.3-2** above illustrates, the proposed stations would be located primarily in communities with large minority and low-income populations. The station area census tracts sensitive to environmental justice concerns are illustrated in **Figure 4.3-1**.

SOURCE: Terry A. Hayes Associates LLC, 2004

LEGEND:

Census Tracts

NORTH

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.3-1

STATION AREA CENSUS TRACTS SENSITIVE TO ENVIRONMENTAL JUSTICE CONCERNS

4.3.2 IMPACT ASSESSMENT

Methodology

The methodology in this section incorporates the socioeconomic and environmental justice analysis guidelines set by the USDOT and the United States Environmental Protection Agency's (EPA's) *Final Guidance For Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*. Data used in this section was gathered from the 2000 U.S. Census.

For this analysis all census tracts within a half-mile of the Exposition Corridor were analyzed for race and income composition. A "high concentration" of minority or low-income residents was defined as an area that contains a higher percentage of minority or low-income populations than that found in Los Angeles County. The United States Department of Transportation uses the following definition given in Title IV of the Civil Rights Act to define "minority":

Black	a person having origins in any of the black racial groups of Africa
Hispanic	a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
Asian	a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
American Indian	a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition
Native Hawaiian or other Pacific Islander	a person having origins in any of the original peoples of Hawaii, Guam Samoa, or other Pacific Islands

The USDOT uses the following definition given in Title IV of the Civil Rights Act to define "low-income":

Low-income	a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines.

The 2003 HHS poverty guidelines are shown in **Table 4.3-3** for Los Angeles County.

TABLE 4.3-3: 2003 HHS POVERTY GUIDELINES FOR LOS ANGELES COUNTY	
Size of Family Unit	Poverty Guidelines
1	$8,980
2	$12,120
3	$15,260
4	$18,400
5	$21,540
6	$24,680
7	$27,820
8	$30,960
For each additional person	$3,140
SOURCE: http://aspe.hhs.gov/poverty/03poverty.htm, December 2, 2003.	

4.3.2.1 Effects on Local Businesses

No Action. The No Action Alternative would not result in any impacts on local businesses.

LPA. Impacts to local businesses can either be direct or indirect. Direct impacts denote the acquisition or displacement of a business. Indirect impacts include decreased patronage due to a loss of parking or customers, increased competition due to proximity to a similar business, and decreased patronage due to conflicting land uses.

Construction and implementation of the Mid-City/Exposition LRT would require the full or partial acquisition of 18 parcels along the alignment and two outside of the LPA alignment. Of the two outside of the LPA alignment, one of the takes would displace two businesses, a horse stable and a Southern California Edison contractor. Per Federal and State law, Metro has established relocation assistance policies to assist displaced business owners and compensate property owners. Where acquisition and relocation are unavoidable, Metro would follow the provisions of the Uniform Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the Department of Transportation, dated March 2, 1989. Owners of private property have federal and state constitutional guarantees that their property will not be taken or damaged for public use unless they first receive just compensation. For more details on the state and federal regulation of property acquisition and relocation assistance, see Section 4.2 Land Acquisition, Displacement and Relocation.

Indirect impacts would result due to a loss of on-street parking immediately adjacent to businesses along Hill Street. The retail businesses concentrated around the intersection of Hill Street and Adams Boulevard serve the local neighborhood and patrons coming from the freeway. The loss of parking on the northern part of Hill Street would result in an impediment to convenient patron access the retail shops and represents an adverse impact to these businesses. As stated in Section 3.3 Parking, there would be no feasible locations for replacement parking. Parking impacts would not occur in the Mid-Corridor or West End segments where ample street parking would be available on surrounding streets or mitigation would stipulate the construction of replacement parking.

The proposed Project would not cause other indirect impacts, such as increased competition due to proximity to a similar business or decreased business patronage due to conflicting land uses. Increased development would be anticipated along the corridor around station areas. Any new development proposed would be subject to environmental review. All socioeconomic impacts that are identified would be mitigated on a project by project basis.

Downtown Los Angeles Connection Options. The Hill Street Couplet Design Option would have the same impact on local businesses due to loss of parking as the LPA. The Flower Street Design Option would not displace any businesses. As the alignment would run along Flower Street, none of the existing parking on Hill Street would be removed, and no impact to the accessibility of Hill Street businesses would occur. While there would be a loss of on-street parking along Flower Street, the lost spaces primarily serve Los Angeles Trade Technical College which has off-street parking available. This option would require full take of one parcel that would consequently displace one business. Per Federal and State law, Metro has established relocation assistance policies to assist displaced business owners and compensate property owners.

La Cienega Station Parking Options. The Southwest Corner option would displace one local business. Per Federal and State law, Metro has established relocation assistance policies to assist displaced business owners and compensate property owners. Impacts related to the acquisition of property is discussed in greater detail in Section 4.2 Land Acquisition, Displacement, and Relocation. The No Parking option would not displace any local businesses. Neither option would affect parking for local businesses.

Jefferson Boulevard Design Options. Widening Jefferson Boulevard to the north would require the acquisition of one large parcel where three businesses are located. Per Federal and State law, Metro has established relocation assistance policies to assist displaced business owners and compensate property owners. Impacts related to the acquisition of property is discussed in greater detail in Section 4.2 Land Acquisition, Displacement, and Relocation. No parking for local businesses would be affected.

Metro-owned ROW would be used to accommodate widening Jefferson Boulevard to the south. No local businesses or parking would be affected.

Venice/Robertson Design Options. The Aerial Station Option and the North of ROW Station Options would require the acquisition of local businesses. Per Federal and State law, Metro has established relocation assistance policies to assist displaced business owners and compensate property owners. Impacts related to the acquisition of property is discussed in greater detail in Section 4.2 Land Acquisition, Displacement, and Relocation.

The ROW Station Option would be located in the Metro-owned ROW and would not acquire any local businesses. Currently there is parking in the ROW which would be removed as allowed in Metro leases with local businesses.

Phased Implementation. As with the LPA, implementation of the Vermont Segment would require the acquisition of one business. The Vermont Segment would have the same impact on local business due to loss of parking as the LPA. Implementation of the Crenshaw Segment and the La Cienega Segment would also require the acquisition of local businesses. Impacts related to the acquisition of property is discussed in greater detail in Section 4.2 Land Acquisition, Displacement, and Relocation. Per Federal and State law, Metro has established relocation assistance policies to assist displaced business owners and compensate property owners.

4.3.2.2 Effects on Minority and Low-Income Populations

No Action. The No Action Alternative would not result in any impacts on minority or low-income populations.

LPA. The proposed Project would be an improvement to the existing public transportation system serving the area. As detailed in Section 1.0 Purpose and Need, residents in the Study Area are characterized by higher than normal transit dependency and lower than normal automobile ownership.

Therefore, extension of a light rail system to this area would result in *beneficial* impacts to the Study Area population that would be comprised of a primarily minority and low-income demographic. Low-income residents would benefit from increased access to mass transit and, subsequently, increased access to employment opportunities and regional centers. Nuisance impacts associated with mass-transit (noise, vibration, aesthetics, etc.) are addressed in the associated sections throughout this Final EIS/EIR along with the applicable mitigation measures. The introduction of a light rail transit system would result in a beneficial overall effect to transportation for the communities affected. There is no evidence of a disproportionate adverse impact to local minority or low-income populations under any of the other environmental categories reviewed in this document.

The improvements to the Exposition ROW could make the area more desirable and cause an increase in population in the area. However, the growth would be expected to be within the population forecasts for the corridor and for Los Angeles as a whole. Population growth in the area would be expected to be limited by housing availability and market factors that would not directly related to the proposed transit improvements.

Overall, the proposed Project is projected to have positive socioeconomic impacts within the Exposition Corridor. Community groups, for example, have indicated the expectation that the proposed Project will provide access to the Crenshaw Corridor and thereby assist existing community efforts to revitalize the Crenshaw Corridor. The Project corridor would provide improved access to other regional centers including Downtown Los Angeles and Culver City. The anticipated benefits of access to other regional centers has, in community meetings, seemed to be balanced by the anticipation of more shoppers coming to the corridor from elsewhere. This would be a benefit to residents of the corridor.

Downtown Los Angeles Connection Options. The design options in Downtown Los Angeles represent different route alignments for one portion of the guideway. The choice of one design option over another would not affect the overall beneficial impact the proposed Project would have on environmental justice concerns. Regardless of the chosen design option, the proposed Project would provide low income and minority population quiet, clean public transportation between geographically distinct areas of the city.

La Cienega Station Parking Options. The parking options would not have any effects on low-income or minority populations. The parking option would affect a discrete location along the entire Mid-City/Exposition LRT alignment and would not result in disproportionate impacts to low income or minority populations.

Jefferson Boulevard Design Options. Similar to the Downtown Los Angeles Connection Options discussion above, the choice of Jefferson Boulevard Design Options would not affect the overall beneficial impact of the proposed Project. Regardless of the chosen design option, the proposed Project would provide low income and minority population quiet, clean public transportation between geographically distinct areas of the city. The bridge design would affect a discrete location along the entire Mid-City/Exposition LRT alignment and would not result in disproportionate impacts to low income or minority populations.

Venice/Robertson Design Options. Regardless of the chosen design option, the proposed Project would provide low-income and minority population with quiet, clean public transportation between geographically distinct areas of the city. The station option would not influence this overall beneficial impact of the Project.

Phased Implementation. Low-income residents would benefit from increased access to mass transit and, subsequently, increased access to employment opportunities and regional centers. Increased public transit could potentially revitalize certain areas within the corridor.

4.3.3 MITIGATION MEASURES

Implementation of the LPA would result in the loss of on-street parking for retail businesses concentrated around Hill Street and Adams Boulevard. However, no feasible mitigation is available to reduce this parking impact.

4.3.4 CEQA DETERMINATION

CEQA does not have thresholds of significance for issues related to socioeconomics and environmental justice.

4.4 VISUAL QUALITY

The purpose of this section is to evaluate and describe the impacts of the proposed Mid-City/Exposition LRT Project on the visual quality of the Exposition Corridor.

4.4.1 AFFECTED ENVIRONMENT

The visual character of the proposed Mid-City/Exposition LRT Project route alignment is most appropriately assessed according to three generalized geographic segments. These segments, as identified in Chapter 2.0 Alternatives Considered, are the Downtown Los Angeles Connection, the Mid-Corridor, and the West End. The following text describes the existing visual quality of the proposed route alignment according to the three segments.

4.4.1.1 Visual Context

Downtown Los Angeles Connection. Although the route begins at the 7th Street/Metro Center and Flower Street Station this portion of the route would share tracks with the existing Metro Blue Line until it reaches the Washington Boulevard/Hill Street intersection. New construction would begin at this location. With the exception of the buildings fronting Washington Boulevard at Hill Street, which are eight stories in height, most of the buildings along Hill Street are one and two stories and are industrial in character.

This portion of the route starts at the 7th Street/Metro Center Station located at 7th and Flower Streets. It is proposed to run south along Flower Street, jog east at Washington Boulevard, and then run down Hill Street until reaching the Metro-owned Exposition ROW, where it would turn westward. From the 7th Street/Metro Center Station to the Washington Boulevard/Hill Street intersection, the route would utilize existing Blue Line tracks. Upon turning onto Hill Street, the new route would commence. The existing streets lack notable landscaping, and there are few distinctive visual features (**Figure 4.4-1**). The historic streetlights along Hill Street are a notable exception to the lack of visual features in this area, as well as the front entrance to Los Angeles Trade Technical College facing Washington Boulevard which includes an arcade.

The Exposition ROW from Hill Street to the Harbor Freeway (I-110) also passes through an industrial area. Storage and garage-type buildings are located in this area ranging from four to ten stories in height. The Exposition ROW itself has been leased as surface parking areas, and a portion of the ROW at Grand Avenue was in use as a construction portal for a Los Angeles City sewer project (**Figure 4.4-2**).

On the west side of the Harbor Freeway, the industrial character of the Exposition ROW changes to an existing landscaped median in Exposition Boulevard. This median features grass cover, berms and medium size trees. The median creates a strong green space between the north and south roadways of Exposition Boulevard, while providing a visual link between the large landscaped open space in Exposition Park and museum buildings on the south side of the ROW and the landscape features of the USC campus and academic buildings on the north side of the ROW (**Figure 4.4-3**).[1]

[1]Many portions of the landscaped median have been temporarily removed by a City of Los Angeles sewer construction project.

Hill Street has a distinct commercial/industrial character.

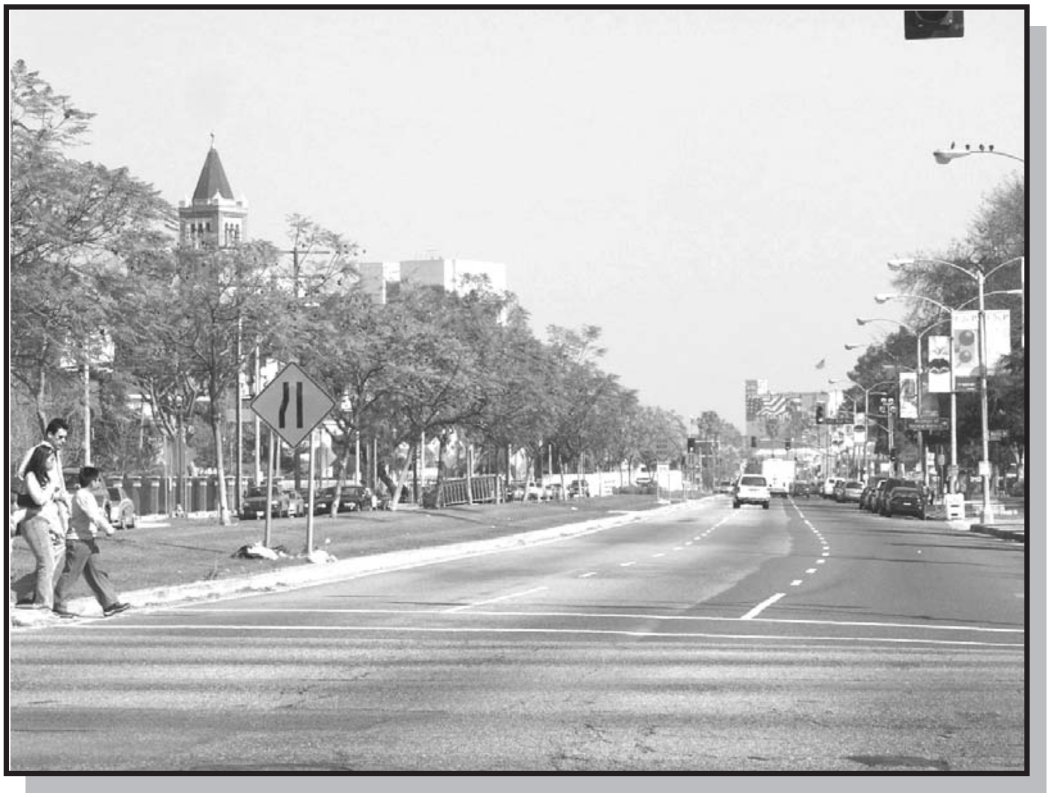
FIGURE 4.4-1

HILL STREET VISUAL CHARACTER

View of the industrial character of the Metro ROW between Grand Avenue and Hill Street.

FIGURE 4.4-2

METRO RIGHT-OF-WAY
AT GRAND AVENUE



Exposition Boulevard median as seen from Vermont Avenue looking east.

Exposition Boulevard median as seen from near Kinsey Street looking west.

Metro

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-3

FIGUEROA STREET TO VERMONT AVENUE VISUAL CHARACTER

Vistas within the Downtown Los Angeles Connection segment of the route include:

- View from Los Angeles Trade Technical College Washington Boulevard entrance to Downtown Los Angeles skyline
- South to north background views of the Downtown Los Angeles skyline along Hill Street (**Figure 4.4-4**)
- Foreground Views of Exposition Park/Rose Garden, museums and USC campus (**Figure 4.4-5**)

Neither Hill Street nor Exposition Boulevard is a designated Scenic Highway.

Mid-Corridor. The Mid-Corridor segment begins at Vermont Avenue and extends up to La Cienega Boulevard along the Exposition ROW. From Vermont Avenue, the western border of USC, to Gramercy Place (which occurs approximately one-quarter mile east of Arlington Boulevard), single-family homes and a few apartment buildings are located on the north and south sides of Exposition Boulevard separated by the Exposition ROW which functions as a street median. The most notable building element along this segment is the Musjid Umar Mosque on the northwest corner of Exposition Boulevard. Another structure in this section is the Foshay Middle School. A single-gauge railroad track remains in the median. Most of the ballast has dissipated, and there is no substantial ground cover within the median. The track, however, is flanked on either side by outcrops of tall cypress and palm trees that create a strong vertical element and give the impression that eastbound and westbound travel lanes in Exposition Boulevard are separate roadways. Overall, the roadway appears to be narrower than it actually is (**Figure 4.4-6**).

At about Gramercy Place, the Exposition ROW transitions from the median of Exposition Boulevard to a "side running" ROW on the south side of Exposition Boulevard. In the stretch between Gramercy Place and Arlington Boulevard, adjacent buildings are primarily low-scale single-family homes with the exception of several apartment buildings east of the Arlington Boulevard intersection.

West of Arlington Boulevard to about 7th Avenue, there is a change in the character of adjacent land uses. On the south side of the ROW are the fences and backyards of single-family residences. Both travel lanes of Exposition Boulevard are north of the ROW. On the north side of Exposition Boulevard are scattered residential uses, but the primary land use is industrial in character. Adjacent industrial buildings are low-scale in character. The ROW itself has little ground cover, but there are outcrops of oleander shrubs that line portions of the north side of the ROW (which partially obscures views from residential backyards toward the industrial buildings to the north) (**Figure 4.4-7**).

Between 7th Avenue and Crenshaw Boulevard, land uses south of the ROW are industrial in nature (i.e., most warehouses at some time in the past had loading docks along the former railroad tracks). In the past several years, this portion of the ROW has been replanted with small trees. Industrial land uses continue along the north side of Exposition Boulevard.

As the ROW approaches Crenshaw Boulevard, there is a substantial visual change (**Figure 4.4-8**). On the north side of Exposition Boulevard, the semi-circular West Angeles Cathedral building creates a dominant visual presence that is surrounded by surface parking. On the south side of the ROW, across from the cathedral, uses are low-scale commercial buildings serving Crenshaw Boulevard.

Downtown skyline viewed from Hill Street.

Metro

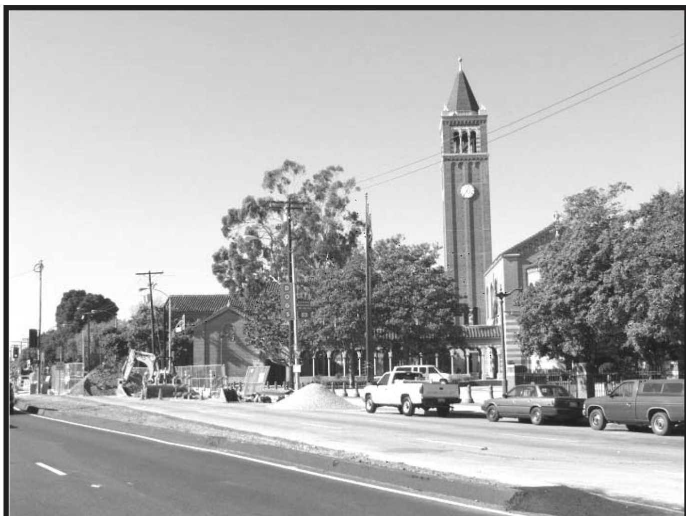
SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-4

HILL STREET DOWNTOWN VISTA

USC Campus

Natural History Museum



USC Campus

Brewer Park

Rose Garden

Metro

Views of Exposition Park and USC campus from Exposition Boulevard

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-5

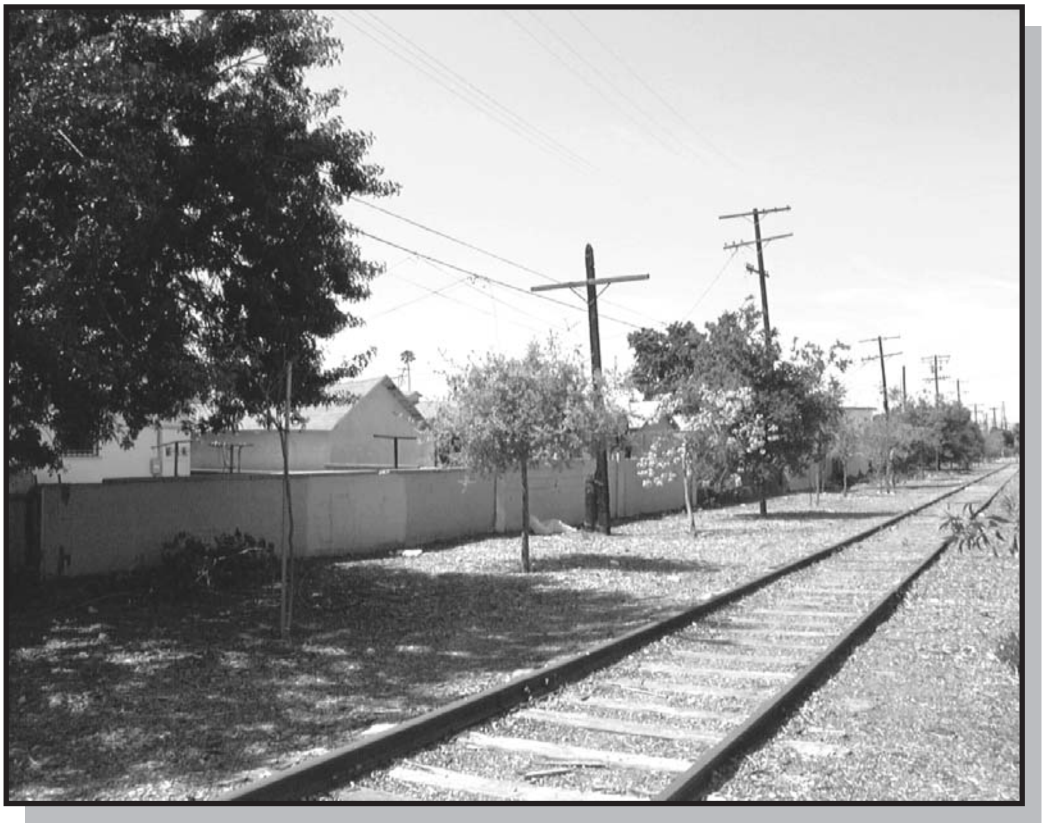
EXPOSITION PARK VIEWS

Adjacent residences with spine from Masjid Umar Mosque in background.

Existing median trees form a strong vertical element along Exposition Boulevard.

FIGURE 4.4-6

VERMONT AVENUE TO GRAMERCY PLACE VISUAL CHARACTER



Residential backyards are adjacent to the Metro ROW to the south.

A low-scale industrial corridor is located to the north of the Metro ROW.

Metro

SOURCE: Terry A. Hayes Associates LLC

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.4-7

SECOND AVENUE TO DEGNAN AVENUE
VISUAL CHARACTER

The West Angeles Church of God in Christ is the dominant visual element at Crenshaw Boulevard.

Trees have been planted in the Metro ROW adjacent to industrial uses.

Metro

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-8

DEGNAN AVENUE TO CRENSHAW BOULEVARD VISUAL CHARACTER

From Crenshaw Boulevard to Farmdale Avenue, the ROW returns back to the median-like position separating Exposition Boulevard from Exposition Place. The eastern half of this stretch of the ROW has been adopted by the adjacent community and features numerous community-initiated plantings within the ROW to beautify the environment. This beautification includes a concrete "Expo" marker sign. Also in this area, the ROW is characterized by a good number of low to medium height trees that help define the ROW as open space. Surrounding land uses in this section are single-family homes (**Figure 4.4-9**). The existing ROW is in view from some of the adjacent homes.

West of Farmdale Avenue to La Brea Avenue, the ROW returns to a side running configuration. The ROW is located on the south side of Exposition Boulevard. Adjacent to the ROW are Dorsey High School and the Rancho Cienega Sports Center. Near La Brea Avenue, the south side of the ROW is framed by a massive storage building. From Farmdale Avenue to La Brea Avenue, north of the ROW and on the north side of Exposition Boulevard, are continuous blocks of low-scale light industrial buildings (**Figure 4.4-10**).

West of La Brea Avenue, to a point adjacent to Redondo Boulevard, the ROW is located in a narrow triangle of land between Exposition Boulevard on the south and Jefferson Boulevard on the north. The south side of the ROW is separated from single-family homes in the Baldwin Vista neighborhood by a continuous stretch of tall oleander shrubs. To the north of the ROW is a collection of low-scale industrial buildings and storage areas (**Figure 4.4-11**).

At Redondo Boulevard, the ROW is located adjacent to the south curb of Jefferson Boulevard. Low-scale industrial uses are located on the north side of Jefferson Boulevard up to Carmona Avenue. To the south of the ROW is the Baldwin Vista neighborhood separated from the ROW by a chain-link fence, tall oleander shrubs and Exposition Boulevard (downgraded to a 36-foot wide residential street). The ROW itself is not landscaped, and there is no ground cover. The most visible elements in the ROW are commercial billboards.

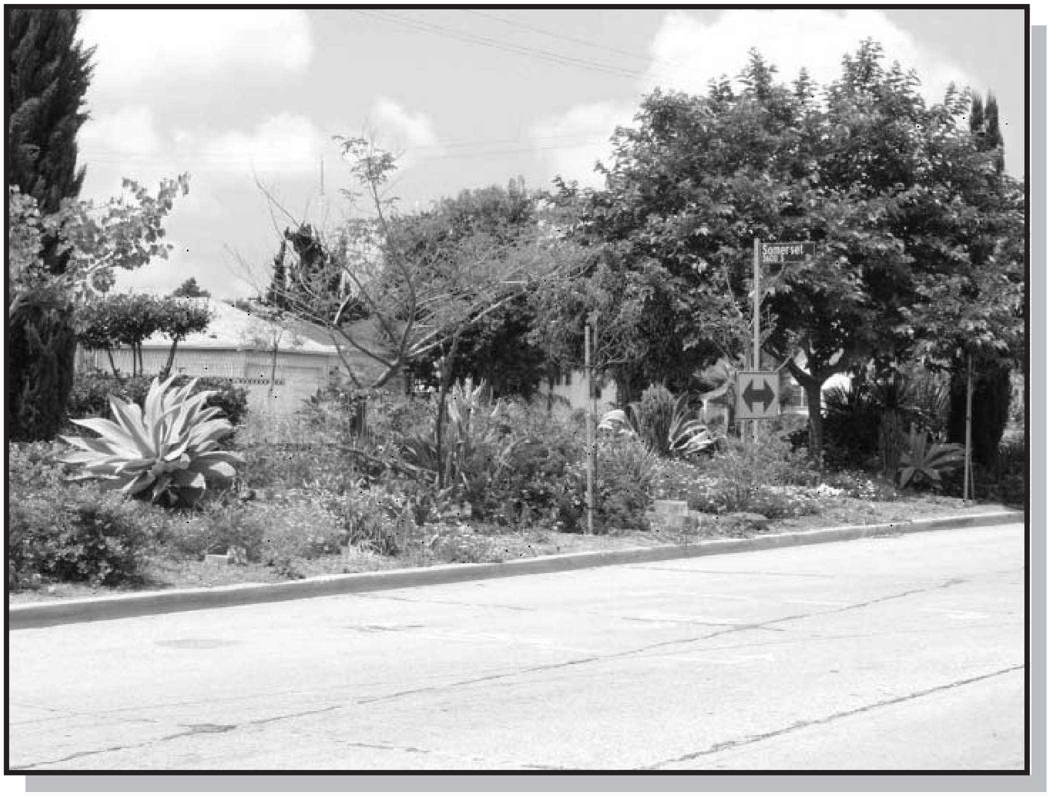
As the ROW approaches La Cienega Boulevard, large warehouse-scale industrial buildings are visible to the south of the ROW. On the north side of Jefferson Boulevard from Carmona Avenue to La Cienega Boulevard are residential uses. There are predominantly single-family homes from Carmona Avenue to Clyde Avenue and predominantly two-story apartment buildings from the Clyde Avenue to La Cienega Boulevard (**Figure 4.4-12**).

Vistas within the Mid-Corridor segment of the route include:

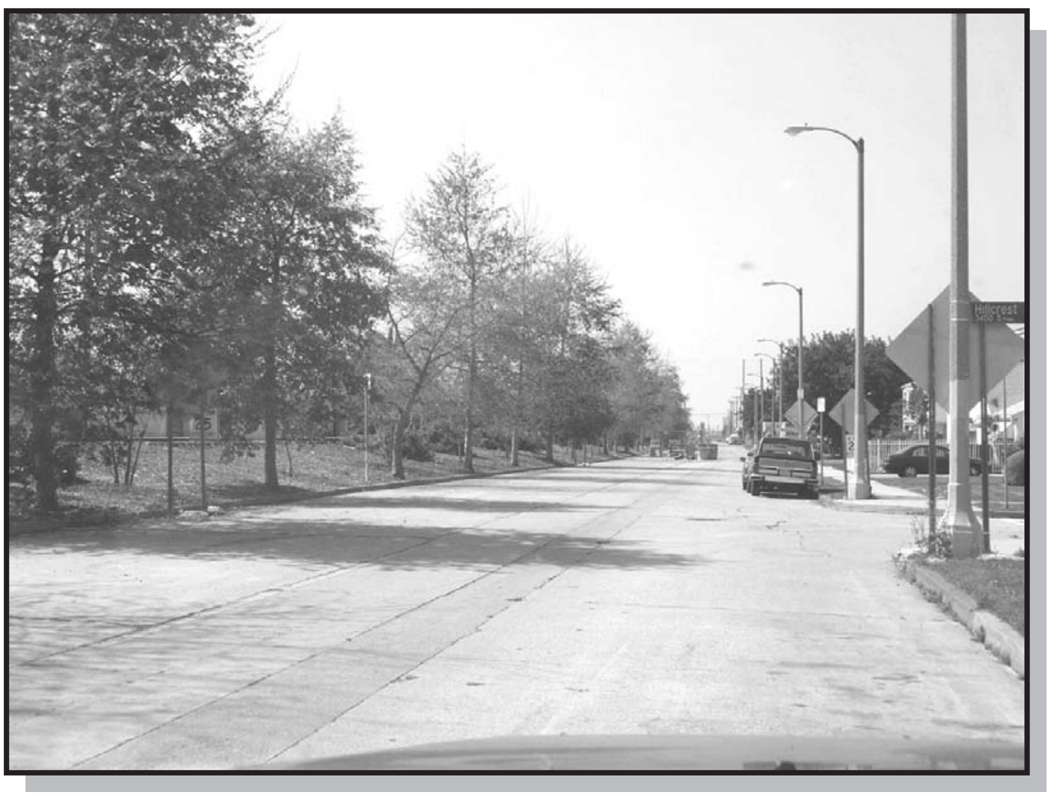
- Musjid Umar Mosque (foreground)
- West Angeles Cathedral (foreground)
- Community Landscaping and "Expo" sign west of Crenshaw Boulevard (foreground)
- Rancho La Cienega Sports Center Park play fields (foreground)
- Hollywood Hills (middle ground) from points west of La Brea Avenue
- Baldwin Hills (middle ground) from La Brea Avenue (**Figure 4.4-13**)
- Foshay Middle School auditorium and street frontage along Exposition Boulevard
- Oleanders between Farmdale and Clyde Avenues

Neither Exposition Boulevard nor Jefferson Boulevard are designated as a Scenic Highway.

West End. At La Cienega Boulevard, the ROW remains to the south of Jefferson Boulevard up to the Ballona Creek crossing. The adjacent land uses are low-scale industrial buildings on the north and south sides of Jefferson Boulevard. Within some portions of the ROW in this segment of the route, the Metro has temporarily allowed landscaping improvements to be installed including ground cover, berms, and palm trees (**Figure 4.4-14**).



Community initiated landscaping near Somerset.



Single-family homes have direct views of a tree-lined Metro ROW.

Metro

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-9

CRENSHAW BOULEVARD TO
FARMDALE AVENUE VISUAL CHARACTER

Between Farmdale Avenue and La Brea Avenue, the Metro ROW is bounded by Dorsey High School and Rancho La Cienega Sports Park at the south and a strip of low-scale industrial buildings on the north.

Metro

SOURCE: Terry A. Hayes Associates LLC

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

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FIGURE 4.4-10

FARMDALE AVENUE TO LA BREA AVENUE
VISUAL CHARACTER

Residences are buffered from the Metro ROW by dense landscaping.

Tall oleander border the south edge of the Metro ROW.

Metro

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-11

BALDWIN VISTA NEIGHBORHOOD
VISUAL CHARACTER

Industrial buildings on south side of Jefferson Boulevard near Hauser Avenue.

Metro

SOURCE: Terry A. Hayes Associates LLC

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FIGURE 4.4-12

HAUSER AVENUE TO LA CIENEGA BOULEVARD VISUAL CHARACTER

Vista of Baldwin Hills looking south along La Brea Avenue.

Vista of Hollywood Hills looking north along La Brea Avenue.

Metro

SOURCE: Terry A. Hayes Associates LLC

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FIGURE 4.4-13

LA BREA AVENUE VISTAS

View looking toward La Cienega Boulevard from the Ballona Creek Bridge.

Private landscaping improvements allowed within the Metro ROW.

Metro

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-14

LA CIENEGA BOULEVARD TO
BALLONA CREEK VISUAL CHARACTER

West of Ballona Creek to Hayden Avenue, the ROW separates the eastbound and westbound travel way of National Boulevard. The ROW in this segment has been paved as a surface parking lot. To the north of the ROW, are the playfields of Syd Kronenthal Park, as well as single-family neighborhoods in east Culver City (**Figure 4.4-15**). The ROW is partially screened from views of the park by a continuous stand of tall trees planted along the perimeter of the park. Residences in this same area are partially screened from the ROW by large shrubs on the northern edge of the ROW. The ROW itself is not landscaped, and there is no ground cover or trees. On the south side of National Boulevard are low to medium scale industrial buildings. Several of these buildings are designed by the architectural firm of Eric Moss and have unique architectural features (**Figure 4.4-16**).

From Hayden Avenue to Washington Boulevard, the ROW is located to the north of National Boulevard. Similar to the Ballona Creek to Hayden Avenue segment, the adjacent uses are predominantly single-family homes separated from the ROW by an array of shrubs and bushes (**Figure 4.4-17**). As the ROW approaches Washington Boulevard the adjacent uses on the north side transition to low-scale industrial buildings. On the south side of the National Boulevard, the character of adjacent uses is also industrial, with the exception of the recently constructed Turning Point school located on Wesley Street that is housed in a renovated industrial building (**Figure 4.4-18**).

Between Washington and Venice Boulevards, the ROW has been used for a nursery and other light industrial uses (**Figure 4.4-19**). Adjacent to the ROW are low-scale industrial buildings on the northeast side of Exposition Boulevard and a large, industrial warehouse southwest of the ROW. West of Venice Boulevard to near Bagley Avenue, the ROW is bordered by the elevated Santa Monica Freeway (I-10) on the north and by a combination of medium-scale commercial (including Venice Crossroads), industrial, and apartment buildings on the south. The easternmost portion of the ROW is paved and is leased by Metro for storage uses. The ROW portion near Bagley Avenue is not developed (**Figure 4.4-20**).

Vistas from the west end portion of the Corridor include:

- Baldwin Hills from La Cienega Boulevard (middle ground) (**Figure 4.4-21**)
- Hollywood Hills from La Cienega Boulevard (background)
- Ballona Creek Flood Control Channel (foreground and middle ground)
- Syd Kronenthal Park (foreground)
- Eric Moss architecture in Hayden Tract (foreground)
- West Los Angeles/Santa Monica Mountains (background)

Neither Jefferson Boulevard nor National Boulevard is designated as a Scenic Highway.

4.4.2 IMPACT ASSESSMENT

No Action. The No Action Alternative would not have any visual quality impacts.

LPA. **Table 4.4-1** inventories the potential visual effects associated with the proposed Project. Visual effects are grouped by corridor segment and analyzed in relation to scenic highways, scenic vistas, visual character and light and glare. Where impacts are identified, mitigation measures are provided.

Syd Kronenthal Park

Existing trees within the Metro ROW.

Metro

SOURCE: Terry A. Hayes Associates LLC

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

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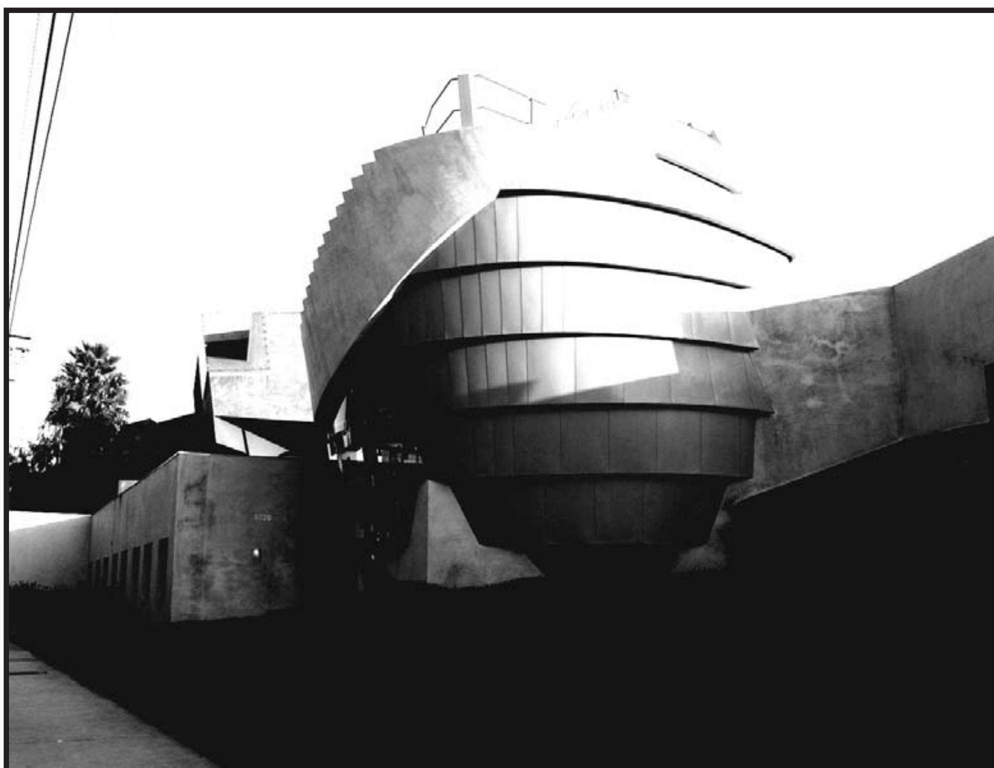
FIGURE 4.4-15

NATIONAL BOULEVARD
EAST OF HAYDEN VISUAL CHARACTER



SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-16

ERIC MOSS DESIGNED BUILDINGS
ADJACENT NATIONAL BOULEVARD

Homes in the McManus neighborhood in east Culver City are adjacent to the Metro ROW and partially screened by existing landscaping.

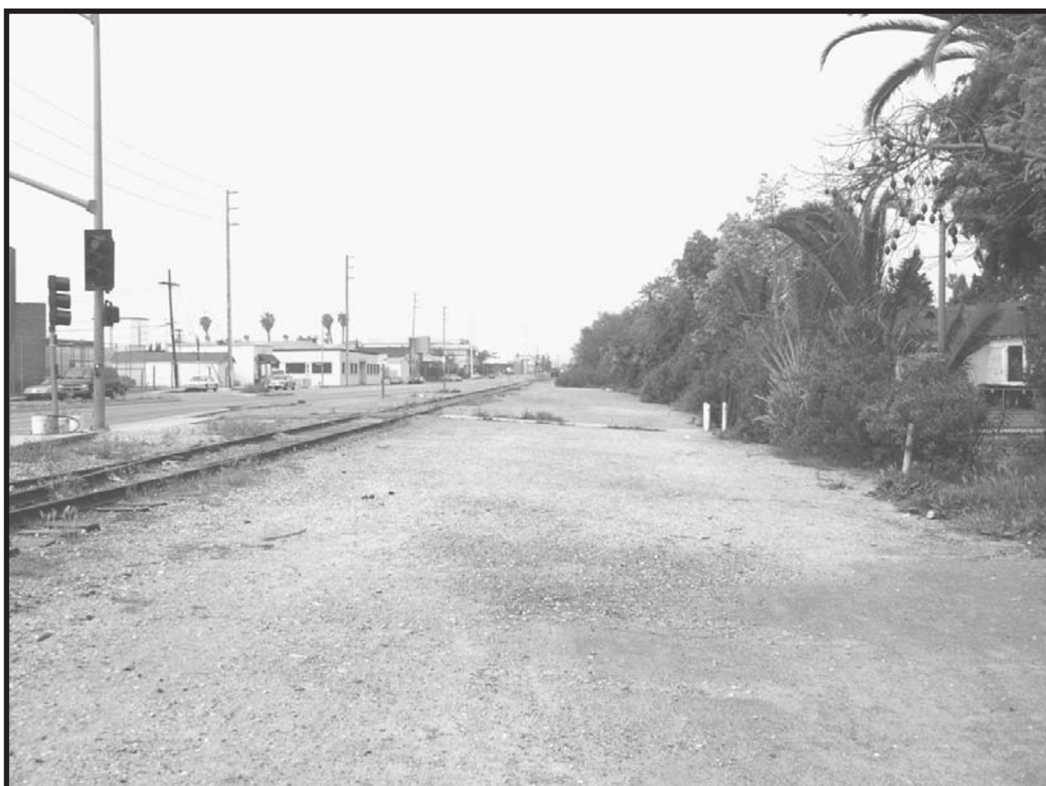
Metro

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-17

HAYDEN AVENUE TO WESLEY AVENUE
VISUAL CHARACTER

Turning Point School



View of Metro ROW west of Hayden Avenue

Metro

SOURCE: Terry A. Hayes Associates LLC

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FIGURE 4.4-18

NATIONAL BOULEVARD WEST OF
HAYDEN AVENUE VISUAL CHARACTER

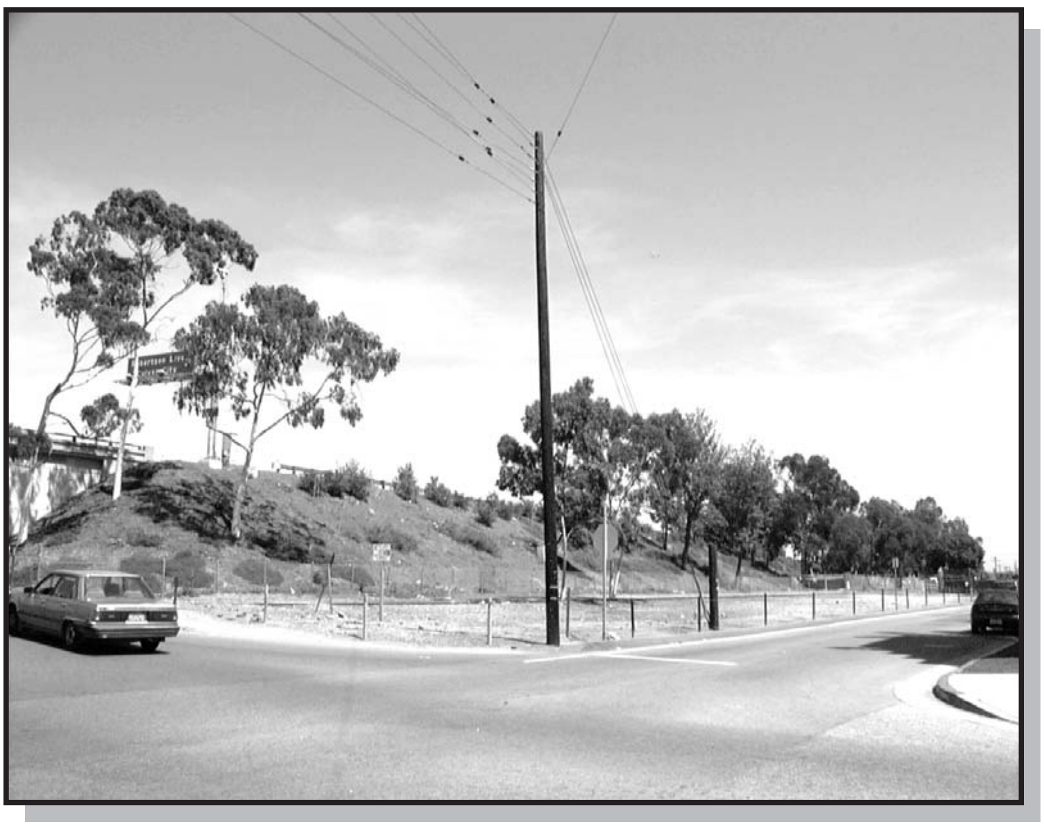
Industrial uses adjacent to ROW, north of Washington Boulevard.

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-19

WASHINGTON BOULEVARD TO VENICE BOULEVARD VISUAL CHARACTER

View looking north at Metro ROW along Venice Boulevard.



View looking southeast at Metro ROW near Bagley Avenue.

Metro

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.4-20

VENICE BOULEVARD TO
BAGLEY AVENUE VISUAL CHARACTER

Metro

SOURCE: Terry A. Hayes Associates LLC

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

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FIGURE 4.4-21

LA CIENEGA BOULEVARD AND BALLONA CREEK VISTAS

TABLE 4.4-1: VISUAL IMPACTS				
Street Segment	**Scenic Highway**	**Scenic Vista**	**Visual Character**	**Light and Glare**
Downtown Los Angeles Connection				
Hill Street	No impact. Not designated.	LRT in Hill Street median would not block background vista of Downtown Los Angeles skyline.	LRT would be consistent with low scale industrial character of area.	21^{st} and Hill Station is located within the street median and is not located within or adjacent to residences.
Washington Boulevard	No impact. Not designated.	Los Angeles Trade Technical School Washington Boulevard entrance. Impact caused by another LRT line servicing the existing Grand Station, which blocks the vista from the college entrance to Downtown Los Angeles skyline.	Impact due to increased frequency of LRT trains stopping at Grand Station and using Grand Station as a station stop. The increased frequency of trains and increased number of train vehicles stopping at the Grand Station presents a view that is interrupted or blocked from this entrance.	No impact as use is with an existing station.
Exposition ROW- Hill to Figueroa Streets	No impact. Not designated.	No impact.	No impact. Industrial character of ROW would be unchanged.	No impact. No station located within this segment.
/a/ See mitigation measures below.				

TABLE 4.4-1: VISUAL IMPACTS				
Street Segment	**Scenic Highway**	**Scenic Vista**	**Visual Character**	**Light and Glare**
Exposition ROW - Figueroa Street to Vermont Avenue	No impact. Exposition Boulevard not designated.	Conversion of median to LRT would introduce a new visual element (trackway, vehicles and overhead wires) that would change vista of Exposition Park and USC from Exposition Boulevard. Critical views to be maintained looking across from Exposition Boulevard are: Pardee Way, the Rose Garden from Kinsey Drive to Menlo Avenue, connection between Trousdale Parkway to Rose Garden and California Science Center, Watt Way entrance, Menlo Avenue, the Natural History Museum and Jesse Brewer Park. To reduce impact, median landscaping would be replaced and LRT infrastructure and station elements carefully designed as part of the elements of the Mid-City/Exposition Transit Parkway with community input. The Project would be designed to maintain visual continuity between USC and Exposition Park./a/	Conversion of median to LRT would introduce a new visual element (trackway, vehicles and overhead wires) that would change vista of Exposition Park and USC from Exposition Boulevard. Pedestrian entrances and parkways are located in front of Exposition Boulevard at the Rose Garden from Kinsey Drive to Menlo Avenue, Trousdale Parkway between USC campus to Rose Garden, Watt Way entrance to USC campus and the Natural Museum entrance at Menlo Avenue. Pedestrian entrances and parkways are also located in front of Jesse Brewer Park off of Menlo Avenue and Vermont Avenue, and the new addition to the Natural History Museum entrance off of Jesse Brewer Park. To reduce impact, median landscaping would be replaced and LRT infrastructure and station elements carefully designed as part of the Mid-City/Exposition Transit Parkway with Lead Artist and community input. Project elements would include, lighting, public art, pedestrian access, etc. Visual barriers such as fencing or aerial walkways are discouraged on the alignment between Trousdale Circle to Vermont Station. The alignment would be at-grade between Trousdale Parkway to Vermont Avenue. The Project would maintain visual continuity of Exposition Boulevard as an extension of Exposition Park. /a/	USC/Exposition Park Station is located within the street median and is not located within or adjacent to residences.
/a/ See mitigation measures below.				

TABLE 4.4-1: VISUAL IMPACTS				
Street Segment	**Scenic Highway**	**Scenic Vista**	**Visual Character**	**Light and Glare**
Mid-Corridor				
Vermont Avenue to Gramercy Place	No impact. Exposition Boulevard not designated.	No impact. No scenic foreground, middle ground or background vista available.	Conversion of median to LRT would introduce a new visual element (trackway, vehicles and overhead wires). Conversion would remove existing mature trees and may introduce privacy impacts. To reduce impact, the Mid-City/Exposition Transit Parkway design shall include Lead Artist and community input. Landscaping would be provided where feasible, to shield the LRT alignment against privacy impacts in residential areas.	Vermont Station is located within the street median and is not located within or adjacent to residences. Surrounding land uses are commercial and institutional in nature. Embedded track surfaces located in the ROW median would cause reflected glare in front of residential areas along the LRT alignment. To reduce impact, landscaping would be provided, where feasible, along the sides of the ROW median, outside of the LRT dynamic envelope, to reduce reflective glare in front of residential areas.
Gramercy Place to Arlington Avenue	No impact. Exposition Boulevard not designated.	No impact. No vista would be affected.	The LRT would introduce new visual elements directly adjacent to residential uses. Noise walls would also be constructed south of the alignment, directly against residential uses. Privacy impacts may occur north of the alignment facing residential uses. To reduce impact, landscape screening and noise walls shall be designed with community and Lead Artist input. Landscaping would be provided where feasible, to shield the LRT alignment against privacy impacts in residential areas./a/	No impact. No lighted stations or parking areas are located within this segment.
/a/ See mitigation measures below				

TABLE 4.4-1: VISUAL IMPACTS

Street Segment	Scenic Highway	Scenic Vista	Visual Character	Light and Glare
Arlington Avenue to 7th Avenue	No impact. Exposition Boulevard not designated.	No impact. No vista would be affected.	LRT would introduce new visual elements directly adjacent to residential uses. Noise walls would also be constructed south of the alignment, directly against residential uses. Privacy impacts may occur north of the alignment facing residential uses. To reduce impact landscape screening and noise walls shall be designed with community and Lead Artist input. Landscaping would be provided where feasible, to shield the LRT alignment against privacy impacts in residential areas./a/	No impact. No lighted stations or parking areas are located within this segment.
7th Avenue to Crenshaw Boulevard	No impact. Exposition Boulevard not designated.	Crenshaw Station platforms would be located south of the West Angeles Cathedral. A platform of one side of the Crenshaw Station would be located south of the West Angeles Cathedral, introducing a new visual element, which may block the view to the Cathedral. To reduce impacts, station area planning shall include specific consideration of station design impact on Cathedral with stakeholder input. Station area design guidelines shall be prepared before the construction phase of the Project to maintain views and the visual importance of the West Angeles Cathedral.	LRT improvements would be consistent with the largely industrial character of this segment.	Crenshaw Station and park and ride lot(s) are located within in this segment. The station and parking would be located within institutional and industrial areas and would not pose a nuisance.

/a/ See mitigation measures below

TABLE 4.4-1: VISUAL IMPACTS				
Street Segment	**Scenic Highway**	**Scenic Vista**	**Visual Character**	**Light and Glare**
Crenshaw Boulevard to Farmdale Avenue	No impact. Exposition Boulevard not designated.	Crenshaw Station platforms would be located south of the West Angeles Cathedral. To reduce impact to surrounding residential neighborhood, station design shall include community input regarding landscaping, public art, and other Transit Parkway improvements. Stations are also designed so that station entrances do not open into direct view of single-family residences.	LRT improvements would remove existing community initiated landscaping. The LRT would also introduce new visual elements including vehicles, overhead wiring and low to medium-scale retaining walls. To reduce impact to surrounding residential neighborhood, station and ROW design shall include Lead Artist and community input./a/ Stations would also be designed so that station entrances do not open into direct view of single-family residences.	The Eastbound Crenshaw Station platforms would located adjacent to residences near Victoria Street. Lighting of platforms would introduce a new light source. To reduce impact, station light shall be designed and oriented not to create spillover lighting onto residential properties. /a/
Farmdale Avenue to La Brea Avenue	No impact. Exposition Boulevard not designated.	The La Brea Station would be an aerial station and would change the vista of Baldwin Hills from north La Brea Avenue. To reduce impact on the vista, station area design guidelines would be prepared before the construction phase of the Project to reduce the massing and profile of the elevated structure, and to maintain existing views, where possible, to Baldwin Hills.	LRT elements would be consistent with predominant industrial character of area. Impacts to existing landscaping to be mitigated by replacing oleanders with equivalent landscaping in color, mass, and height.	Light LRT aerial station at La Brea Avenue would not adversely affect industrial land uses located east of La Brea Avenue. To reduce impact, landscaping shall be introduced adjacent to or on large walls of the bridge structure to reduce reflective light and glare. New landscaping would be compatible with existing landscaping in the area.
/a/ See mitigation measures below				

TABLE 4.4-1: VISUAL IMPACTS				
Street Segment	**Scenic Highway**	**Scenic Vista**	**Visual Character**	**Light and Glare**
La Brea Avenue to Redondo Boulevard	No impact. Jefferson Boulevard not designated.	LRT would not alter existing vistas west of La Brea Avenue.	The elevated LRT station and structure would be a new visual element. The LRT would reduce privacy for apartments west of La Brea Avenue. Structures and overhead wire would be visible from single-family residences located west of Sycamore Avenue. The existing oleander landscaping presents a privacy and nuisance impact south of the ROW in front of the Baldwin Vista neighborhood. Lack of visual screening north of the oleanders also presents a privacy impact in the same area. To reduce impact, existing landscaping along Exposition Blvd. would be replaced with new landscaping with similar color and height. Additional screening elements shall be implemented as part of the bridge structure. Station design and public art shall include Lead Artist and community input. Neighborhood station design guidelines call for preserving existing views as part of the station design. An opaque wall shall be provided in back of the landscaping facing the Baldwin Vista neighborhood and south of the alignment.	Light spillover from the aerial La Brea Station would likely affect adjacent apartments and single-family residences. To reduce impact, station platform lighting shall be shielded from adjacent residences. Landscaping shall be introduced adjacent to or on large walls of the bridge structure to reduce reflective light and glare. New landscaping would be compatible with existing landscaping in the area.
Redondo Boulevard to Carmona Avenue	No impact. Jefferson Boulevard not designated.	LRT would not alter existing vistas in this area.	LRT may remove existing landscaping along Exposition Boulevard adjacent to the Baldwin Vista neighborhood. In addition, sound walls would add a new visual element. To reduce impact, the Mid-City/Exposition LRT Transit Parkway design shall include Lead Artist and community input. /a/	No impact. No lighted stations or parking areas are located within this segment.
/a/ See mitigation measures below				

TABLE 4.4-1: VISUAL IMPACTS

Street Segment	Scenic Highway	Scenic Vista	Visual Character	Light and Glare
Carmona Avenue to La Cienega Boulevard	No impact. Jefferson Boulevard not designated.	Proposed elevated LRT structure and six-story station parking structure would add a new element into the vista of Baldwin Hills from the north and south. To reduce impact, station area design guidelines would be prepared before the construction phase of the Project with community input. These guidelines would include consideration of north-south vistas to Baldwin Hills as part of the station and parking structure design.	LRT improvements would have beneficial effect by landscaping the ROW and eliminating existing billboards. The proposed parking structure may produce shade and shadow impacts to existing adjacent residential uses, south of the parking structure. To reduce impact, station area design guidelines would be prepared before the construction phase of the Project with Lead Artist and community input. These guidelines would include and not be limited to setbacks and stepped back design of the massing of the parking structure to reduce shade and shadows to adjacent residential uses.	Light spillover from the aerial La Cienega Station would likely affect adjacent apartments and single-family residences located on the north side of Jefferson Blvd. To reduce impact, all lighting or glare shall be directed away from residences on the north side of Jefferson Boulevard. Landscaping shall be introduced adjacent to or on large walls of the bridge structure to reduce reflective light and glare. New landscaping would be compatible with existing landscaping in the area.

/a/ See mitigation measures below

TABLE 4.4-1: VISUAL IMPACTS				
Street Segment	Scenic Highway	Scenic Vista	Visual Character	Light and Glare
West End				
La Cienega Boulevard to Ballona Creek	No impact. Jefferson Boulevard not designated.	Proposed elevated LRT structure and six-story station parking structure would add a new element into the vista of Baldwin Hills from the north and south. To reduce impact, station area design guidelines would be prepared before the construction phase of the Project with community input. These guidelines would include consideration of north-south vistas to Baldwin Hills as part of the station and parking structure design.	The elevated bridge structure would add a new element into the vista looking west towards Ballona Creek in the middle ground view and then to Culver City and West Los Angeles in the background view, depending on the Jefferson Boulevard Design Option selected. The LPA and Option D Bridge design would potentially block foreground and middle ground views of Ballona Creek, depending on the viewpoint looking west. The Option C Bridge design would maintain foreground and middle ground views of Ballona Creek, however it would alter views beyond to Culver City. To reduce impact, station area design guidelines would be prepared before the construction phase of the Project with Lead Artist and community input. These guidelines would include consideration of north-south vistas to Baldwin Hills as part of the station and bridge design.	Light LRT aerial station at La Cienega Boulevard would not adversely affect industrial land uses located east of La Brea Avenue. To reduce light and glare impact occurs, landscaping shall be introduced adjacent to or on large walls of the bridge structure to reduce reflective light and glare. New landscaping would be compatible with existing landscaping in the area.
/a/ See mitigation measures below				

TABLE 4.4-1: VISUAL IMPACTS				
Street Segment	Scenic Highway	Scenic Vista	Visual Character	Light and Glare
Ballona Creek to Hayden Avenue	No impact. National Boulevard not designated.	The LRT alignment would be located in a graded parkway for the LPA and Jefferson Boulevard Design Option D. No elevated structure would block vistas of Syd Kronenthal Park or Eric Moss-designed buildings.	The proposed Project would introduce new visual elements for residences in east Culver City directly north of the ROW including removal of landscaping, construction of sound walls, LRT vehicles, overhead wires, and an off-street bike path. To reduce impact, the LRT alignment, bikepath and landscaping would be designed as an integral part of the Mid-City/Exposition Transit Parkway. Landscape features and grading of the existing ROW would provide screening of the LRT alignment from residential areas. The double row of trees placed along the bikepath would provide an additional buffer between the LRT alignment on the ROW and residential areas. A landscape plan, lighting plan and the design of screening features shall be coordinated with the Lead Artist and community input.	Lighting along bike path may have spillover effects on adjacent residences. To reduce impact, all lighting shall be directed away from adjacent residences
Hayden Avenue to Washington Boulevard	No impact. National Boulevard not designated.	The LRT alignment would be located in a graded parkway for the LPA and all Jefferson Boulevard Design Options. No vistas would be impacted.	Same as above.	Same as above.
Washington Boulevard to Venice Boulevard	No impact. Exposition Boulevard not designated.	At grade Venice/Robertson Station would not affect vistas.	Venice/Robertson Station would be consistent in character with surrounding industrial uses.	No residential areas would be affected by light station platforms or surround access areas.
/a/ See mitigation measures below				

TABLE 4.4-1: VISUAL IMPACTS

Street Segment	Scenic Highway	Scenic Vista	Visual Character	Light and Glare
Venice Boulevard to Bagley Avenue	Venice Boulevard is designated as a scenic highway by the City of Los Angeles. The proposed LRT surface parking lot located north of Venice would not affect the vistas from Venice roadway.	Proposed LRT surface parking would not interrupt any vista.	Proposed LRT surface parking would be adjacent to the Santa Monica Freeway and would not change the visual character of the area.	Proposed LRT surface parking may create lighting spillover effects for adjacent north facing apartment buildings. To reduce impact, all parking lot lighting shall be oriented in a manner not to create spillover or glare for adjacent residential properties.

/a/ See mitigation measures below
SOURCE: Terry A. Hayes Associates LLC, 2004

Downtown Los Angeles Connection Options. Instead of turning east off of Flower Street onto Washington Boulevard to access Hill Street as proposed in the LPA, the route alignment under the Hill Street Couplet design option would run along 17th and 18th Streets to reach Hill Street. The proposed Hill Street Couplet would fit aesthetically into the urban context in this portion of the route that is characterized by commercial and industrial uses and existing LRT. The addition of LRT on 17th and 18th Streets would not result in a conflict with the existing visual character. There are no scenic vistas from 17th or 18th Streets to be obstructed by the LRT. As the trains would be running at-grade, no privacy issues with the surrounding apartment buildings would arise. The Hill Street Couplet design option does not include new station locations on 17th or 18th Streets, and thus, there would not be any impacts related to light and glare.

The Flower Street design option also fits into the urban context of the area's existing visual character. Along Flower Street, where the other design option would run, there are no scenic vistas that the Mid-City/Exposition LRT would obstruct. As the trains would be running at-grade, no privacy issues with the surrounding apartment buildings and land uses would arise.

Along Flower Street between Washington Boulevard and the I-110 freeway, LADOT has determined that the street should be widened to accommodate the LRT and an adequate number of traffic lanes. By widening the street, the sidewalks would be narrowed by five feet from their existing width of 15 feet to 10 feet. During construction of the LRT, tall palm trees that currently line Flower Street in this area would have to be removed. The height of the palms lends a vertical dimension to the street and adds greenery. These palm trees would be replaced to avoid visual impacts. Metro would conduct an urban design study with the City of Los Angeles and affected stakeholders before Final Design to develop design guidelines for tree location and replacement.

The Flower Street Design Option includes an undercrossing to grade separate the LRT alignment from traffic conflicts. Three undercrossing options are under consideration as part of the Project. These options include the following: 1) USC/Exposition Park Undercrossing option; 2) USC/Exposition Park Modified Undercrossing option; and 3) USC/Exposition Park Extended Undercrossing option. In each of these options, the LRT alignment would enter an undercrossing just south of Jefferson Boulevard and resurface to grade either at the USC/Exposition Park Station or further west at Watt Way, as shown in **Figure 4.4-22**. In addition, each of these options would introduce a new visual element of safety walls and screens in the Exposition Boulevard corridor between Figueroa Street and Vermont Avenue. The safety walls and screens would be up to approximately five feet in height and, depending on the option, would occur at different locations and for different lengths and heights along the median in Exposition Boulevard. **Figure 4.4-22** shows the locations and lengths of the safety wall per the alignment options.

Metro

SOURCE: Metro Real Estate Department, DMJM Harris, Terraserver, & Terry A. Hayes Associates LLC

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.4-22

FLOWER STREET DESIGN OPTIONS ALONG EXPOSITION BOULEVARD

In considering the visual impacts associated with each of these options, key focal points have been identified along the Exposition Boulevard corridor which may be impacted by the addition of the new visual element in the segment of the alignment between Figueroa Street and Vermont Avenue.[2] These focal points have also been identified in **Figure 4.4-23** and include the Amgen Center for Science Learning (Amgen Center) near Figueroa Street, Trousdale Parkway at the main entrance to the USC campus, the Rose Garden in the heart of the museum group at Exposition Park, the Natural History Museum of Los Angeles County circular entry, and Jesse Brewer Park near Vermont Avenue. It should be noted that there is an existing fence and wall, lining the USC campus along Exposition Boulevard, with pedestrian and vehicular entrances at Pardee Way, Trousdale Parkway, Watt Way, and Menlo Avenue. This existing fence and wall currently block major views of the Exposition Boulevard corridor. In addition, the Amgen Center is situated on top of a high berm to the south of Exposition Boulevard and extends from Figueroa Street to Kinsey Drive. Morever, the Rose Garden is depressed in elevation in comparison to Exposition Boulevard and, as such, is not predominantly visible from pedestrian vantage points from the north side of Exposition Boulevard.

In the USC/Exposition Park Undercrossing option, an open undercrossing is proposed. In addition, this option does not preclude a new USC/Exposition Park Station west of Kinsey Drive just east of Trousdale Circle. The safety walls and screens would line the open undercrossing from Figueroa Street to east of Pardee Way. The safety wall and screen of up to five feet in height would begin again at the LRT portal (where the trackway starts to go below-grade) west of Pardee Way to the grade alignment just west of Kinsey Drive. The safety wall and screen would extend a length of 500 feet. Near Trousdale Parkway, partial blockage of pedestrian level views from the northern sidewalk of Exposition Boulevard looking south to the eastern half of the Rose Garden would be minimized due to the lower profile of the safety wall. The height of the station platforms would not be a visual impact because the platforms would be at sidewalk level. To further reduce impact, the safety wall would include openings to allow views through the safety wall. At greater distances, north or south of Exposition Boulevard, none of the new visual elements would be visible. The visual impacts of this option would not be adverse.

In the USC/Exposition Park Modified Undercrossing option, the open undercrossing would be covered. Similar to the option above, the safety wall and screen of up to five feet in height would line the LRT portal west of Pardee Way to the grade alignment just west of Kinsey Drive. The safety wall and screen would extend a length of 500 feet. The USC/Exposition Park Station is not included under this option. Near Trousdale Parkway, partial blockage of pedestrian level views from the northern sidewalk of Exposition Boulevard looking south to the eastern half of the Rose Garden would be minimized due because the safety wall would end just west of Kinsey Drive. At greater distances, north or south of Exposition Boulevard, none of the new visual elements would be visible. The visual impacts of this option would not be adverse.

In the USC/Exposition Park Extended Undercrossing option, the open undercrossing would also be covered. The undercrossing is extended 1,070 feet to the west compared to the above options. The USC/Exposition Park Station is not included under this option. The LRT portal is located west of the proposed Trousdale Circle. The safety wall and screen of up to five feet in height would line the LRT portal and continue to the grade alignment just east of Watt Way, extending a length of 580 feet. Near Trousdale Parkway, partial blockage of pedestrian level views from the northern sidewalk of Exposition Boulevard looking south to the western half of the Rose Garden and potential views of the Natural History Museum would occur. Direct pedestrian views from the northern sidewalk of Exposition Boulevard along the safety wall would also be affected. Landscaping along the safety wall and screen

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[2]For the purpose of the visual discussion pertaining to the safety walls and screens, the Exposition Boulevard corridor refers to the segment of Exposition Boulevard between Figueroa Street and Vermont Avenue.

The project includes planting areas on either side of the ROW on Exposition Boulevard so that the strong vertical tree element can be maintained.

FIGURE 4.4-23

PERSPECTIVE VIEW OF
EXPOSITION ROW WEST OF VERMONT

would be provided to lessen the mass and height of the safety wall structure and reduce visual impacts. At greater distances, north or south of Exposition Boulevard, none of the new visual elements would be visible. The visual impacts of this option would not be adverse.

Station areas would be lit up throughout the night. The Flower Street design options would include two station locations on Flower Street, at 23rd Street and at Jefferson Boulevard. These stations would not be located in residential neighborhoods where light and glare issues are of concern. Additionally, station lighting shall be designed and oriented not to create spillover lighting.

La Cienega Station Parking Options. The Southwest Corner option would construct a 60-foot parking structure at the intersection of La Cienega and Jefferson Boulevards. The structure would cast larger shadows than the shorter building currently on the site. However, there are no residential uses adjacent to the proposed site that would be affected by the increase in shadows. The proposed site for the parking structure is in a semi-industrial area and would be visually consistent with the surrounding area.

The No Parking option would not construct a new parking facility. No visual impact would result.

Jefferson Boulevard Design Options. Either of the bridge options would introduce a new visual element to the area surrounding the La Cienega Boulevard/Jefferson Boulevard intersection in the City of Los Angeles. The bridge structure, LRT vehicles, and catenary poles would be visible looking north-south on La Cienega Boulevard and east-west on Jefferson Boulevard. The reconfiguration of Jefferson Boulevard would affect the bridge's design. However, whether Jefferson Boulevard were widened to the north or to the south, the bridge's position, elevation and profile would remain the same. The position and height of the bridge dictate its effect on surrounding views. The main vista from Jefferson Boulevard east of La Cienega is looking south toward the ridge line of the Baldwin Hills. For either type of bridge structure (retained fill or columns as determined by the widening option), a pedestrian or cyclist's view of the Baldwin Hills ridge line would be obstructed by the profile of the bridge.

To widen Jefferson Boulevard to the north, a 32,746 square-foot parcel of land would be acquired. Only a portion of this parcel would be used to create an additional traffic lane. The remaining area of the parcel would not likely be large enough to be redeveloped with new commercial uses. It is possible, however, that the remaining area would be used for a surface parking facility for the phased implementation of the La Cienega Segment. Mitigation is required to ensure that this portion of the parcel is appropriately landscaped.

In Culver City, privacy and visual intrusion impacts on nearby residences northwest of Ballona Creek are minimized by either bridge option. The bridge would begin to come back to grade west of Ballona Creek and would be fully at-grade east of Fay Avenue in Culver City. The height of the bridge between Fay Avenue and Eastham Drive would be approximately five to 15 feet. Additionally, existing tall trees located north of the Exposition ROW next to Syd Kronenthal Park would completely screen the bridge from view in residential areas. With implementation of the proposed Project, a row of trees would also be planted south of the proposed bikepath and north of the bridge structure to enhance screening already provided by existing trees.

There are no light and glare impacts associated with either bridge design option.

Venice/Robertson Design Options. The ROW station option would situate the Venice/Robertson station adjacent to residences located just north of the ROW. The close proximity of the station to residences has the potential to create light and glare and reduce privacy. Mitigation would ensure that this station would be sufficiently screened with landscaping to maintain an attractive aesthetic and minimize visual intrusions for adjacent neighborhoods.

The North of ROW Station options would occur as part of a potential transit-oriented development (TOD) to be implemented in conjunction with the City of Culver City. Metro would provide coordination with Culver City station area planning efforts to develop design guidelines. The guidelines would ensure that visual impacts related to the location of this station would be minimized.

The Aerial Station option would be situated in the same location as the terminus station under the LPA. This western-most portion of the alignment is a commercial, semi-industrial area and no inconsistencies with visual character are anticipated. In order to reach the aerial station, the LRT trackway would begin to grade separate east of the Washington and National Boulevards intersection where residential neighborhoods abut the ROW. At Helms Avenue, where the residential neighborhoods start, the trackway would be approximately five feet high. The trackway would achieve its full height of 25 feet at Wesley Street, however, there are no residences on Wesley Street directly across from the ROW. No visual intrusion to nearby residences is anticipated due to the Aerial Station option. Metro would provide coordination with Culver City station area planning efforts to develop design guidelines. The guidelines would ensure that visual impacts related to the location of this station would be minimized.

Phased Implementation. Implementation of the Vermont Segment would not cause any visual quality impacts. Operation of the Mid-City/Exposition LRT along the proposed route would not obstruct any scenic vistas. Light rail transit would fit into the urban context in this portion of the route that is characterized by commercial and industrial uses and existing LRT. However, in the western portion of this Segment, the addition of a trackway, light rail vehicles, and the overhead wire system would alter the visual character of Exposition Park. The Mid-City/Exposition LRT would be a new visual element, and the existing landscaped median between Figueroa Street and Vermont Avenue would be eliminated. The Project design includes an extensive landscaping plan to replace existing tree and ground cover. A wider, landscaped median would be reconstructed as part of the Project with the intent to provide visual continuity between the Exposition Park and the parkway character of Exposition Boulevard. Mitigation would involve the input of local community members to address impacts to visual character.

The Vermont Segment would not result in light and glare impacts at the 21st Street/Hill Street Station because there are no residential uses in the area to which nighttime spillover lighting are typically of concern.

In the Crenshaw Segment, visual impacts would be the same as those described for these portions of the LPA. The addition of a trackway, light rail vehicles, and the overhead wire system would alter the visual character of the Exposition Corridor as a landscaped boulevard. The Crenshaw Segment would remove landscaping and introduce new visual LRT-related elements to Exposition Corridor. Existing palm and cypress trees located within the ROW between Vermont Avenue and Gramercy Place would be eliminated. From Van Ness Avenue to 7th Avenue, four- to eight-foot high noise walls would intermittently be situated adjacent to residential uses. Existing oleanders and other small trees would also be removed between Arlington Avenue and Victoria Street. To reduce impacts to changes in visual character, landscaping, trees, public art and other elements of the Mid-City/Exposition Transit Parkway must be included in the median ROW. Mitigation measures would address these impacts related to changes in visual character and privacy conflicts.

The Crenshaw Station platforms would be located south of the West Angeles Cathedral and be a new visual element adjacent to this community facility. Station area planning shall include specific consideration of station design impact on the cathedral with stakeholder input. Gateway station type guidelines would be modified to preserve scenic vistas for this station. Furthermore, stations are also designed so that station entrances do not open into direct view of single-family residences.

Impacts related to implementation of the La Cienega Segment would be similar to those for the Crenshaw Segment. Between Crenshaw and La Cienega Boulevards, additional landscaping would be removed and new visual elements introduced. The most notable new visual elements in the La Cienega Segment would be the La Brea grade separation and the parking structure at La Cienega. To reduce impacts to changes in visual character, landscaping, trees, public art and other elements of the Mid-City/Exposition Transit Parkway must be included in the median ROW. Mitigation measures would address these impacts related to changes in visual character and privacy conflicts. Station area planning shall include community input to address any local concerns.

All lighting in station areas would be directed away from adjacent residences. Mitigation provided would ensure that lighting is oriented and hooded to eliminate disruptive spillover lighting.

4.4.3 MITIGATION MEASURES

Many visual enhancements, landscaping features and public art opportunities are included in the proposed Project design, as discussed in Chapter 2.0 Alternatives Considered. Metro Art staff shall oversee the implementation of the public art component of the Project. Metro Art has commissioned a highly experienced Lead Artist to determine how the landscaping, station design, grade crossings and separations, and bicycle amenities may be developed into relevant artwork opportunities. This includes system-wide public art concepts for Project elements to receive Lead Artist input such as sound walls, canopies and planting, as well as Station Artist opportunities for paving and sculptural elements for individual stations. Each station shall feature the work of its own individual Station Artist. This Final EIS/EIR calls for basic standardized components for the guideways and stations. The art components shall be designed and installed to enhance, but not radically alter, the proposed basic design.

As a complement to the Lead Artist's concepts, Metro Art shall invite interested members of this community along the alignment to form a Metro Art Advisory Group. Furthermore, Metro Art shall be responsible for ensuring the appropriate review of any art related gifts and donations to the Mid-City/Exposition LRT Project.

Illustrative views of the proposed Project design are shown in **Figures 4.4-24** through **4.4-27**. All artwork concept designs

The project will include substantial landscaping in the neighborhood area west of Crenshaw Boulevard. The ultimate selection of plants, walls, fences, signage and art will be carried out in a collaborative process between the Metro and area residents as part of the Crenshaw Station area planning.

Metro

SOURCE: Zimmer Gunsul Frasca Partnership

FIGURE 4.4-24

PERSPECTIVE VIEW
WEST OF CRENSHAW BOULEVARD

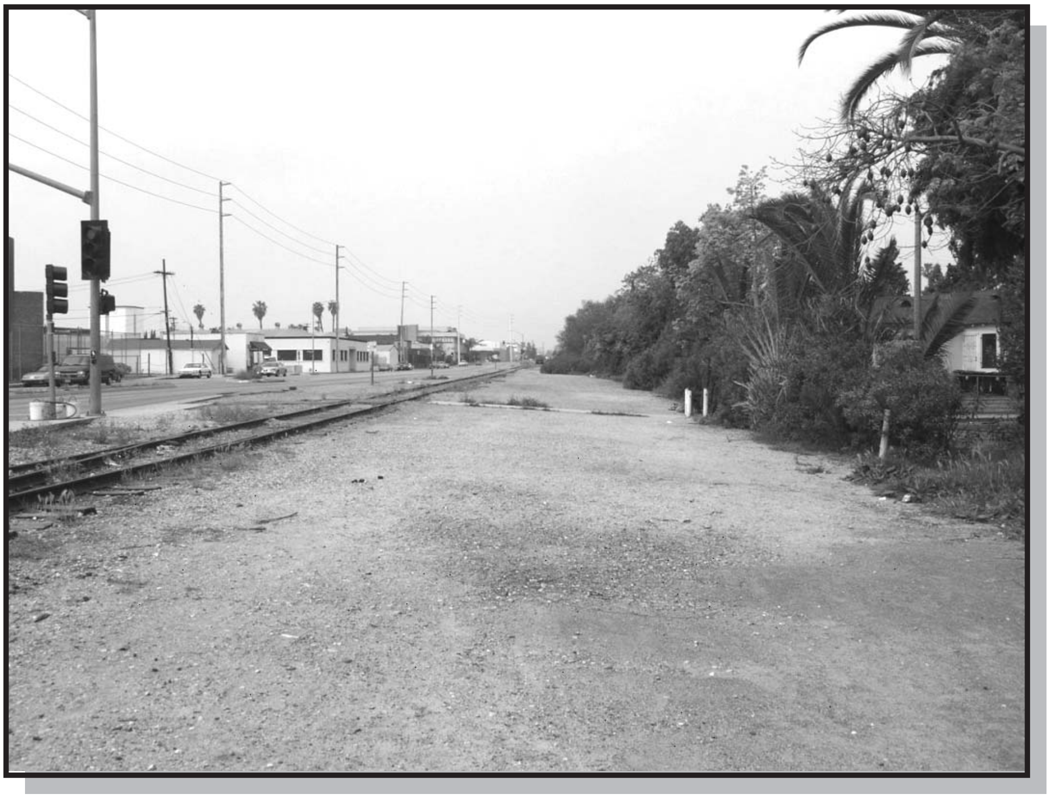
This perspective looking northeast shows the light rail vehicle and structure as it might be seen in the Baldwin Vista neighborhood west of La Brea Avenue. The structure would be partially screened by a landscaped Masonry Stabilized Earth (MSE) wall.

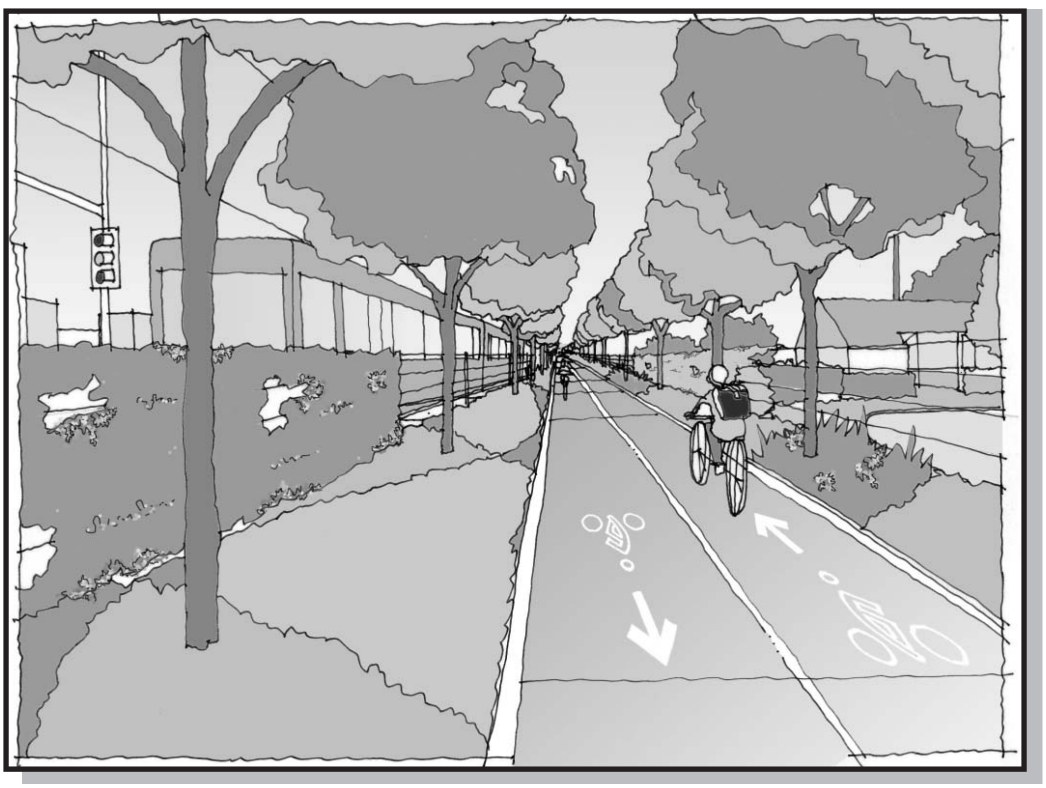
Metro

SOURCE: Zimmer Gunsul Frasca Partnership

FIGURE 4.4-25

PERSPECTIVE VIEW
WEST OF LA BREA AVENUE





This view (looking west) shows the landscaped LRT ROW with the adjacent bike path. Homes would be buffered from LRT noise by landscaped earth berms. Homes would be screened from the LRT ROW by substantial landscaping.

Metro

SOURCE: Zimmer Gunsul Frasca Partnership

FIGURE 4.4-26

PERSPECTIVE VIEW
WEST OF HAYDEN AVENUE

View of median area between Exposition Park and USC campus. The proposed LRT would add groundcover and trees to the ROW to establish a “landscaped transit parkway” link between the north and south sides of Exposition Boulevard in this segment.

Metro

SOURCE: Zimmer Gunsul Frasca Partnership

FIGURE 4.4-27

PERSPECTIVE VIEW
EXPOSITION PARK AND USC CAMPUS

through installation shall be reviewed by Metro Art in order to ensure maintainability and to address all operational issues. It is highly recommended that Metro Art be contacted early in the process of establishing an art program to provide input and expertise on transit related issues. Metro Art is available as an expert resource or consultant to the Project.

The following measures are intended to supplement and enhance the Project's current design features as elements of the Mid-City/Exposition Transit Parkway:

V1 Wherever feasible (as determined by a qualified arborist), specimen trees within the existing median shall be relocated to be incorporated into the landscape plan or along adjacent sidewalks where space permits as part of the implementation of guidelines for the Landscape Element of the Mid-City/Exposition Transit Parkway. Landscape guidelines shall be prepared before the construction phase of the Project.

V2 An embedded trackway enhanced with decorative surfaces shall be included as part of the ROW landscaping of the LRT alignment adjacent to Exposition Park.

V3 All lighting at the parking facilities and station locations shall utilize Best Available Technology to reduce spillover to adjacent land uses. In addition, all lighting at parking facilities and station locations shall be directed away from adjacent residences and landscaping, fences, or other measures to shield adjacent residences from light and glare produced by light standards and vehicle headlights as part of the design development and implementation of the integrated corridor feature sub-element.

V4 All walls, structures and fences shall be properly screened or incorporate design features to improve appearance and reduce visual intrusion. Feature improvements, at minimum, would include choice of materials, Lead Artist design input and placement as part of the implementation of all sub-elements of landscaping, art, and other Transit Parkway improvements.

V5 Per Metro Art policy and in accordance with FTA Circular 9400.1A, a public art budget shall be established for the incorporation of public art within the Project. The budget shall include design, fabrication and installation of Station Artist elements and Lead Artist design fees. Implementation of the Lead Artists designs shall be included in the Project's construction's base budget.

V6 To reduce visual impacts in the segment between Figueroa and Vermont Avenues, median landscaping shall be replaced and LRT Project elements shall be designed as part of the Mid-City/Exposition Transit Parkway with Lead Artist and community input. Project elements shall be defined to include lighting, public art, pedestrian access, etc.. Visual barriers in this segment such as fencing shall be discouraged.

V7 To reduce impact in the Mid-Corridor segment, landscaping, trees and public art and other elements of the Mid-City/Exposition Transit Parkway included in the median ROW shall be designed with Lead Artist and community input. Landscaping shall be provided where feasible, to shield the LRT alignment against privacy impacts in residential areas.

V8 To reduce impact, noise walls and landscape screening shall be designed with community and Lead Artist input. Landscaping, where feasible, shall shield the LRT alignment against privacy impacts in residential areas.

V9 Crenshaw station area design guidelines shall be prepared before the construction phase of the Project to maintain views and the visual importance of the West Angeles Cathedral.

V10 La Brea Station area design guidelines shall be prepared before the construction phase of the Project to reduce the massing and profile of the elevated structure, and to maintain existing views, where possible, to Baldwin Hills.

V11 La Cienega Station area and parking structure design guidelines shall be prepared before the construction phase of the Project with community input. These guidelines shall include consideration of north-south vistas to Baldwin Hills as part of the station and parking structure design.

V12 Design guidelines for the Jefferson Boulevard Bridge shall be prepared before the construction phase of the Project with community input. These guidelines shall include consideration of north-south vistas to Baldwin Hills as part of the bridge design.

V13 The Option C Bridge design for the Jefferson Boulevard Bridge shall be integrated into the Mid-City/Exposition Transit Parkway concept to maintain views, where possible, to Syd Kronenthal Park.

V14 An opaque wall shall be provided in back of the landscaping that faces the Baldwin Vista Neighborhood and south of the alignment.

V15 The LRT alignment, bike path and landscaping shall be designed as an integral part of the Mid-City/Exposition Transit Parkway. Landscape features and the grading of the existing ROW shall provide screening of the LRT alignment from residential areas. A double row of trees shall be placed along the bike path in Culver City between Ballona Creek and National Boulevard to provide an additional buffer between the LRT alignment on the ROW and residential areas. A landscape plan, lighting plan and the design of screening features shall be coordinated with the community and Lead Artist input during Final Design.

V16 A graded parkway shall be constructed to enclose the LRT trackway between Faye Avenue and Wesley Street.

V17 To reduce impact from reflected glare from embedded track surfaces, landscaping shall be provided, where feasible, along the sides of the ROW median, outside of the LRT dynamic envelope.

V18 If Jefferson Boulevard is widened to the north at the La Cienega grade separation, Metro shall landscape, as needed, any portion of the land acquired to accommodate the grade separation, necessary street widening and parking that would be left vacant.

V19 Before Final Design, Metro shall develop design guidelines in coordination with Culver City's station area planning process to ensure that visual impacts due to location of the North of ROW station are minimized.

V20 If the Aerial Station option is selected for the interim western terminus station, Metro shall develop design guidelines in coordination with Culver City's station area planning process before Final Design to ensure that visual impacts are minimized. These guidelines shall also consider the incorporation of vistas or view corridors for the station to Downtown Culver City.

V21 A Mid-City/Exposition LRT Customer Environment and Design Committee shall be established by Metro and shall contain representatives from the following Metro departments:

- Construction
- Operations
- Planning
- Communications

The Committee shall serve as a review board to ensure that the final designs adhere to the Metro Design Criteria and are consistent with overall agency goals and the guiding criteria for the Exposition LRT Gateway and Neighborhood Station design.

V22 Where feasible, openings shall be provided along the safety wall of the USC/Exposition Park Station's platforms to allow for views through the station.

V23 TPSS sites shall be screened with landscaping (to cover necessary fencing) in retail and residential areas.

V24 Metro shall conduct an urban design study with the City of Los Angeles before Final Design to develop design guidelines for tree location and replacement. Community input shall be included as part of the study.

4.4.4 CEQA DETERMINATION

According to CEQA, a proposed project would have a significant visual impact if it would:

- Adversely affect a scenic vista;
- Substantially damage a scenic resource, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of light or glare which would adversely affect day or nighttime views in the area.

The combination of landscaping and design elements already included in the Project, the inclusion of public art elements, and implementation of mitigation measures **V1** through **V24** would reduce potential visual impacts of the Project to less-than-significant levels.

No Action Alternative. No visual quality impacts would result from the No Action Alternative.

LPA. Impacts from the proposed Project to visual quality are presented in **Table 4.4-1**, above. The table follows the route geographically moving from east to west. Mitigation measures are provided where significant impacts would result.

Downtown Los Angeles Connection Options. Visual impacts of the Hill Street Couplet and Flower Street Design Options are discussed in detail in Section 4.4.2 "Impacts Assessment," under the "Downtown Los Angeles Connection Design Options." As determined in the evaluation in that section, no visual impacts are anticipated from the Hill Street Couplet.

The Flower Street design option has the unique feature of an undercrossing. Three design options for the undercrossing exist. The undercrossing design options are discussed in detail in Section 4.4.2 "Impact Assessment" under the "Downtown Los Angeles Connection Design Options." As discussed in that section, none of the undercrossing design options would result in a significant visual impact. In addition, mitigation would ensure no significant impacts result from either design option.

La Cienega Station Parking Options. The Southwest Corner option would construct a 60-foot parking structure at the intersection of La Cienega and Jefferson Boulevards. The structure would cast larger shadows than the shorter building currently on the site. However, there are no residential uses adjacent to the proposed site that would be affected by the increase in shadows. The proposed site for the parking structure is in a semi-industrial area and would be visually consistent with the surrounding area. No significant visual impacts are anticipated.

Jefferson Boulevard Design Options. Either of the bridge options would introduce a new visual element to the area surrounding the La Cienega Boulevard/Jefferson Boulevard intersection in the City of Los Angeles. As discussed above in Section 4.4.2 "Impact Assessment" under "Jefferson Boulevard Design Options," mitigation would reduce potentially significant visual impacts from the proposed bridge structure.

Venice/Robertson Design Options. As discussed above in Section 4.4.2 "Impact Assessment" under "Venice/Robertson Design Options," the station options would result in potentially significant visual impacts. Mitigation would ensure that the selected station would be developed per Metro and Culver City generated design guidelines. Furthermore, mitigation would ensure that the station would be sufficiently screened with landscaping to maintain an attractive aesthetic and minimize visual intrusions for adjacent neighborhoods.

Phased Implementation. "4.4.2 Impact Assessment" discusses the Phased Implementation segments in detail. As determined in that section, visual impacts would be the same as those for the LPA. Mitigation would be required to reduce significant visual impacts to less-than-significant levels.

Significant Impacts Remaining after Mitigation. Implementation of mitigation measures **V1** through **V24** would reduce impacts to visual quality to a less-than-significant level.

4.5 AIR QUALITY

This section examines the degree to which the proposed Project may result in significant adverse changes to air quality. Potential air quality impacts are analyzed for operations of the proposed Project. The analysis contained herein focuses on air pollution from two perspectives: daily emissions (regional impacts) and pollutant concentrations (localized impacts). "Emissions" refer to the quantity of pollutant released into the air, measured in pounds per day (ppd). "Concentrations" refer to the amount of pollutant material per volumetric unit of air. "Concentrations" are measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Mitigation measures for air quality are recommended where necessary. Air quality impacts associated with construction of the proposed Project are discussed in Section 4.15 Construction Impacts.

4.5.1 AFFECTED ENVIRONMENT

4.5.1.1 Pollutants and Effects

Air quality studies focus on the following five criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2) and particulate matter (PM_{10}).

Ozone. O_3 is a colorless gas and is the chief component of urban smog. Ozone impacts lung function by irritating and damaging the respiratory system. In addition, ozone causes damage to vegetation, buildings, rubber, and some plastics.[1] Ozone is one of a number of substances called photochemical oxidants that are formed when reactive organic compounds (ROC) and nitrogen oxides (precursor emissions), both byproducts of the internal combustion engine, react in the presence of ultraviolet sunlight. Ozone is present in relatively high concentrations within the Basin, and the damaging effects of photochemical smog are generally related to the concentrations of ozone.[2] Meteorology and terrain play major roles in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and cloudless skies provide for the optimum conditions.

Carbon Monoxide. CO is a gas that, in the human body, interferes with the transfer of oxygen to the blood. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is a product of incomplete combustion emitted, along with carbon dioxide, by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, CO is emitted primarily by automobiles, trucks, and motorcycles. CO is a nonreactive air pollutant that dissipates relatively quickly, so ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. When surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February, CO from motor vehicle exhaust can become locally concentrated. The highest CO concentrations measured in SCAB are typically recorded during the winter.

Nitrogen Dioxide. NO_2 is a byproduct of fuel combustion. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts quickly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 acts as an acute irritant and, in equal concentrations is more injurious than NO at atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in

[1]California Air Resources Board Almanac, 1999

[2]SCAQMD, 1993

children (two to three years old) has also been observed at concentrations below 0.3 parts per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation of PM_{10}.[3]

Sulfur Oxides. Sulfur oxides, primarily SO_2, are a product of combustion of high-sulfur fuels, such as many grades of coal and oil. In recent years, restrictions on the use of high-sulfur fuels and other air pollution control measures have substantially reduced ambient concentrations of SO_2 throughout the U.S. SO_2 is a human respiratory irritant. It also combines with moisture in the atmosphere to form sulfuric acid, which, in turn, damages vegetation and slowly erodes the exterior facades of buildings and other structures in urban areas. SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. The SO_2 concentrations have been reduced to levels well below state and national standards, but further reductions in emissions are needed to attain compliance with standards for sulfates and PM_{10}, of which SO_2 is a contributor.

Suspended Particulate Matter. Suspended, or respirable, particulate matter (PM_{10}) consists of suspended particles less than 10 microns in diameter. Particulate in this size category can be inhaled, irritating the human respiratory tract and aggravating pre-existing respiratory disease. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly, can be absorbed into the blood stream and cause damage elsewhere in the body, and can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Particulate also damage and discolor surfaces on which they settle, and reduce regional visibility.

Particulate in the atmosphere result from natural sources, such as wind erosion and ocean spray, and from human activities. Man-made sources include many types of dust- and fume-producing industrial and agricultural operations; fuel combustion and vehicle travel; grading, excavating, demolition, and blasting from construction; and atmospheric chemical and photochemical reactions. Motor vehicle traffic is the major source of PM_{10}. In urban areas, PM_{10} concentrations generally are higher in winter when more fuel is burned and meteorological conditions favor the concentration of primary air pollutants.

4.5.1.2 Regulatory Setting

The Federal Clean Air Act (CAA) governs air quality in the United States. In addition to being subject to the requirements of CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). At the federal level, CAA is administered by the United States Environmental Protection Agency (USEPA). In California, the CCAA is administered by the California Air Resources Board (CARB) at the state level and by the Air Quality Management Districts at the regional and local levels.

United States Environmental Protection Agency. USEPA is responsible for enforcing the Federal CAA. USEPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). NAAQS are required under the 1977 CAA and subsequent amendments. USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

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[3] Ibid.

California Air Resources Board. In California, CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for meeting the state requirements of the Federal CAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective on March 1996. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

South Coast Air Quality Management District. SCAQMD monitors air quality within the Project area. SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of Orange County; the non-desert portions of Los Angeles, Riverside, and Bernardino counties; and the Riverside County portion of the Salton Sea Air Basin and Mojave Desert Air Basin. The 1977 Lewis Air Quality Management Act created SCAQMD to coordinate air quality planning efforts throughout southern California. This Act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in southern California. Under the Act, renamed the Lewis-Presley Air Quality Management Act in 1988, SCAQMD is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin (SCAB). Specifically, SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary source, area source, point source and certain mobile source emissions. SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

SCAB is a subregion of the SCAQMD and covers an area of 6,745 square miles. SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. SCAB is bounded by Pacific Ocean to the west; the San Gabriel, San Bernardino and San Jacinto mountains to the north and east; and the San Diego County line to the south (**Figure 4.5-1**).

Attainment Status. CARB designates an area as non-attainment for a pollutant if air quality data show that a State standard for a pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard, and are not used as a basis for designating areas as non-attainment.

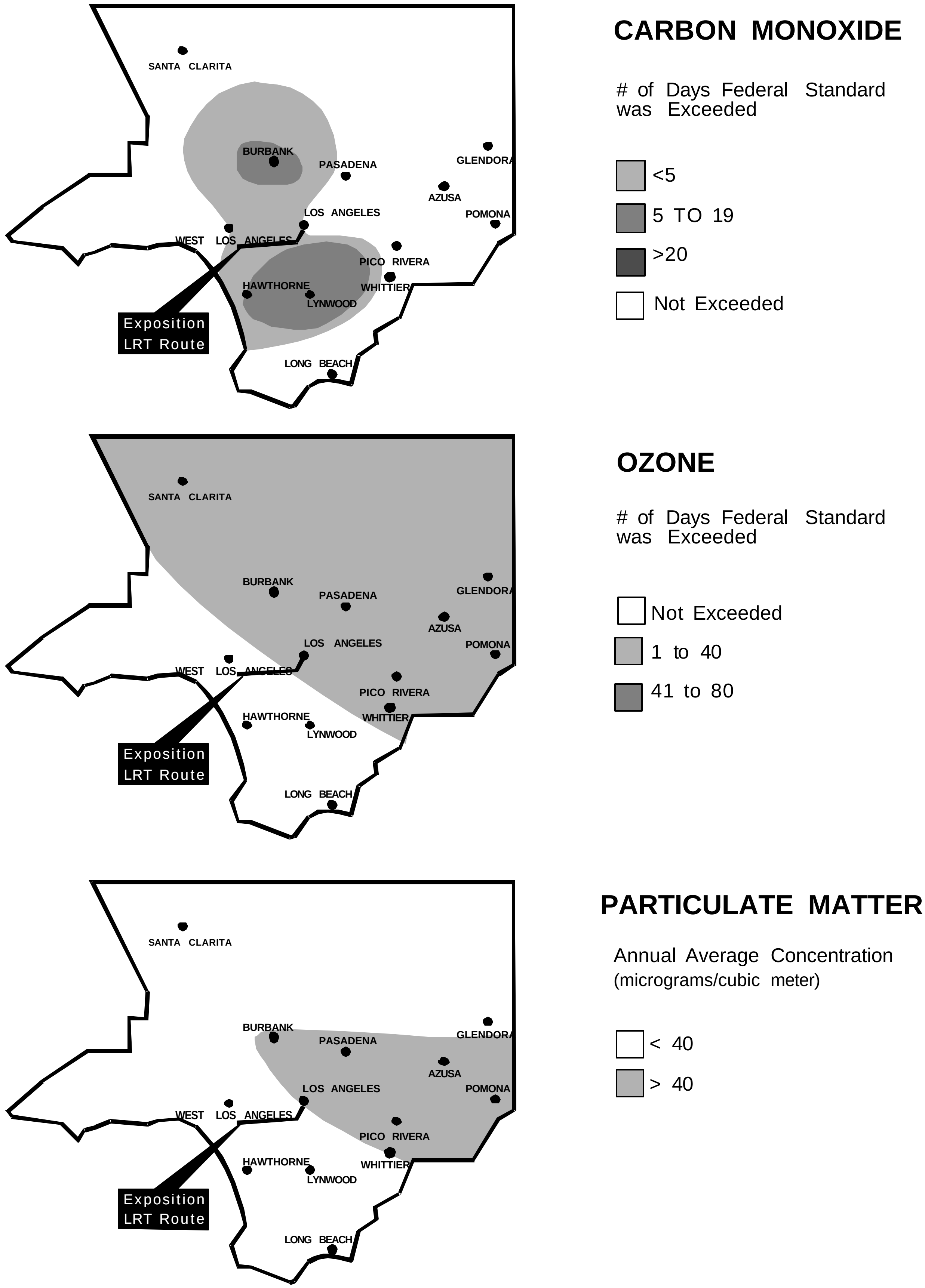
On the basis of regional monitoring data, the Los Angeles County portion of the South Coast Air Basin has been designated as a non-attainment area for ozone, carbon monoxide, and suspended Particulate (PM_{10}). The air basin is designated as an attainment area for nitrogen oxide, sulfur dioxide, sulfates, and lead (**Figure 4.5-2**).[4]

[4]California Air Resources Board: Proposed Amendments to the Designation Criteria and Amendments to the Area Designations for State Ambient Air Quality Standards and Proposed Maps of the Area Designations for the State and National Ambient Air Quality Standards, September 2000.

SOURCE: California Air Resources Board, State and Local Air Monitoring Network Plan, October 1998

FIGURE 4.5-1

SOUTH COAST AIR BASIN



Metro

SOURCE: For Carbon Monoxide and Particulate Matter: South Coast Air Quality Management District Website, 1996; for Ozone: South Coast Air Quality Management District Website, 1997

FIGURE 4.5-2

CARBON MONOXIDE, OZONE & PARTICULATE MATTER LEVELS

State Implementation Plans. Federal clean air laws require areas with unhealthy levels of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and inhaleable particulate matter to develop plans, known as State Implementation Plans (SIPs), describing how they would attain National Ambient Air Quality Standards (NAAQS). The 1992 amendments to the federal Clean Air Act set new deadlines for attainment based on the severity of the pollution problem and launched a comprehensive planning process for attaining the NAAQS.

SIPs are not single documents; rather, they are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies, such as the Bureau of Automotive Repair, prepare SIP elements and submit them to CARB for review and approval. CARB forwards SIP revisions to USEPA for approval and publication in the Federal Register. The Code of Federal Regulations (CFR) Title 40, Chapter 1, Part 52, Subpart F, Section 52.220 lists all of the items that are included in the California SIP. Many additional California submittals are pending USEPA approval.

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 operation emissions. 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.

The 2003 AQMP is the most recent air quality plan adopted by SCAQMD on August 1, 2003. The 2003 AQMP updates the attainment demonstration for the federal standards of O_3 and PM_{10}, replaces the 1997 attainment demonstration for the federal CO standard, provides a basis for a CO maintenance plan for the future, and updates the maintenance plan for the federal NO_2 standard that SCAB has met since 1992. The 2003 AQMP also 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 SCAB.

National and State Ambient Air Quality Standards

As required by the Federal CAA, NAAQS have been established for six major air pollutants: CO, NO_2, O_3, PM_{10}, SO_2, and lead. Pursuant to the CCAA, the State of California has established California Ambient Air Quality Standards (CAAQS). CAAQS are generally more stringent than the corresponding federal standards (NAAQS) and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. Since the CAAQS are more stringent than the NAAQS, the CAAQS are used as the comparative standard in the air quality analysis.

The State and Federal standards are summarized in **Table 4.5-1.** 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.

TABLE 4.5-1: STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS				
			Federal Standards	
Pollutant	**Averaging Period**	**California Standard**	**Primary**	**Secondary**
Ozone (O_3)	1 hour	0.09 ppm (180 μg/m^3)	0.12 ppm (235 μg/m^3)	Same as Primary Standard
	8 hour	--	0.08 ppm (157 μg/m^3)	
Respirable Particulate Matter (PM_{10})	24 hour	50 μg/m^3	150 μg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m^3	50 μg/m^3	
Fine Particulate Matter ($PM_{2.5}$) /a/	24 hour	No Separate Standard	65 μg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m^3	15 μg/m^3	
Carbon Monoxide (CO)	8 hour	9.0 (10 mg/m^3)	9.0 (10 mg/m^3)	--
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	--	0.053 ppm (100 μg/m^3)	Same as Primary Standard
	1 hour	0.25 ppm (470 μg/m^3)	--	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	0.03 ppm (80 μg/m^3)	--
	24 hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)	--
	3 hour	--	--	0.5 ppm (1300 μg/m^3)
	1 hour	0.25 ppm (655 μg/m^3)	--	--
Lead	30 day average	1.5 μg/m^3	--	--
	Calendar Quarter	--	1.5 μg/m^3	Same as Primary Standard

/a/ The Federal air quality standard for $PM_{2.5}$ was adopted in 1997. Presently, no methodologies for determining impacts relating to $PM_{2.5}$ have been developed or adopted by federal, state, or regional agencies. Additionally, no strategies or mitigation programs for $PM_{2.5}$ have been developed or adopted by Federal, State, or regional agencies.
SOURCE: California Air Resources Board, Federal and State Air Quality Standards (7/9/2003)

Regional Setting

The proposed Project or Project alternatives are located within the Los Angeles County portion of SCAB. Ambient pollution concentrations recorded in the Los Angeles County are among the highest in the four counties comprising the Basin. SCAB is an area of high air pollution potential due to its climate and topography. The Basin 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 typically decreases with height; however, under inversion conditions, temperature increases as altitude increases and prevents 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, air quality problems are created due to the interaction between the ocean surface and lower layer of the atmosphere, which creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward.

In addition, hydrocarbons and NO_2 react under strong sunlight, creating pollution, commonly referred to as “smog.” Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland, toward the mountains.

During the fall and winter, air quality problems are created due to CO and NO_2 emissions. High NO_2 levels usually occur during autumn or winter, on days with summer-like conditions. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the SCAB are associated with heavy traffic.

Local Setting

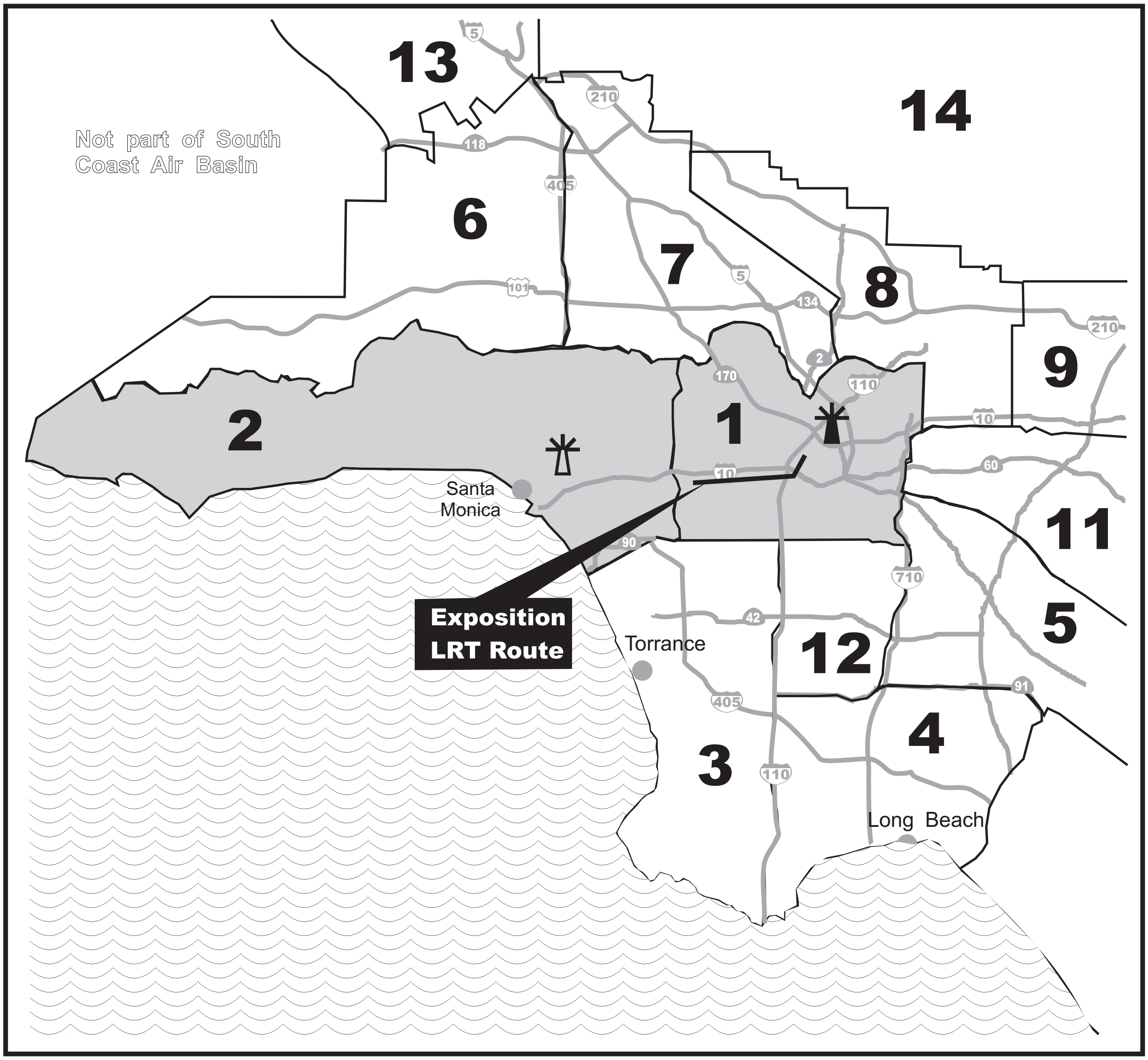
The SCAQMD monitors air quality conditions at 37 locations throughout SCAB. The Mid-City/Exposition Corridor is within the Northwest and Central Los Angeles Source Receptor Areas (**Figure 4.5-3**). The West Los Angeles-VA Hospital monitoring station serves the Northwest Los Angeles Source Receptor Area, and the Los Angeles-North Main Street monitoring station serves the Central Los Angeles Source Receptor Area. Data from the West Los Angeles-VA Hospital and Los Angeles-North Main Street monitoring stations were used to characterize existing conditions in the vicinity of the proposed Project, and establish a baseline for estimating future conditions both with and without the proposed Project. The pollutants SO_2 and PM_{10} are not monitored at the West Los Angeles monitoring station. The Los Angeles monitoring station will be used to characterize these two pollutants. A summary of the data recorded at these stations is presented in **Table 4.5-2**.

TABLE 4.5-2: AIR QUALITY SUMMARY FOR STUDY AREA MONITORING STATIONS, 2000-2002

		West Los Angeles-VA Hospital			Los Angeles-North Main Street		
Air Pollutant	**Standard Exceedance**	**2000**	**2001**	**2002**	**2000**	**2001**	**2002**
Carbon Monoxide (CO)	Maximum 8-hr concentration (ppm)	4.31	3.20	2.73	5.98	4.47	3.80
	Days > 9.5 ppm (federal 8-hr. standard)	0	0	0	0	0	0
	Days > 9 ppm (state 8-hr standard)	0	0	0	0	0	0
Ozone (O_3)	Maximum 1-hr Concentration (ppm)	0.104	0.099	0.118	0.136	0.116	0.122
	Maximum 8-hr Concentration (ppm)	0.079	0.080	0.077	0.103	0.099	0.079
	Days > 0.12 ppm (federal 1-hr standard)	0	0	0	1	0	0
	Days > 0.08 ppm (federal 8-hr standard)	0	0	0	4	1	0
	Days > 0.09 ppm (state 1-hr standard)	2	1	1	8	8	8
Nitrogen Dioxide (NO_2)	Maximum 1-hr Concentration (ppm)	0.162	0.109	0.113	0.152	0.142	0.143
	Days > 0.09 ppm (state 1-hr standard)	0	0	0	0	0	0
Sulfur Dioxide (SO_2)	Maximum 24-hr Concentration (ppm)	n/a	n/a	n/a	0.007	0.008	0.008
	Days > 0.14 ppm (federal 24-hr standard)	n/a	n/a	n/a	0	0	0
	Days > 0.05 ppm (state 24-hr standard)	n/a	n/a	n/a	0	0	0
Suspended Particulate (PM_{10})	Maximum 24-hr concentration (μg/m^3)	n/a	n/a	n/a	80	97	65
	Calculated > 150 μg/m^3 (federal 24-hr standard)	n/a	n/a	n/a	0	0	n/a
	Calculated > 50 μg/m^3 (state 24-hr standard)	n/a	n/a	n/a	91.8	119.2	n/a

n/a = information is not available
ppm = parts per million
μg/m^3 = micrograms per cubic meter
SOURCE: California Air Quality Data Summaries 1997-1999, California Air Resources Board

With the exception of O_3, no pollutants monitored at the West Los Angeles-VA Hospital monitoring station exceed the Federal and State Standards. At the Los Angeles-North Main Street monitoring station, O_3 and PM_{10} exceeded the Federal and State Standards at least once between 2000 and 2002. However, CO, NO_2, and SO_2 did not exceed the Federal or State Standards.



SOURCE: South Coast Air Quality Management District Air Monitoring Areas Map, 1989

LEGEND: West Los Angeles Monitoring Station   Los Angeles Monitoring Station

Air Monitoring Areas in Los Angeles County:

1. Central Los Angeles
2. Northwest Coastal
3. Southwest Coastal
4. South Coastal
5. Southeast Los Angeles County
6. West San Fernando Valley
7. East San Fernando Valley
8. West San Gabriel Valley
9. East San Gabriel Valley
10. Pomona/Walnut Valley
11. South San Gabriel Valley
12. South Central Los Angeles
13. Santa Clarita Valley
14. Antelope Valley
15. San Gabriel Mountains

Approx. Scale 0 3.0 6.0 9.0 Miles   NORTH

Metro

FIGURE 4.5-3

AIR MONITORING AREAS

4.5.1.3 Background Carbon Monoxide Concentrations

Carbon monoxide concentrations are typically used as the sole indicator of conformity with the CAAQS because 1) CO levels are directly related to vehicular traffic volumes, the main source of air pollutants, and 2) localized CO concentrations and characteristics can be modeled using USEPA and SCAQMD methods. In other words, the operational air quality impacts associated with a project are generally best reflected through the estimated changes in related CO concentrations. SCAQMD defines the background level as the highest eight-hour reading over the past three years.

A review of the data from the West Los Angeles-VA Hospital monitoring station during the 2000 through 2002 period indicates that the average eight-hour background CO concentration was 4.3 parts per million (ppm). An ambient eight-hour CO concentration based on the data recorded from the Los Angeles-North Main Street monitoring station is 6.0 ppm. Assuming a typical persistence factor[5] of 0.7, the estimated one-hour background concentration would be 6.1 ppm at the West Los Angeles-VA Hospital monitoring station and 8.6 ppm at the Los Angeles-Main Street monitoring station. Ambient CO concentrations at the Los Angeles-Main Street monitoring station are higher than ambient CO concentrations at the West Los Angeles-VA Hospital monitoring Station. Ambient CO concentrations at each station do not exceed the State and Federal standards.

Carbon Monoxide Concentrations at Sensitive Receptor Locations

Some land uses are considered more sensitive to changes in air quality than others, depending on the types of population groups and the activities involved. CARB has identified the following people as the most likely to be affected by air pollution: children under 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include hospitals, daycare facilities, elder care facilities, elementary schools, and parks. These land uses are located within the Mid-City/Exposition Corridor area.

There is a direct relationship between traffic/circulation congestion and CO impacts, since exhaust fumes from vehicular traffic is the primary source of CO. CO is a localized gas that dissipates very quickly under normal meteorological conditions. Therefore, CO concentrations decrease substantially as distance from the source increases. The highest CO concentrations are typically found along sidewalk locations directly adjacent to congested roadway intersections.

To provide a worst-case simulation of CO concentrations within the area that may be affected by the proposed Project or Project alternatives, CO concentrations at sidewalks adjacent to the most congested 5 of the 10 study intersections were modeled. The five intersections were selected to represent worst-case conditions because these intersections were designated by the Project traffic consultant as being significantly impacted by traffic and would have the worst level of service under the proposed Project. At each intersection, traffic-related CO concentrations were added to the background conditions discussed above. Traffic-related CO concentrations were estimated using the CAL3QHC dispersion model, which utilizes traffic volume inputs and EMFAC2002 emissions factors. **Table 4.5-3** shows existing CO concentrations at the five study intersections evaluated. As shown, none of the study intersections exceed the State and Federal one-hour CO concentration standards of 20 ppm and 35 ppm, respectively; however, all five study intersections currently exceed the State and Federal eight-hour CO concentration standards of 9.0 ppm.

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[5]Persistence factor is the ratio between the one-hour and one-hour second annual maximum CO concentrations measured at a continuous air monitoring station. A persistence factor of 0.7 is typically used in urban areas.

TABLE 4.5-3: EXISTING CARBON MONOXIDE CONCENTRATIONS		
Intersection	**1-Hour CO Concentration (ppm)**	**8-Hour CO Concentration (ppm)**
National / Washington	13.7	9.6
Jefferson / National	16.8	11.7
La Cienega / Jefferson	13.9	9.7
Normandie / Exposition	15.4	10.8
Vermont / Exposition	13.5	9.4
ppm = parts per million **SOURCE:** Terry A. Hayes Associates LLC, CAL3QHC output, 2000.		

4.5.1.4 Future Baseline Air Quality

Overall, CO concentrations in year 2020 are expected to be lower than existing conditions due to stringent state and federal mandates for lowering vehicle emissions. Although traffic volumes would be higher in the future both with and without the implementation of the proposed Project, CO emissions from vehicles are expected to be much lower due to technological advances in vehicle emissions systems, as well as from normal turnover in the vehicle fleet.[6] In other words, increases in traffic volumes are expected to be offset by increases in cleaner-running cars as a percentage of the entire vehicle fleet on the road.

As previously indicated, the average one- and eight-hour background CO concentrations were 8.6 and 6.0 ppm, respectively, at the Los Angeles-North Main Street monitoring station.[7] Year 2020 one-hour and eight-hour ambient CO concentrations would be reduced to 1.8 ppm and 1.3 ppm, respectively. This anticipated downward trend in CO concentrations is consistent with a continuing decline in historical CO measurements registered at the Los Angeles-North Main Street monitoring stations (**Table 4.5-2**).

4.5.2 IMPACT ASSESSMENT

Methodology

The following calculation methods and estimation models were used to determine air quality impacts: South Coast Air Quality Management District's (SCAQMD) construction emissions calculation formulas, CARB's EMFAC2002 emissions factor model, USEPA's CAL3QHC dispersion model, and USEPA's Industrial Source Complex-Short Term Model (ISCST3) air dispersion model. EMFAC2002, CAL3QHC, and ISCST3 are the latest air quality models approved by USEPA. All air quality calculations and model reports are found in Appendix D.

The proposed Project does not contain lead emissions sources. Therefore, emissions and concentrations related to this pollutant are not analyzed in this report.[8]

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[6]California Air Resources Board.

[7]As discussed earlier, ambient CO concentrations at the Los Angeles-North Main Street monitoring station are higher than the ambient CO concentrations at the West Los Angeles-VA Hospital monitoring station. Therefore, the ambient CO concentrations for the Los Angeles- North Main Street monitoring station were utilized to calculate year 2020 ambient CO concentrations.

[8]Prior to 1978, mobile emissions were the primary source of lead resulting in air concentrations. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. Currently, industrial sources are the primary source of lead resulting in air concentrations. Since the proposed Project does not contain an industrial component, lead emissions are not analyzed in this report.

During operations of the proposed Project, an adverse impact would occur if criteria pollutant emissions exceed the amounts listed in **Table 4.5-4** when compared to the No Action Alternative. A significant impact would also occur if pollutant concentrations exceed the NAAQS.

TABLE 4.5-4: CFR 40 PART 51 – FEDERAL THRESHOLDS	
Pollutants	Tons per Year (Increase Over No Action)
Carbon Monoxide (CO)	100
Nitrogen Oxides (NO_X)	10
Reactive Organic Gas (ROG)	10
Particulate (PM_{10})	70
SOURCE: United States Environmental Protection Agency, CFR 40 Part 51, 2000	

Conformity Criteria. According to 40 CFR Part 93.102, conformity determinations are required for projects that require the approval, funding, or implementation of FHWA or FTA projects. The proposed Project would be funded by FTA and would be required to comply with USEPA Transportation Conformity Rule (40 CFR Part 93). A project-level conformity determination is required for the proposed Project because it is a nonexempt project in a non-attainment area for O_3, CO, and PM_{10}.

The proposed Project would conform to 40 CFR Part 93 if the proposed Project meets the following criteria:

- The conformity determination is based on the most recent planning assumptions in force at the time of the conformity determination.
- The conformity determination is based on the latest emission estimation model available.
- The conformity determination is made according to the consultation procedures in the applicable implementation plan and according to the public involvement procedures established in compliance with 23 CFR Part 450. The conformity determination must be made according to 40 CFR Part 93.105 (a)(2) and (e) and the requirements of 23 CFR Part 450.
- There is a currently conforming transportation plan and TIP.
- The proposed Project comes from a conforming transportation plan and TIP.
- The proposed Project would not result in or exacerbate localized exceedances of the Federal CO or PM_{10} standards.
- The proposed Project complies with PM_{10} control measures that are contained in the applicable implementation plan.

The proposed Project or Project alternatives do not contain lead, hydrogen sulfide, or sulfate emission sources. Therefore, emissions and concentrations related to these pollutants will not be analyzed in this report.

4.5.2.1 Regional Emissions

No Action. The No Action Alternative would result in higher vehicle miles traveled (VMT) than existing conditions and would likely contribute to the degradation of air quality in the region.

LPA. Criteria pollutant emissions for the proposed Project are shown in **Table 4.5.5**. Regional VMT was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 4.5-5: ESTIMATED CHANGE IN VMT AND CRITERIA POLLUTANT EMISSIONS - BASELINE VS LPA			
	Baseline	LPA	LPA vs Baseline (Percent Change)
REGIONAL VMT (millions)			
Annual Passenger Vehicle VMT	138,051.91	137,982.01	-0.05%
Annual Bus VMT	243.57	247.99	1.82%
Annual Light/Heavy Rail VMT	11.16	12.19	0.25%
Annual Commuter Rail VMT	10.29	10.29	0 (0%)
Total Annual VMT	138,293.85	138,252.48	-0.05%
CRITERIA POLLUTANT EMISSIONS (tons per year)			
CO	300,866	300,718	-0.05%
NO_X	30,072	30,069	-0.01%
ROG	38,682	38,675	-0.02%
PM_{10}	5,910	5,907	-0.05%
VMT = vehicle miles traveled. **SOURCE**: Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model and Terry A. Hayes Associates LLC			

Implementation of the proposed Project would reduce annual regional VMT by approximately 0.05 percent. Additionally, CO and PM_{10} emissions are each projected to decrease by approximately 0.05 percent. NO_X and ROG emissions are projected to decrease by approximately 0.01 percent and 0.02 percent, respectively. This impact would be considered beneficial.

Downtown Los Angeles Connection Options. These design options would have similar regional VMT as the LPA and, thus, would result in similar pollutant emissions as the LPA. The incremental change in pollutant emissions would be the same as the LPA.

La Cienega Station Parking Options. The parking options would have similar regional VMT as the LPA, and thus, would result in similar pollutant emissions as the LPA. The incremental change in pollutant emissions would be the same as the LPA.

Jefferson Bridge Design Options. These design options would have similar regional VMT as the LPA and, thus, would result in similar pollutant emissions as the LPA. The incremental change in pollutant emissions would be the same as the LPA.

Venice/Robertson Design Options. These design options would have similar regional VMT as the LPA, and thus, would result in similar pollutant emissions as the LPA. The incremental change in pollutant emissions would be the same as the LPA.

Phased Implementation. Criteria pollutant emissions for the Crenshaw and Vermont Segments are shown in **Table 4.5-6**. As shown, the Vermont Segment would reduce total annual regional VMT by approximately 0.005 percent. CO, ROG, NO_X, and PM_{10} emissions are each projected to decrease by approximately 0.005 percent.

The Crenshaw Segment would reduce annual regional VMT by approximately 0.02 percent. CO, PM_{10}, NO_X, and ROG emissions are each projected to decrease by approximately 0.02 percent.

The La Cienega Segment would reduce annual regional VMT by approximately 0.04 percent. CO and PM_{10} emissions are each projected to decrease by approximately 0.04 percent, and NO_x and ROG emissions are projected to decrease by approximately 0.03 percent.

TABLE 4.5-6: ESTIMATED CHANGE IN VMT AND CRITERIA POLLUTANT EMISSIONS - BASELINE VS PHASED IMPLEMENTATION							
		Crenshaw Segment		Vermont Segment		La Cienega Segment	
	Baseline	Crenshaw Segment	Crenshaw Segment vs Baseline (Percent Change)	Vermont Segment	Vermont Segement vs Baseline (Percent Change)	La Cienega Segment	La Cienega vs Baseline (Percent Change)
REGIONAL VMT (millions)							
Annual Passenger Vehicle VMT	138,051.51	138,021.29	-0.02%	138,044.35	-0.01%	137,995.42	-0.04%
Annual Bus VMT	243.57	244.10	0.02%	243.55	0.007%	254.23	0.07%
Annual Light/Heavy Rail VMT	11.16	11.82	5.5%	11.54	3.4%	12.07	8.23%
Annual Commuter Rail VMT	10.29	10.29	0%	10.29	0%	10.29	0%
Total VMT	138,316.93	138,257.50	-0.02%	138,309.73	-0.005%	138,263.02	-0.04%
CRITERIA POLLUTANT EMISSIONS (tons per year)							
CO	300,866	300,799	-0.02%	300,850	-0.005%	300,745	-0.04%
NO_X	30,072	30,067	-0.02%	30,070	-0.005%	30,064	-0.03%
ROG	38,682	38,675	-0.02%	38,680	-0.005%	38,671	-0.03%
PM_{10}	5,910	5,909	-0.02%	5,910	-0.005%	5,908	-0.04%

VMT = vehicle miles traveled.
SOURCE: Metro Transportation Model, Terry A. Hayes Associates LLC

4.5.2.2 CO Hotspot Analysis

No Action. As shown in **Table 4.5-7**, the No Action Alternative would not cause CO concentrations at study intersections to exceed the State and Federal standards for CO.

LPA. USEPA CAL3QHC micro-scale dispersion model was used to calculate CO concentrations for year 2020 No Action Alternative and for the LPA. CO concentrations at the five study intersections are shown in **Table 4.5-7**. As indicated previously, CO concentrations at five study intersections were calculated using the USEPA CAL3QHC micro scale dispersion model. CO concentrations at each study intersection include future ambient one-hour and eight-hour CO concentration of 1.8 and 1.3 ppm, respectively.

TABLE 4.5-7: 2020 CARBON MONOXIDE CONCENTRATIONS /a/				
	1-Hour (parts per million)		8-Hour (parts per million)	
Intersection	No Action (2020)	Project (2020)	No Action (2020)	Project (2020)
National / Washington	2.4	2.4	1.7	1.7
Jefferson / National	3.2	3.1	2.2	2.2
La Cienega / Jefferson	2.6	2.6	1.8	1.8
Normandie / Exposition	2.6	2.4	1.8	1.7
Vermont / Exposition	2.7	2.6	1.9	1.8
State Standard	**20**		**9.0**	
Federal Standard	**35**		**9.0**	

/a/ No Action and Project concentrations include year 2020 one- and eight-hour ambient concentrations of 1.8 ppm and 1.3 ppm, respectively.
SOURCE: Terry A. Hayes Associates LLC

As indicated in **Table 4.5-7**, the proposed Project would result in one-hour CO concentrations to range from 2.4 to 3.1 ppm and eight-hour CO concentrations to range from 1.7 to 2.2 ppm. CO emitted at the five study intersections would not exceed the State and Federal one-hour CO standard of 20 ppm and 35 ppm, respectively. CO concentrations are also not anticipated to exceed the State and Federal eight-hour standard of 9.0 ppm.

CO Emissions from Parking Facilities. Three new parking facilities would be constructed for the proposed Project. The USEPA Industrial Source Complex-Short Term Model (ISCST3) air dispersion model was used to estimate CO emissions at each parking facility. CO concentrations from each facility were calculated based on lot capacity of each parking facility. The results were added to year 2020 ambient one-hour and eight-hour ambient CO concentration of 1.8 and 1.3 ppm, respectively (**Table 4.5-8**).

TABLE 4.5-8: 2020 CO CONCENTRATIONS FROM PARKING FACILITIES

Parking Facility	Capacity	1-Hour CO Concentration (ppm) /a/	8-Hour CO Concentration (ppm) /b/
Crenshaw / Exposition	868	1.9	1.3
La Cienega / Exposition	530	1.9	1.3
Venice / Robertson	845	1.9	1.3

/a/ CO concentration at each parking facility is added to the future one-hour ambient CO concentration of 1.8 ppm.
/b/ CO concentration at each parking facility is added to the future one-hour ambient CO concentration of 1.3 ppm.
ppm = parts per million.
SOURCE: Terry A. Hayes Associates LLC, 2003

As shown in **Table 4.5-8**, CO concentrations at the parking facilities are anticipated to be approximately 1.9 ppm for the one-hour period and approximately 1.3 ppm for the eight-hour period. CO concentrations emitted from the park-and-ride facilities are not anticipated to exceed State and Federal one- and eight-hour CO standards. Thus, no significant increase in CO concentrations at sensitive receptor locations is expected.

PM_{10} Hotspot Analysis. During operations of the proposed Project, buses would be a major source of PM_{10} emission. A transit center is being proposed at the Venice/Robertson station. Buses idling as passengers board or leave the buses would likely increase PM_{10} concentrations in the area. It is estimated that approximately 158 additional buses would travel to the Venice/Robertson Station daily. Using the USEPA ISCST3 dispersion model, PM_{10} concentrations at the transit center were calculated. The idling of buses would incrementally increase the 24-hour PM_{10} concentration by approximately 0.002 μg/m^3 over the existing ambient concentrations of approximately 44.2 μg/m^3. PM_{10} concentrations are not anticipated to exceed the State and Federal standard of 50 μg/m^3 and 150 μg/m^3, respectively.

Downtown Los Angeles Connection Options. These design options would have similar pollutant concentrations as the LPA and, thus, would result in similar pollutant concentrations as the LPA. Pollutant concentrations would not be anticipated to exceed the State and Federal one- and eight-hour standards.

La Cienega Station Parking Options. The parking options would have similar pollutant concentrations as the LPA and, thus, would result in similar pollutant concentrations as the LPA. Pollutant concentrations are not be anticipated to exceed the State and Federal one- and eight-hour standards.

Jefferson Boulevard Design Options. These design options would have similar pollutant concentrations as the LPA and, thus, would result in similar pollutant concentrations as the LPA. Pollutant concentrations are not anticipated to exceed the State and Federal one- and eight-hour standards.

Venice/Robertson Design Options. These design options would have similar pollutant concentrations as the LPA and, thus, would result in similar pollutant concentrations as the LPA. Pollutant concentrations are not anticipated to exceed the State and Federal one- and eight-hour standards.

Phased Implementation. The Vermont Segment would not affect pollutant concentrations at the National Boulevard/Washington Boulevard, Jefferson Boulevard/National Boulevard, La Cienega Boulevard/Jefferson Boulevard, and Normandie/Exposition intersections. CO concentrations at these intersections would be similar to the No Action Alternative. The Vermont Segment would have similar pollutant concentrations as the LPA at the Vermont/Exposition intersection Specifically CO concentrations at this intersection is approximately 2.6 ppm for the one-hour period and 1.8 for the eight-hour period (**Table 4.5-7** above).

The Vermont Segment would not have an parking facilities. Thus, CO concentrations from parking facilities are not anticipated.

The Crenshaw Segment would not affect pollutant concentrations at the National Boulevard/Washington Boulevard, Jefferson Boulevard/National Boulevard, and La Cienega Boulevard/Jefferson Boulevard intersections. CO concentrations at these intersections would be similar to the No Action Alternative. The Crenshaw Segment would have similar pollutant concentrations as the LPA at the Normandie/Exposition and Vermont/Exposition intersections. CO concentrations at these two intersections range from 2.6 to 2.7 ppm for the one-hour period and from 1.7 to 1.8 ppm for the eight-hour period (**Table 4.5-7**).

The La Cienega Segment would terminate east of La Cienega Boulevard, and therefore would traverse the same study intersections as the Crenshaw Segment. CO concentrations for this segment would be the same as the Crenshaw Segment.

The Crenshaw Segment would have one parking facility. This facility would be located at the intersection of Crenshaw Boulevard and Exposition Boulevard. Similar to the LPA, CO concentrations at the Crenshaw parking facility are anticipated to be approximately 1.9 ppm for the one-hour period and approximately 1.3 ppm for the eight-hour period.

The La Cienega Segment would have one parking facility. This facility would be located at the intersection of La Cienega Boulevard and Jefferson Boulevard. Similar to the LPA, CO concentrations at the La Cienega parking facility are anticipated to be approximately 1.9 ppm for the one-hour period and approximately 1.3 ppm for the eight-hour period.

For all three segments, buses idling at transit stations would likely increase PM_{10} concentrations in the area. The idling of buses at transit stations for the phased implementation would result in similar PM_{10} concentrations as the LPA. PM_{10} concentrations at transit stations are not anticipated to exceed the State and Federal standard of 50 $\mu g/m^3$ and 150 $\mu g/m^3$, respectively.

4.5.2.3 Conformity Analysis

No Action. The No Action Alternative does not require a conformity analysis since no transit development is associated with this alternative.

LPA. According to USEPA Transportation Conformity Rule 40 CFR Part 93.102, conformity determinations are required for projects that require the approval, funding, or implementation of FHWA/FTA projects. Since the Project would be funded by the FTA it would be required to conform with USEPA Transportation rules. A project-level conformity determination is also required for the Project because it is a nonexempt project in a non-attainment area for ozone, CO, and PM_{10}. FTA cannot approve funding for project activities beyond preliminary engineering unless the Project meets USEPA transportation conformity regulations at the project level. The criteria that the Project must satisfy are discussed below.

1. *§93.110 The conformity determination must be based on the latest planning assumptions.*

   The Association of Southern California Association of Government (SCAG) and Metro are the Metropolitan Planning Organizations responsible for determining area wide population and employment forecasts, modeling regional travel demand, and formulating the Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP). Assumptions used in the transportation and traffic analysis for this Project, upon which the microscale CO and regional criteria pollutant analyses are based, are derived from SCAG's most recently adopted population, employment, travel, and congestion estimates. Travel forecasts are based on Metro's transportation model.

2. *§93.111 The conformity determination must be based on the latest emission estimation model available.*

   Emission estimates are based on CARB EMFAC 2002 model. USEPA CAL3QHC dispersion model was used for CO modeling at roadway intersections. USEPA ISCST3 dispersion model was used for CO and PM_{10} modeling at parking facilities. EMFAC2002, CAL3QHC, and ISCST3 models are the most recent models approved by USEPA as of 2005.

3. *§93.112 Conformity determination must be made according to the consultation procedures of this rule and in the applicable implementation plan, and according to the public involvement procedures established in compliance with 23 CFR Part 450. The conformity determination must be made according to §93.105(a)(2) and (e) and the requirements of 23 CFR Part 450.*

   The proposed Project would follow the consultation procedures in 20 CFR Part 450, 40 CFR Part 51, and 40 CFR Part 93 (§93.105(a)(2) and (e)) before making its conformity determination. The environmental document for the proposed Project would be available for public review and comment prior to adoption. FTA was consulted during the preparation of the environmental document.

4. *§93.114 There must be a currently conforming transportation plan and TIP at the time of Project approval.*

   The currently conforming transportation plan is the 2001 Regional Transportation Plan (RTP). FHWA and FTA made a conformity determination for the 2001 RTP on June 8, 2001 for all areas with the exception of Coachella Valley and San Bernardino. FHWA and FTA made conformity determination for those areas on August 3, 2001.

   The currently conforming Transportation Improvement Program (TIP) is the 2002 Regional Transportation Improvement Program. The 2002 RTIP was approved by FHWA and FTA on October 4, 2002.

5. *§93.115 The proposed Project must come from a conforming transportation plan and TIP.*

   The proposed Project is part of the currently conforming transportation plan (2001 RTP) and the currently conforming TIP (2002 RTIP). The design, concept, and scope of the Project have not changed from the the 2001 RTP and 2002 RTIP.

6. *§93.116 The proposed Project would not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} non-attainment and maintenance areas.*

   The federal one- and eight-hour CO standards are 35 and 9 ppm, respectively. The Federal 24-hour PM_{10} standard is 150 $\mu g/m^3$. As stated previously, CO concentrations at study intersections and proposed parking facilities would not result in localized exceedances of the Federal one- and eight-hour CO standards. Additionally, bus activity would not result in exceedances of the Federal 24-hour PM_{10} standard. Thus, the Project would not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} non-attainment and maintenance areas.

7. *§93.117 The proposed Project must comply with PM_{10} control measures that are contained in the applicable implementation plan.*

   Buses that would be used for the Project would be powered by compressed natural gas (CNG). Additionally, the purpose of the Project is to increase transit use in the region. These control measures are incorporated in the 2003 Air Quality Management Plan, which is part of the SIP. Additionally, PM_{10} control measures in the AQMP would be used during construction of the Project.

Based on the above, the proposed Project satisfies USEPA's project-level conformity requirements (40 CFR Part 93).

Downtown Los Angeles Connection Options. These design options use the same planning assumptions, emissions model, and consultation procedure as the LPA. Additionally, the Project comes from a conforming RTP and TIP, would not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} non-attainment and maintenance areas, and complies with the PM_{10} control measures that are contained in the AQMP. Thus, similar to the LPA, these design options satisfy the USEPA's project-level conformity requirements.

La Cienega Station Parking Options. These parking options use the same planning assumptions, emissions model, and consultation procedure as the LPA. Additionally, the Project comes from a conforming RTP and TIP, would not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} non-attainment and maintenance areas, and complies with the PM_{10} control measures that are contained in the AQMP. Thus, similar to the LPA, these design options satisfy the USEPA's project-level conformity requirements.

Jefferson Boulevard Design Options. These design options use the same planning assumptions, emissions model, and consultation procedure as the LPA. Additionally, the Project comes from a conforming RTP and TIP, would not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} non-attainment and maintenance areas, and complies with the PM_{10} control measures that are contained in the AQMP.

Thus, similar to the LPA, these design options satisfy the USEPA's project-level conformity requirements.

Venice/Robertson Design Options. These design options use the same planning assumptions, emissions model, and consultation procedure as the LPA. Additionally, the Project comes from a conforming RTP and TIP, would not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} non-attainment and maintenance areas, and complies with the PM_{10} control measures that are contained in the AQMP. Thus, similar to the LPA, these design options satisfy the USEPA's project-level conformity requirements.

Phased Implementation. The Crenshaw, Vermont, and La Cienega Segments use the same planning assumptions, emissions model, and consultation procedure as the LPA. Additionally, the Project comes from a conforming RTP and TIP, would not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} non-attainment and maintenance areas, and complies with the PM_{10} control measures that are contained in the AQMP. Thus, similar to the LPA, the Crenshaw, Vermont, and La Cienega Segments satisfy the USEPA's project-level conformity requirements.

4.5.3 MITIGATION MEASURES

Regional emissions are not anticipated to exceed the Federal thresholds. Additionally, pollutant concentrations are not expected to violate the State and Federal standards. Since no significant impacts are anticipated, mitigation measures are not required.

4.5.4 CEQA DETERMINATION

CEQA Thresholds of Significance

According to CEQA, the proposed Project would result in a significant impact if the proposed Project or Project alternatives would cause any criteria pollutant concentration to exceed the CAAQS at any sensitive receptor location. A significant impact would also occur if the proposed Project or Project alternatives incrementally increase pollutant emissions that exceed the SCAQMD daily emissions thresholds (**Table 4.5-9**).

TABLE 4.5-9: SCAQMD OPERATIONAL EMISSIONS THRESHOLDS

Criteria Pollutant	Pounds Per Day	Tons per Year /a/
Reactive Organic Gas (ROG)	55	10
Nitrogen Oxides (NO_X)	55	10
Carbon Monoxide (CO)	550	100
Particulates (PM_{10})	150	27

/a/ For ease of comparison, SCAQMD daily operational emissions thresholds are converted to tons per year.
SOURCE: South Coast Air Quality Management District

No Action. The No Action Alternative would result in higher VMT than existing conditions and would likely contribute to the degradation of air quality in the region.

LPA. As shown in **Table 4.5-5**, the LPA would not incrementally increase pollutant emissions that would exceed the SCAQMD thresholds. Additionally, as discussed in "4.5.2 Impact Assessment," the LPA would not cause pollutant concentrations to exceed the State standards. Thus, less-than-significant impacts are anticipated.

Downtown Los Angeles Connection Options. Impacts associated with these design options would be similar to the LPA. As discussed in "4.5.2 Impact Assessment," incremental increases in pollutant emissions would not exceed the SCAQMD thresholds and pollutant concentrations are not anticipated to exceed the State standards. Thus, less-than-significant impacts are anticipated.

La Cienega Station Parking Options. Impacts associated with these parking options would be similar to the LPA. As discussed in "4.5.2 Impact Assessment," incremental increases in pollutant emissions would not exceed the SCAQMD thresholds and pollutant concentrations are not anticipated to exceed the State standards. Thus, less-than-significant impacts are anticipated.

Jefferson Boulevard Design Options. Impacts associated with these design options would be similar to the LPA. As discussed in "4.5.2 Impact Assessment," incremental increases in pollutant emissions would not exceed the SCAQMD thresholds and pollutant concentrations are not anticipated to exceed the State standards. Thus, less-than-significant impacts are anticipated.

Venice/Robertson Design Options. Impacts associated with these design options would be similar to the LPA. As discussed in "4.5.2 Impact Assessment," incremental increases in pollutant emissions would not exceed the SCAQMD thresholds and pollutant concentrations are not anticipated to exceed the State standards. Thus, less-than-significant impacts are anticipated.

Phased Implementation. As discussed in "4.5.2 Impact Assessment," the Crenshaw Segment would decrease pollutant emissions. This impact is considered beneficial.

The Vermont segment would decrease CO, ROG, and PM_{10} emissions. Changes in NO_X emissions are negligible. The decrease in pollutant emissions is considered a beneficial impact.

As discussed in "4.5.2 Impact Assessment," the Crenshaw and Vermont Segments would not cause pollutant concentrations to exceed the State standards. Thus, less-than-significant impacts are anticipated.

Significant Impacts Remaining after Mitigation. The proposed Project would not exceed the SCAQMD thresholds nor the State ambient air quality standards. Therefore, no mitigation is required and less-than-significant impacts are anticipated.

4.6 NOISE AND VIBRATION

This section summarizes the analysis of potential air-borne noise and ground-borne vibration impacts from the proposed Project. The potential sources of impact from this Project include the following:

- Air-borne Noise from Light Rail Vehicles
- Audible Warning Signal Noise
- Ground-borne Vibration and Noise from Train Operations
- Noise from Ancillary Equipment
- Construction Noise and Vibration

4.6.1 AFFECTED ENVIRONMENT

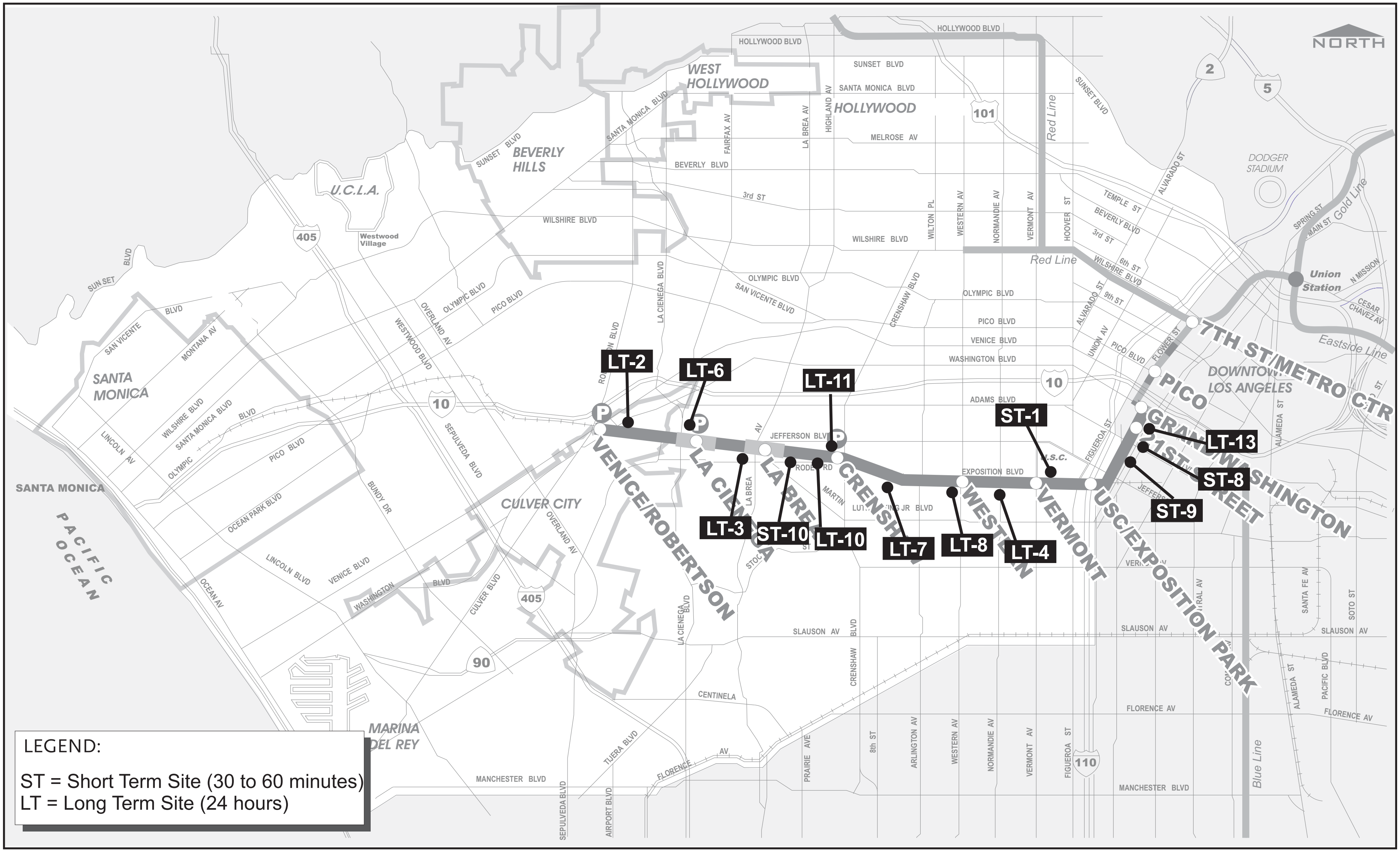
Noise

A noise-monitoring program was performed in July and August 2000 to determine existing levels of noise exposure at noise-sensitive receptors along the routes. Estimating existing noise exposure is an important step in the noise impact assessment since, as discussed below, the thresholds for noise impact are based on the existing levels of noise exposure. Most of the noise monitoring was performed using unattended monitors that were left in place for 24 hours at nine representative sites to document the variation of noise exposure over a complete day. The 24-hour monitoring was supplemented with four short-term noise measurements using a sound level meter. Most of the short-term measurements were made along busy arterial streets. Traffic counts were made at the same time to provide a means of correlating traffic volumes with ambient noise levels.

All of the measurement sites were located in noise-sensitive areas, and were selected to represent the range of existing noise conditions along the routes. **Figure 4.6-1** shows the general locations of the monitoring sites.

The noise monitors sample the A-weighted sound level multiple times per second and can be programmed to provide a wide variety of statistics. For this study, the monitors were programmed to collect hourly and daily noise statistics along with information about particularly loud noise events. The daily results are summarized in **Table 4.6-1** in terms of the Day-Night Sound Level (Ldn) and the Equivalent Sound Level (Leq) over the daytime and nighttime hours. The short-term noise survey results are summarized in **Table 4.6-2** in terms of 30- to 60-minute equivalent sound levels. These terms are defined below.

A-Weighted Sound Level: To approximate the way that humans respond to sound, a filter circuit with frequency characteristics similar to the human hearing system was built into sound measurement equipment. Measurements with this filter enabled are referred to as *A-weighted sound levels*, expressed in decibels (dBA). Community noise is almost always characterized in terms of A-weighted levels. Assuming the same noise source, a noise level increase of one decibel is only barely perceptible outside the laboratory, a three- decibel increase is usually perceptible, and a ten-decibel increase is perceived to be an approximate doubling of loudness.



SOURCE: Hanson, Miller, Miller, Hanson, 2000

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FIGURE 4.6-1

NOISE MONITORING SITES

Equivalent Sound Level (Leq): Because community noise constantly fluctuates, Leq was developed to provide a single number to characterize the perceived loudness of different community noise environments. Leq is a measure of sound energy over a period of time. It is referred to as the *equivalent sound level* because it is equivalent to the level of a steady sound, which, over a referenced duration and location, has the same A-weighted sound energy as the fluctuating sound. Social surveys have shown that Leq, and Leq type noise metrics like Ldn, are one of the best measures available for characterizing community response to fluctuating noise environments. Leqs for periods of one hour, the daytime or nighttime hours, and 24 hours are commonly used in environmental assessments. Because Leq is a measure of the total sound energy, any new community noise source will cause Leq to increase. To estimate how transit operations in the Mid-City/Exposition LRT Corridor would increase Leq, it would be necessary to know the existing Leq and to add in the sound energy that would be generated by all of the transit operations. The more transit operations, the longer the trains and the louder the vehicle, the more sound energy would be added to the existing Leq.

Day-Night Sound Level (Ldn): Ldn, also abbreviated DNL, is a 24-hour Leq, but with a ten-decibel penalty added to noise events occurring at night. Nighttime is defined as 10:00 p.m. to 7:00 a.m. The effect of this penalty is that, in the calculation of Ldn, an event during nighttime hours is equivalent to an event during the daytime hours that is ten decibels louder, or to ten events at the same sound level during the daytime hours. This strongly weights Ldn toward nighttime noise, since most people are more easily annoyed by noise during the nighttime hours when both background noise is lower and most people are sleeping. Ldn is often used to characterize community noise when assessing community noise impacts. Almost all urban and suburban neighborhoods are in the range of Ldn 50 to 70 dBA. An Ldn of 70 dBA represents a relatively noisy area, which might be found near a freeway or a busy surface street. Residential neighborhoods that are not near major sound sources are usually in the range of Ldn 50 to 60 dBA. If there is a freeway or moderately busy arterial nearby, or any substantial nighttime noise, Ldn is usually in the range of 60 to 65 dBA.

The 24-hour noise monitoring results were generalized to estimate the existing Ldn at all residences and noise-sensitive receptors where people normally sleep, and the short-term measurement results were used to estimate the existing Leq at specific institutional land uses with primarily daytime use. The results shown in **Tables 4.6-1** and **4.6-2** served as a basis for the noise impact assessment described below.

TABLE 4.6-1: DAY-NIGHT NOISE SURVEY RESULTS						
		Start		A-weighted L_{dn} (dBA)	L_{eq} (dBA)	
Site No. /a/	Location (East to West)	Date	Time		Day /b/	Night /c/
LT-13	2400 S. Flower St. (Orthopaedic Hospital)	08/03/00	15:00	70	66	62
LT-4	1250 Exposition Blvd.	07/10/00	16:00	69	67	61
LT-8	1647 Exposition Blvd.	07/11/00	18:00	67	67	58
LT-7	2531 Exposition Place /d/	07/11/00	17:00	58	57	49
LT-11	3719 Exposition Blvd.	07/12/00	19:00	65	64	57
LT-10	3500 Muirfield Road	07/12/00	18:00	60	58	52
LT-3	3420 Sycamore Ave.	07/10/00	14:00	59	55	53
LT-6	5539 Jefferson Blvd.	07/11/00	16:00	68	66	60
LT-2	3437 Caroline Ave., Culver City	07/10/00	13:00	62	60	54

/a/ Sites are shown on **Figure 4.6-2**.
/b/ Day: 7:00 a.m. to 10:00 p.m.
/c/ Night: 10:00 p.m. to 7:00 a.m.
/d/ L_{dn} and L_{eq} values estimated from L33 to exclude non-representative intermittent noise
SOURCE: Harris Miller Miller & Hanson Inc., 2000

TABLE 4.6-2: SHORT-TERM (30-60 MIN) NOISE SURVEY RESULTS				
		Start		L_{eq} (dBA)
Site No. /a/	Location (East to West)	Date	Time	
ST-8	2400 S. Flower St. (Orthopaedic Hospital)	07/13/00	15:15	68
ST-9	John Adams Junior High School - Hill Street, 28th-30th St.	07/13/00	16:25	66
ST-1	USC, Marshall School of Business - 701 Exposition Blvd.	07/10/00	17:20	63
ST-10	Dorsey High School - South of Exposition Blvd.	07/13/00	17:45	56

/a/ Sites are shown in **Figure 4.6-2**.
SOURCE: Harris Miller Miller & Hanson Inc., 2000

Vibration

Perceptible ground-borne vibration is not a phenomenon that most people are exposed to on a regular basis. The most common sources of perceptible ground-borne vibration are trucks operating on roadways with potholes, construction activities, and rail operations. Given that there are no existing rail operations in the majority of the Exposition Corridor, there is no consistent, existing source of vibration in the Project area. The vibration impact assessment was based on absolute criteria (see "Methodology - Vibration" below), and does not depend on existing levels of ground-borne vibration.

The ground vibration propagation characteristics were based on tests carried out in July 2000 and supplemental measurements carried out in September 2004 at the following seven representative sites:

- Site V-1 was located at Exposition Place and Fourth Avenue south of the Exposition alignment and west of Arlington Avenue;
- Site V-2 was located at Sycamore Avenue and Exposition Boulevard south of the existing railroad tracks. Sycamore Avenue is located one block west of La Brea;
- Site V-3 was located in Syd Kronenthal Park, north of National Boulevard and west of the Ballona Creek culvert;
- Site V-4 was located in Culver City, in a residential neighborhood at the end of Caroline Avenue, north of the existing tracks and National Boulevard;
- Site V-5 was located at the intersection of Hillcrest Drive and Exposition Boulevard in a residential neighborhood to the south of the existing tracks;
- Site V-6 was located in a residential neighborhood at the end of 4th Avenue, to the south of the existing tracks; and
- Site V-7 was located in a parking lot on the USC campus to the south of the existing tracks and Exposition Boulevard, near Vermont Avenue.

The results at the above sites were used to divide the corridor into representative regions with similar ground-borne vibration propagation characteristics as follows:

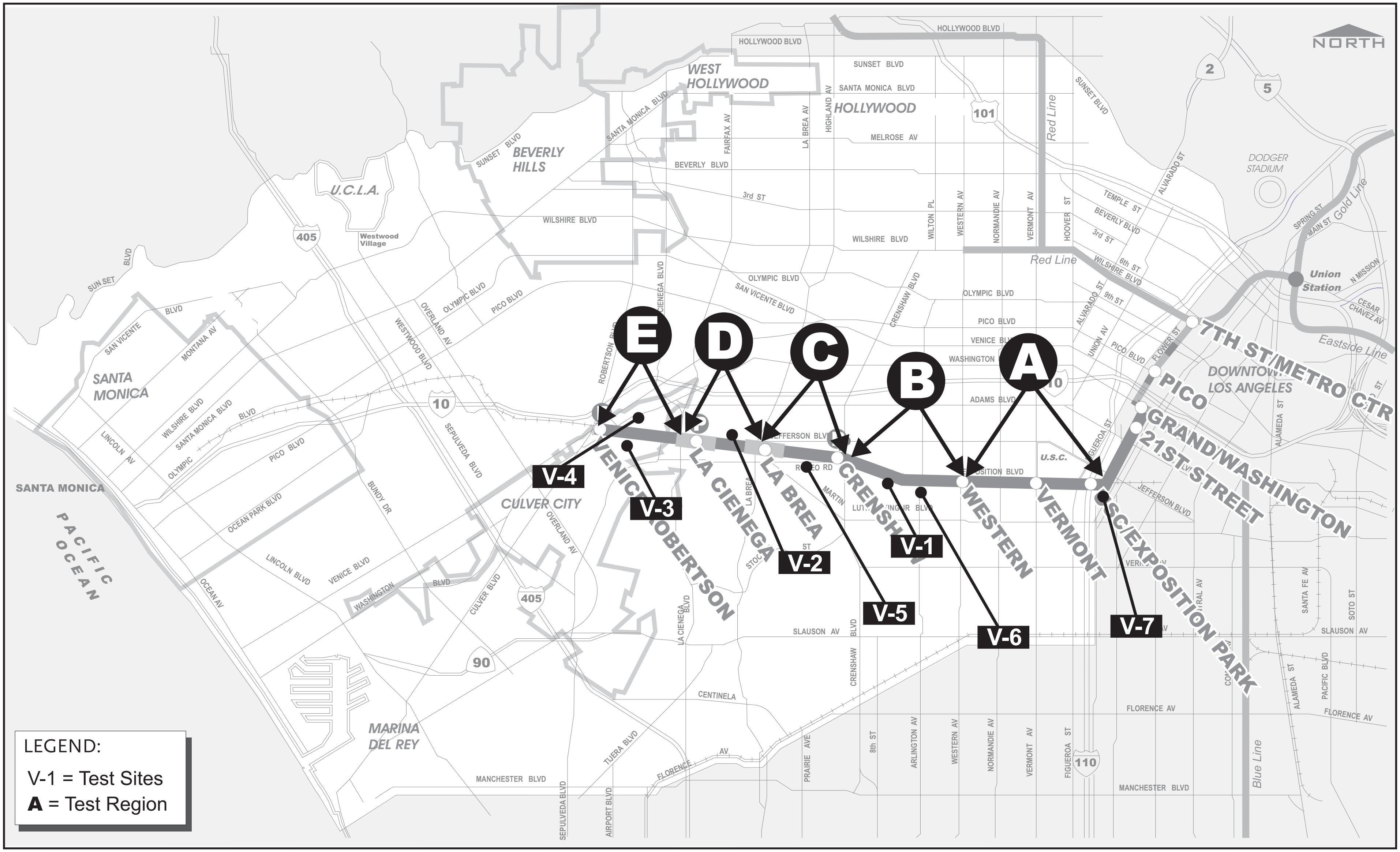
- Region A included all areas along the Exposition Corridor between Hill/Jefferson and Western Avenues;
- Region B included all areas along the Exposition Corridor between Western Avenue and Crenshaw Boulevard;
- Region C included all areas along the Exposition Corridor between Crenshaw Boulevard and La Brea Avenue.
- Region D included all areas along the Exposition Corridor between La Brea Avenue and La Cienega Boulevard; and
- Region E included all areas along the Exposition Corridor between La Cienega Boulevard and Venice/Robertson, including all of Culver City.

The locations of the vibration propagation test sites and regions are shown in **Figure 4.6-2**.

4.6.2 IMPACT ASSESSMENT

The potential sources of noise or vibration impact from this Project include:

Air-borne Noise from Light Rail Vehicles. This is the typical noise from electric-powered transit trains passing through communities. Train operations do not cause air-borne noise when operating in subway, except for localized areas near vent shafts and tunnel portals. The primary source of air-borne noise is steel wheels rolling on steel rails. This rolling noise increases in direct proportion to increases in train speed, and also increases substantially when impacts occur as train wheels traverse the rail gaps and joints of special trackwork for crossovers and turnouts. In addition, noise from transit vehicle auxiliary equipment, such as the air conditioning and traction motor ventilation systems, may sometimes be significant.



SOURCE: Hanson, Miller, Miller, Hanson, 2000

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FIGURE 4.6-2

VIBRATION PROPAGATION TEST SITES AND REGIONS

Audible Warning Signal Noise. Audible warnings would be required for light rail transit (LRT) systems at gate-protected grade crossings. Audible warnings include both on-vehicle horns or chimes and bells on the crossing gates. The standard procedure would be for the bells to ring while the gates are active and for the train operator to sound the horn or chime as the train approaches the crossing. The noise effects of audible warning signals for grade crossings would be limited to sensitive receptors in the immediate vicinity of the crossing.

Ground-borne Vibration and Noise from Train Operations. The interaction of steel wheels rolling on steel rails would create vibration that propagates through the track support system and the intervening ground to nearby buildings. The resulting building vibration is referred to as ground-borne or structure-borne vibration. The ground-borne vibration may be perceived by building occupants as the vibration of the floors or the rattling of windows, items on shelves or items hanging on the walls. The vibration may also result in ground-borne noise inside buildings, a low-frequency “rumble” radiated by vibrating room surfaces.

Special Trackwork. Special trackwork comprising of turnouts and crossovers will be required. Turnouts, popularly known as switches, allow a train to move from one track onto another and can be a major source of train noise. A crossover is an arrangement of turnouts that allow a train to move between parallel tracks. The noise associated with turnouts and crossovers comes from a small gap in the heart of the switch necessary to allow trains to go in either of the two directions the switch allows.

Ancillary Equipment. This category includes any heating, ventilation or air conditioning (HVAC) equipment needed in stations and traction power substations (TPSS) that would be dispersed at regular intervals along the line. The light rail stations would be open air and would require only minimal HVAC equipment. Also, the TPSS units would be fully enclosed systems units similar to those used on the Blue, Green and Gold Lines that emit very low sound levels. Therefore, any noise impacts from ancillary equipment would occur in very localized areas. To ensure that there would be no noise impacts from ancillary equipment, the purchase documents for all ancillary equipment would include noise limits and the location and specifications for all HVAC and TPSS equipment would be reviewed during the final design.

Construction Noise and Vibration. Construction noise and vibration would be temporary impacts that would not have any long-term effects on communities. The potential noise and vibration impacts from construction activities are discussed in Section 4.15 Construction Impacts.

Impact Criteria - Noise

A determination of a noise impact for this project was 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 more transit noise was allowed in neighborhoods with high levels of existing noise, smaller increases in total noise exposure were 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 was 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 one-hour Leq during the facility's operating period was used.

There were 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. Noise mitigation will 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 4.6-3**. 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 4.6-4** gives the information from **Table 4.6-3** in terms of the allowable increase in cumulative noise exposure (noise from existing sources plus Project noise) as a function of existing noise exposure. As the existing noise exposure increases, the amount that the rail Project noise can increase, before there is impact, decreases.

TABLE 4.6-3: FTA NOISE IMPACT CRITERIA				
Existing Noise Exposure L_{eq} or L_{dn}	Project Noise Exposure Impact Thresholds, L_{eq} or L_{dn} (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	59	57	64
44	52	59	57	64
45	52	59	57	64
46	53	60	58	65
47	53	60	58	65
48	53	60	58	65
49	54	60	59	65
50	54	60	59	65
51	54	61	59	66
52	55	61	60	66
53	55	61	60	66
54	55	62	60	67
55	56	62	61	67
56	56	63	61	68
57	57	63	62	68
58	57	63	62	68
59	58	64	63	69
60	58	64	63	69
61	59	65	64	70
62	59	65	64	70
63	60	66	65	71
64	61	66	66	71
65	61	67	66	72
66	62	68	67	73
67	63	68	68	73
68	63	69	68	74
69	64	70	69	75
70	65	70	70	75
71	66	71	71	76
72	66	72	71	77
73	66	72	71	77
74	66	73	71	78
75	66	74	71	79
76	66	75	71	80
77	66	75	71	80
>77	66	76	71	81

/a/ 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 Definitions:
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, and churches.
SOURCE: FTA Transit Noise and Vibration Assessment, April 1995

TABLE 4.6-4: CUMULATIVE NOISE LEVEL INCREASE ALLOWED BY FTA CRITERIA				
Existing Noise Exposure L_{eq} or L_{dn}	Impact Thresholds for Increase in Cumulative Noise Exposure, L_{dn} or L_{eq}, dBA /a/			
	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	3	3	6
71	1	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

/a/ L_{dn} is used for land uses where nighttime sensitivity is a factor; maximum 1-hour L_{eq} is used for land use involving only daytime activities.
SOURCE: FTA Guidance Manual, 1995

Methodology - Noise

The approach used to assess potential noise impact consists of combining the available data on the Project design and planned operational characteristics with models of train noise to predict future noise levels. Then, for sensitive receptors, the predictions were compared with estimates of existing noise exposure. The steps in the assessment were:

- Determine Study Area Characteristics
- Determine Existing Noise Environment
- Develop Noise Projection Models
- Perform Noise Impact Assessment
- Inventory Impact and Assess Mitigation Options

For the purposes of this study, a *severe* noise impact was defined by FTA criteria, as summarized in the preceeding section "Impact Criteria - Noise." The noise impact criteria are summarized in **Table 4.6-3**, shown above. 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 total future noise exposure would be the combination of the existing noise exposure and the additional noise exposure caused by the transit Project. Ldn was used to characterize noise exposure for residential land uses and Leq was used for other land uses.

The final product of the noise assessment is a tabulation of impacts and a list of mitigation measures required to minimize the impacts.

Prediction Model for Train Noise. The train noise prediction model was based on formulas given in the FTA guidance manual, and on measurements of Siemens P2000 light rail vehicles performed by Metro in June 1999 and measurements of the P2000 vehicles in revenue service operation on the Gold Line.[1] The noise projections assume that a two-car train consists of 95-foot-long light rail vehicles, operating at 40 mph on tangent ballast and tie track, generates a maximum sound level of 77 dBA at 50 feet from the track centerline (over soft ground).

The other components of the noise projections are the schedule (number of trains per day during daytime and nighttime hours), train speed, distance and track configuration. In the calculation of Ldn, trains during the nighttime hours (10:00 p.m. to 7:00 a.m.) were considered equivalent to 10 daytime trains. This reflects most people's increased sensitivity to noise at night when it may disturb their sleep or relaxation. For the full build year, the operating times of the LRT line will be between 5:00 a.m. and 1:00 a.m. The full build operating plan for LRT service specifies peak-hour headways of five minutes and off-peak headways of 12 minutes. For the analysis, it was assumed that two-car trains would operate the entire day, with two exceptions: 1) 75 percent of the peak-hour operations will be three-car trains and all trains after 9:00 p.m. will be one-car trains. Peak hour operations will occur between 6:00 a.m. and 9:00 a.m. and between 3:00 p.m. and 7:00 p.m. Off-peak operations will occur between 5:00 a.m. and 6:00 a.m., 9:00 a.m. and 3:00 p.m., and from 7:00 p.m. to 1:00 a.m.

Prediction Model for Audible Warning Devices at Grade Crossings. The California Public Utilities Commission (CPUC) has jurisdiction over the operation of light rail transit systems. CPUC regulations require the use of audible warning devices, including on-vehicle audible warnings and crossing bells, at all grade crossings that are protected by crossing gates. Specifically, Section 7.8 of CPUC General Order 75-C specifies that: "Unless omitted by permission of the Commission, the warning aspect shall be accompanied by the sounding of a bell." The General Order does not specify a sound level for the bell. Most grade crossing bells conform to the American Railway Engineering and Maintenance-of-Way Association (AREMA) *Communication and Signaling Manual* specifications. Sections 3-2.60 and 3-2.61 of the AREMA manual state that crossing bells should generate a sound level between 75 dBA and 105 dBA at a distance of 10 feet from the bell. Typical grade crossing bells on light rail transit systems generate a sound level of 85 dBA at 10 feet, which is equivalent to 72 dBA at 50 feet from the bell.

The standard operating procedure is for the crossing bells to ring for the entire warning cycle, starting just before the gates begin to lower and stopping when the gates return to the vertical (open) position. As a result, the crossing bell rings for 30 to 50 seconds per train pass-by (the actual duration is dependent on several factors, such as the train speed and the crossing geometry). There are a number of LRT grade crossings in California, particularly in residential areas, where the CPUC has approved modifying the operating procedures so that the bells stop ringing once the gates reach the down (closed) position. This

[1]Los Angeles P2000 Light Rail Vehicle Noise and Vibration Measurement Results, Wilson, Ihrig & Associates, July 1999.

reduces the bell ring time to approximately 10 to 15 seconds. For the noise impact assessment, it has been assumed that all crossing bells near noise sensitive receptors would sound for 12 seconds each time a train passes in either the eastbound or westbound direction. The bell sound level has also been assumed to be 72 dBA at a distance of 50 feet from the bell.

CPUC General Order 75-C, Section 3.04, requires that light rail vehicles be equipped with two different audible warnings, one measuring at least 85 dBA at 100 feet in front of the vehicle and the other measuring at least 75 dBA at 100 feet. Metro light rail vehicles operating on the Gold Line are equipped with three different audible warnings, a horn, a lower sound level horn-type sound commonly referred to as the "quacker" and a gong. All three are electronically generated and are broadcast from speakers under the front of the light rail vehicles. Sound levels from the gong and quacker have been measured at just over 75 dBA at 100 feet in front of the train, whereas the horn is substantially louder, measuring at least 85 dBA at 100 feet.

CPUC General Order 75-C states that an on-vehicle audible warning must be sounded in advance of each gate-protected grade crossing. However, the General Order does not specify which of the audible warnings must be sounded. It is common practice for light rail transit systems in California, including those operating on a semi-exclusive right-of-way (like the Mid-City/Exposition LRT), to use a 75 dBA warning like the Gold Line quacker or gong. For the initial operations of the Gold Line, Metro policy was to sound the 85 dBA horn prior to all gated-protected grade crossings. However, Metro recently changed its operating rules so that the 75 dBA warning is sounded. Train operators always have the discretion of using the louder horn when they feel the additional warning is needed for pedestrians or motorists near the grade crossing. For this analysis, it was assumed that a 75 dBA quacker (or similar device) would be sounded at all gate-protected grade crossings in residential or other noise-sensitive areas.

To summarize, the analysis of noise impacts for audible warning devices on the proposed Mid-City/Exposition LRT corridor was based on the following assumptions:

- Noise levels from crossing gate bells would be 72 dBA at a horizontal distance of 50 feet in any direction from the bell;
- The crossing bells would ring for a total of 12 seconds for each scheduled train;
- An audible warning (quacker, gong, or similar device) with a maximum sound level of 75 dBA at 100 feet in front of the train would be sounded prior to each gate-protected grade crossing; and
- The quacker would be sounded starting approximately 300 feet prior to the crossing and continue until the vehicle reaches the crossing.

These operating procedures would need to be reviewed and approved by CPUC. Since the same basic procedures are in use on the Gold Line and other California light rail systems, it is reasonable to assume that the procedures would be approved for the Mid-City/Exposition LRT.

Impact Criteria - Vibration

The FTA ground-borne vibration impact criteria are based on land use and train frequency, as shown in **Table 4.6-5**. It should be noted that **Table 4.6-5** includes 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.

TABLE 4.6-5: GROUND-BORNE VIBRATION AND NOISE IMPACT CRITERIA BY LAND USE CATEGORY				
	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
Land Use Category	Frequent Events /a/	Infrequent Events/b/	Frequent Events	Infrequent Events
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB /c/	65 VdB /c/	- /d/	- /d/
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

/a/ "Frequent Events" is defined as more than 70 vibration events per day. Most transit projects fall into this category.
/b/ "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
/c/ 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.
/d/ Vibration-sensitive equipment is not sensitive to ground-borne noise.
SOURCE: FTA Guidance Manual, 1995

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 4.6-5**. Due to the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a transit project. **Table 4.6-6** gives criteria for acceptable levels of ground-borne vibration for various types of special buildings. As in **Table 4.6-5**, **Table 4.6-6** also includes separate FTA criteria for ground-borne noise expressed in dBA.

TABLE 4.6-6: GROUND-BORNE VIBRATION AND NOISE IMPACT CRITERIA FOR SPECIAL BUILDINGS				
	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
Type of Buildings or Room /a/	Frequent Events /b/	Infrequent Events /c/	Frequent Events	Infrequent Events
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	30 dbA	43 dbA

/a/ "Frequent Events" is defined as more than 70 vibration events per day. Most transit projects fall into this category.
/b/ "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
/c/ 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 p.m., it should be rare that the trains interfere with the use of the hall.
SOURCE: FTA Guidance Manual, 1995

Methodology - Vibration

The approach used to assess vibration impact consists of combining the available data on the Project design and planned operational characteristics with models of train vibration to Project future vibration levels. Then, for sensitive receptors, the projections were compared with applicable vibration criteria. The steps in the assessment were:

- Determine Study Area Characteristics;
- Determine Vibration Propagation Characteristics of the Ground;
- Develop Vibration Projection Models;
- Perform Vibration Impact Assessment; and
- Inventory Impact and Assess Mitigation Options.

The final product of the noise assessment was a tabulation of impacts and a list of mitigation measures required to minimize the impacts.

Prediction Model for Train Vibration. The projection of ground-borne vibration from LRT operations on the Mid-City/Exposition route was based on vibration source data for the proposed Siemens Transportation Systems P2000 light rail vehicle, obtained from tests carried out in April 2000. These data, representing the vibration forces generated by the interaction of the steel wheels rolling on the steel rails, were combined with the vibration propagation characteristics of the ground to provide estimates of ground-borne vibration at sensitive receptor locations. It is important to note that the vibration criteria is based on the maximum vibration level during an LRT passby, and that maximum vibration levels are independent of train length. Therefore, a one-car LRT train generates the same maximum vibration level as a three-car LRT train.

Although there has been relatively little research into human response to building vibration, there is considerable experience with ground-borne vibration from rail systems and other common vibration sources. Some conclusions are:

- Ground-borne vibration from transit trains should be characterized in terms of the RMS (root-mean-square) vibration velocity amplitude, with a one-second time constant. This is in contrast to vibration from blasting and other construction activities that have the potential to cause building damage. For building damage criteria, ground-borne vibration is almost always expressed in terms of the peak particle velocity (PPV);
- The threshold of vibration perception for most humans is around 65 VdB, levels in the 70 to 75 VdB range are often noticeable but acceptable, and levels in excess of 80 VdB are often considered unacceptable;
- For urban transit systems with 10 to 20 trains per hour over a day, limits for acceptable levels of residential ground-borne vibration are usually between 70 and 75 VdB;
- For human annoyance, there is some relationship between the number of events and the degree of annoyance caused by the vibration. It is intuitive to expect that more frequent vibration events, or events that last longer, will be more annoying to building occupants. Because of the limited amount of information available, there is no clear basis for defining this tradeoff. To account for most commuter rail systems having many fewer daily operations than the typical urban transit line, the criteria in the FTA Guidance Manual include an 8 VdB higher impact threshold if there are fewer than 70 trains per day; and
- It is very rare that ground-borne vibration from any type of train operations would be high enough to cause any sort of building damage, even minor cosmetic damage. The only real concern would be that the vibration would be intrusive to building occupants or interfere with vibration sensitive equipment.

4.6.2.1 Air-borne Noise from Light Rail Vehicles

No Action. The No Action Alternative would not result in any air-borne noise from LRV impacts.

LPA. For the Mid-City/Exposition LRT, the results in **Table 4.6-7** indicate that without mitigation, 115 residential noise impacts are anticipated, including 66 with moderate impact and 49 with severe impact. Of the moderate impacts, 60 would be single-family residences and six would be multi-family buildings. All 49 of the severe impacts single-family residences. Most of the severe impacts are anticipated to occur along the south side of Exposition Boulevard between 2[nd] and 10[th] Avenues, where the backyards of residences abut the route, and in some cases the LRT tracks would be within ten feet of residences. Appendix J contains detailed maps showing where noise impacts would occur along the alignment.

TABLE 4.6-7: SUMMARY OF RESIDENTIAL NOISE IMPACT ASSESSMENT FOR THE MID-CITY/ EXPOSITION LRT

LRT Segment	Near Track Centerline Distance (ft)	Max. Train Speed (mph) /b/	Exist L_{dn} (dBA)	Project L_{dn} dBA: Impact Threshold			Fut. L_{dn} (dBA)	Number of Impacts: Impact		Severe	
				Impact	Severe	Train Noise		SF /a/	MF /a/	SF	MF
Downtown to Exposition Blvd.	There are no Category 2 impacts in this segment.										
Exposition Blvd., Vermont Ave. to Western Ave.	50	35	69	64	69	62	70	0	0	0	0
Exposition Blvd., Western Ave. to 2nd Ave.	25	50	67	62	68	68	71	0	4	0	0
North side of Exposition Blvd., 2nd Ave. to 10th Ave.	80	55	67	62	68	60	68	0	0	0	0
South side of Exposition Blvd., 2nd Ave. to 10th Ave.	10	55	58	57	62	70	71	23	0	42	0
North side of Exposition Blvd, Crenshaw Blvd to Field Ave	75	50	65	61	66	61	66	0	0	0	0
South side of Exposition Blvd, Crenshaw Blvd to Farmdale Ave	55	55	60	58	63	63	65	16	1	0	0
South side of Exposition Blvd, La Brea Ave to Cloverdale Ave	65	55	59	57	63	64	65	6	1	3	0
North side of Jefferson Blvd, La Brea Ave to La Cienega	110	55	65	61	66	58	65	0	0	0	0
South side of Jefferson Blvd, Cloverdale Ave to Carmona Ave	70	55	63	60	65	62	66	5	0	0	0
North side of National Blvd, Fay Ave to Helms Ave	40	55	62	59	65	65	67	10	0	4	0
							Total	**60**	**6**	**49**	**0**

/a/ SF = single-family residence, MF = multi-family residential building.
/b/ For purposes of the noise study, the highest possible train speeds were used to provide a worst case analysis. Actual train speeds will be less in most areas.
SOURCE: Harris Miller Miller & Hanson Inc., 2004

For non-residential, noise-sensitive sites that fall under FTA Land Use Category 3, site-specific noise impact assessments were performed. The results of this analysis are summarized in **Table 4.6-8** for each of the short-term measurement sites along the Mid-City/Exposition route. The results indicate that no noise impacts from LRT operations are projected at any of these non-residential sites.

TABLE 4.6-8: SUMMARY OF NON-RESIDENTIAL NOISE IMPACT FROM LIGHT RAIL VEHICLE

Site Description	Distance (ft)	Max. Train Speed (mph)/a/	Exist L_{eq}(h) (dBA)	Project L_{eq}(h) (dBA) Impact Threshold Impact	Project L_{eq}(h) (dBA) Impact Threshold Severe	Project L_{eq}(h) (dBA) Train Noise	Future L_{eq}(h) (dBA)	Impact
Abram Friedman Occupational Center /b/	15	35	68	68	74	63	69	None
John Adams Middle School	32	35	63	65	70	59	64	None
Los Angeles Trade Technical College	48	35	63	65	70	56	63	None
St. John's Church/c/	64	35	63	65	70	54	63	None
Future site of LAUSD School	120	35	63	65	70	49	63	None
USC, Marshall School of Business	75	35	63	65	70	53	63	None
Dawa Center of Masjid Umar	80	35	63	65	70	52	63	None
West Angeles Cathedral	110	20	65	66	71	45	65	None
Foshay Learning Center	112	30	67	68	72	49	67	None
Al Madinah School	68	20	65	66	71	48	65	None
Dorsey High School - South of Exposition Blvd	50	55	56	61	67	59	61	None
Turning Point School	120	35	60	63	68	58	62	None

/a/ For purposes of the noise study, the highest possible train speeds were used to provide a worst case analysis. Actual train speeds will be less in most areas.
/b/ The Abram Friedman Occupation Center would be directly adjacent to the Hill Street Couplet Design Option. It would not be considered a sensitive receptor to the LPA or Flower Street Design Option.
/c/ St. John's Church would be directly adjacent to the Flower Street Design Option. It would not be considered a sensitive receptor to the LPA or Hill Street Couplet Design Option.
SOURCE: Hanson Miller Miller Hanson Inc., 2004

Downtown Los Angeles Connection Options. There would be no air-borne noise from LRT vehicles impacts related to any of the downtown Los Angeles connection options.

La Cienega Station Parking Options. No LRT air-borne noise impacts would result from either parking option.

Jefferson Boulevard Design Options. There would be no air-borne noise from LRT vehicles impacts related to either bridge design option at La Cienega Boulevard. Under either design option, the aerial station would have sound walls to dampen LRT noise.

Venice/Robertson Design Options. Impacts from any of the proposed Venice/Robertson Design Options would be the same as those for the LPA.

Phased Implementation. **Table 4.6-7** lists anticipated noise impacts along the alignment.
Vermont Segment Noise Impacts - There would be no air-borne noise from LRT vehicles impacts for the Vermont Segment of the Phased Implementation.

Crenshaw Segment Noise Impacts - For the Crenshaw Segment, there would be 28 moderate impacts (23 single-family and 5 multi-family) and 42 severe impacts (all single-family residences).

La Cienega Segment Noise Impacts - For the La Cienega Segment, in total, there would be 53 moderate impacts (46 single-family and 7 multi-family) and 45 severe impacts (all single-family).

There would be no additional air-borne noise from LRT vehicles impacts related to the Phased Implementation.

4.6.2.2 Audible Warning Signal Noise

No Action. The No Action Alternative would not result in any audible warning signal noise impacts.

LPA. *Grade Crossing Audible Warnings* - The quacker and crossing bells have the potential to generate either additional impacts where none were projected for the light rail vehicles or to increase the magnitude of the projected noise impacts (i.e. from moderate to severe). Light rail trains have been modeled to travel at speeds of up to 45 and 55 mph through most gate-protected crossings. At this speed, the light rail vehicle would create substantially more noise than the quacker at grade crossings. At most locations along the alignment, the addition of the chime would increase the projected noise exposure levels by less than 0.5 dBA Ldn and therefore would not result in either new impacts or increase the severity of projected impacts from the light rail vehicle.

There are a total of 11 gate-protected grade crossings, including one pedestrian crossing that would require a crossing gate, along the Mid-City/Exposition LRT Alignment. These crossings are listed from east to west in **Table 4.6-9**. Audible warnings would occur at grade crossings west of Gramercy Place. East of Gramercy Place, the LRT would be street-running (i.e. the LRT would operate with existing traffic signals) and, per PUC requirements, an audible warning device is not necessary at street-running grade crossings.

The potential for noise impacts from the crossing bells is generally confined to the sensitive receptors within 100 feet of the crossing gates. At these locations, the Ldn would increase by one to three dBA. At a few locations within 50 feet of the crossing bell, the increase could be four to eight dBA. As a result, noise from the bells would be projected to generate five new impacts and increase severity of Project light rail vehicle noise impacts, from moderate to severe, at 16 sensitive receptors. **Table 4.6-9** gives the locations of the additional moderate impacts and severe impacts projected from the crossing bells.

TABLE 4.6-9: SUMMARY OF NOISE IMPACTS FROM GRADE CROSSING AUDIBLE WARNINGS						
	Increase in L_{dn} (dBA)	Number of Impacts				
		Impact		Severe		
Crossing		SF /a/	MF /a/	SF	MF	Notes
Arlington Ave.	1 to 4	2	3	0	1	
7th Ave.	1 to 8	0	0	3	0	
9th Ave. (Private crossing)	1 to 2	0	0	4	0	
10th Ave.	--	--	--	--	--	No sensitive receptors w/in 300 ft
11th Ave.	--	--	--	--	--	No sensitive receptors w/in 300 ft
Buckingham Rd.	1 to 2	0	0	4	2	
Farmdale Ave.	1 to 3	0	0	0	2	Includes 1 motel & 2 MFR
Hauser Bl. (Private crossing)	--	--	--	--	--	No sensitive receptors w/in 300 ft
Wesley St.	0 to 1	0	0	0	0	Pedestrian crossing only
National Blvd.	--	--	--	--	--	No sensitive receptors w/in 300
Washington Blvd.	--	--	--	--	--	No sensitive receptors w/in 300
Total Impacts		2	3	11	5	

/a/ SF = single-family residence, MF = multi-family residential building.
SOURCE: Harris Miller Miller & Hanson Inc. and ATS Consulting LLC, 2004

The noise projections assume ongoing programs of wheel and rail maintenance that will keep wheel and rail surfaces in good condition. Although it is possible that modified maintenance procedures could further reduce noise emissions, the effectiveness of any proposed maintenance procedure would need to be demonstrated before it could be considered as a mitigation option. In many cases, noise impacts can be reduced or eliminated by using sound walls adjacent to at-grade track sections or located along the outer edges of aerial structures that block the direct sound path between the source and receiver. To be effective, sound barriers must break the direct line of sight from the source to the receiver, have a minimum surface density of four pound/square feet, and have no holes, drainage gaps or access openings that act as "sound leaks." Barriers can be walls composed of masonry blocks, pre-cast concrete, wood, or metal, depending on structural, aesthetic and cost factors. Where space permits, a barrier may also consist of a wall on top of an earth berm to reduce the amount of wall required. To provide a significant noise reduction (in the range of five to ten dBA), barriers usually must be about four feet high on aerial structure or berms and six to eight feet high for at-grade track near the right-of-way line. The actual noise reduction would depend on the specific site geometry.

Although noise control at the receiver is typically the least desirable approach, improving the exterior-to-interior sound insulation of buildings would be an option that may be applied in areas where other alternatives for noise mitigation are either impractical or not cost effective. This usually requires replacing or improving windows, weather stripping doors, and installing central air-conditioning systems. Central air-conditioning is usually needed because opening windows or using wall units for ventilation may short-circuit the sound insulation improvements.

The results of the noise impact assessment indicate that for the light rail vehicle noise, a reduction of approximately six dBA would be required to eliminate all severe impacts from the Mid-City/Exposition LRT. This amount of noise reduction could be achieved by constructing six- to eight-foot high sound barrier walls within eight feet of the tracks. The sound walls listed in **Table 4.6-10** would be recommended at all locations with moderate impact or severe impact, which would require a total of 9,450 lineal feet (1.8 miles) of sound wall.

TABLE 4.6-10: SUMMARY OF NOISE MITIGATION USING SOUND WALLS /a/						
	Sound Barrier Wall Description				Residual Impacts	
Location	Side	Civil Stations	Length (ft) /b/	Height (ft)	Impact	Severe
Van Ness Ave. to Arlington Ave.	S	280+00 - 283+40	340	8	0	0
2nd Ave. to 7th Ave.	S	288+00 - 305+20	1,720	8	3(SF)/c/,/d/	0
7th Ave. to 9th Ave.	S	306+00 - 312+50	650	8	5(SF)/d/	0
Wellington Rd. to Buckingham Rd.	S	344+50 - 353+80	970	6	0	0
Buckingham Rd. to Farmdale Ave.	S	355+00 - 371+00	1,600	6	2(1SF,1MF) /d/	0
La Brea Ave. to Hauser Blvd.	S	398+80 - 424+00	2,520	4-6/e/	0	0
Fay Ave. to Wesley St.	N	470+50 - 487+00	1,650	6	0	0
Total			**9,450**		**10**	**0**

/a/ Mitigation includes sound barriers at a location of eight feet from the near track centerline to minimize the height while providing the maximum amount of noise reduction.
/b/ Height is measured from top of rail to ensure proper relationship to rail car.
/c/ SF = single-family residence, MF = multi-family residence
/d/ All residual impacts would be mitigated by measures in **Table 4.6-11**. See also mitigation measure **NV3**.
/e/ At this location a six-foot high barrier would be required at grade for 1,760 feet and a four-foot high barrier would be required on the elevated structure for 760 feet.
Note: Mitigation is subjected to slight modification during final design but any changed would be designed to have equivalent noise reduction capabilities. Additional sound wall would be added if required to meet federal noise criteria.
SOURCE: Harris Miller Miller & Hanson Inc., 2004

With sound walls, noise impacts would remain at 7th Avenue and Farmdale Avenue. The additional attenuation method discussion below and in **Table 4.6-11** would fully mitigate these residual impacts.

Noise Attenuation Methods for Grade Crossings - The sound barriers would also be effective at reducing noise from the quacker at grade crossings. If the speaker for the quacker is located near the bottom of the train, as it is on the Gold Line vehicles, then the sound barriers would reduce quacker noise by approximately eight dBA.

Typical grade crossing bells are 10 to 15 dBA louder than the lower limit of the AREMA standard. A bell with a sound level of 64 dBA at 50 feet would still meet the AREMA standard but would substantially reduce community noise levels near grade crossings. In addition, crossing bells radiate noise in a 360 degree plane.

Table 4.6-11 lists the recommendations for noise mitigation at grade crossings identified in **Table 4.6-9** above as having additional noise impact. The recommendations in **Table 4.6-11** include noise barriers already recommended in **Table 4.6-10**. At the 7th Avenue and Farmdale grade crossings, sound insulation would be recommended to mitigate the noise impacts at sensitive receptors directly adjacent to the grade crossings.

TABLE 4.6-11: SUMMARY OF NOISE MITIGATION AT GRADE CROSSINGS			
Grade Crossing Location	Mitigation Recommendations /a/	Residual Impacts	
		Impact	Severe
Arlington Ave.	Reduce crossing bell level, noise barrier	0	0
7th Ave.	Reduce crossing bell level, noise barrier extension or sound insulation	0	0
9th Ave.	Reduce crossing bell level, noise barrier	0	0
Buckingham Rd.	Reduce crossing bell level, noise barrier, sound insulation	0	0
Farmdale Ave.	Reduce crossing bell level, noise barrier, sound insulation	0	0
Total		**0**	**0**

Note: Crossing bell levels shall be reduced to 64 dBA at 50 feet. See mitigation measure **NV3**.
/a/ Mitigation includes sound barriers at locations already recommended in Table 4.6-10.
SOURCE: Harris Miller Miller & Hanson Inc., 2004

Downtown Los Angeles Connection Options. There would be no audible warning signal noise impacts for any of the downtown Los Angeles connection options.

La Cienega Station Parking Options. There would be no audible warning signal noise impacts for the parking options.

Jefferson Boulevard Design Options. There would be no audible warning signal noise impacts for either bridge design option at Jefferson Boulevard.

Venice/Robertson Design Options. There would be no audible warning signal noise impacts for the Venice/Robertson design options.

Phased Implementation. *Vermont Segment Noise Impacts.* There would be no noise mitigation using sound walls for the Vermont Segment. This is because all of the impacted areas identified in **Tables 4.6-10** and **4.6-11** are located west of Vermont. Therefore, as shown in **Table 4.6-10**, there would be no audible signal noise impacts for the Vermont Segment of the Phased Implementation.

Crenshaw Segment Noise Impacts. **Table 4.6-10** indicates that for the Crenshaw Segment, mitigation would eliminate all noise impacts in this segment.

La Cienega Segment Noise Impacts. **Table 4.6-10** indicates that for the La Cienega Segment, mitigation would eliminate all noise impacts in this segment.

As indicated in **Table 4.6-11**, there would be no additional audible warning signal noise impacts related to the Phased Implementation.

4.6.2.3 Special Trackwork Noise Impacts

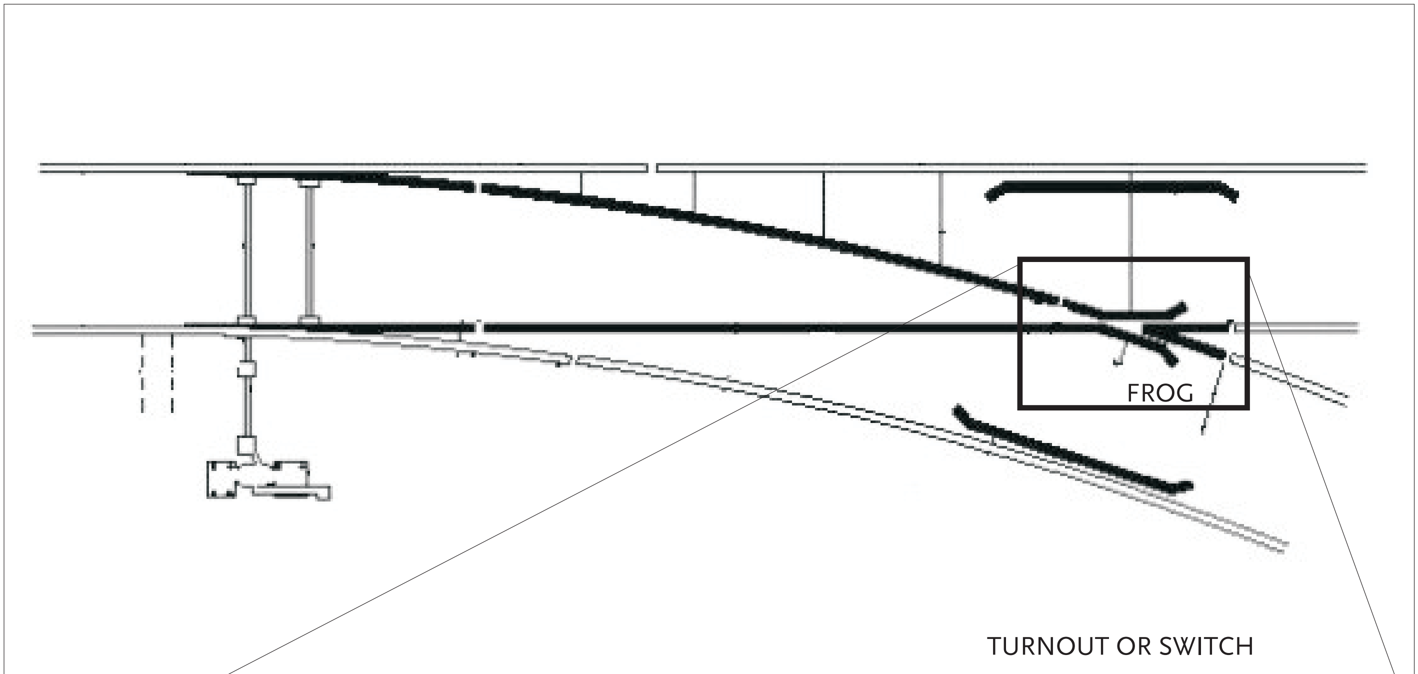
Special trackwork comprised of turnouts and crossovers will be required. Turnouts, popularly known as switches, allow a train to move from one track onto another and can be a major source of train noise. A crossover is an arrangement of turnouts that allow a train to move between parallel tracks.

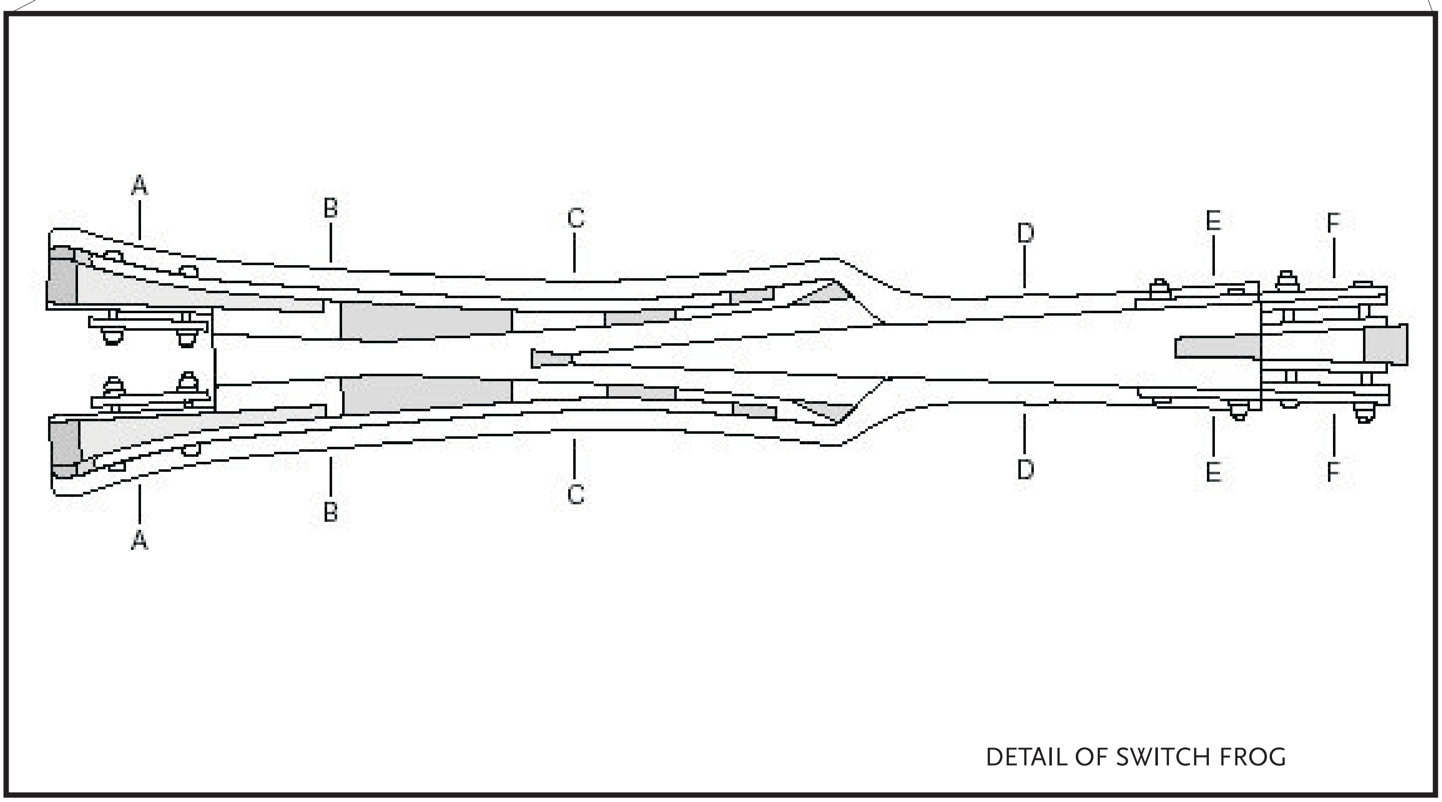
The noise associated with turnouts and crossovers comes from a small gap in the heart of the switch necessary to allow trains to go in either of the two directions the switch allows. This gap is located in a central part of the switch known as a frog. It is called a frog because its shape is thought to resemble that of the small amphibian. **Figure 4.6-3** depicts both a turnout and a frog.

In the process of crossing over rail gaps LRT wheels can increase LRT noise levels by as much as six dBA. Thus, relocating turnovers and crossovers away from residential areas can be an effective noise mitigation measure. Another approach for mitigating the noise impacts would be to use spring-rail frogs in place of standard rigid frogs. These devices close the flangeway gap in the main traffic direction, eliminating the wheel impacts that cause higher noise levels. Spring-rail frogs can be a cost-effective mitigation measure when traffic will move in the primary direction most of the time.

No Action. The No Action Alternative would not result in any crossover noise impacts.

LPA. **Table 4.6-12** identifies where impacts would occur and what mitigation would reduce the noise impacts.





SOURCE: DMJM Harris

FIGURE 4.6-3

TURNOUT/SWITCH AND FROG

TABLE 4.6-12: SUMMARY OF NOISE IMPACTS FROM PROPOSED CROSSOVER LOCATIONS				
Station Number	Crossover Location	Level of Impact without Crossover	Level of Impact with Crossover	Mitigation
103	Flower St. between 18th St. and Washington Blvd.	No Impact	No Impact	No mitigation needed
111/a/	Flower St. and 20th St.	No Impact	No Impact	No mitigation needed
152/a/	Flower St. and 33rd St.	No Impact	No Impact	No mitigation needed
213	Exposition Blvd and Catalina St.	No Impact	Impact	A spring-rail or moveable frog shall be used at this location
311	Exposition Blvd between 7th St. and 9th St.	Severe Impact (south side of street) No Impact (north side of street)	Severe Impact (south side of street) Impact (north side of street)	This crossover shall be moved to a less sensitive location or a spring-rail frog shall be used at this location.
413	Exposition Blvd and Cloverdale Avenue	Impact (south side of street) No Impact (north side of street)	Severe Impact (south side of street) Impact (north side of street)	This crossover shall be moved to a less sensitive location or a spring-rail frog shall be used at this location.
482, 484, or 486 /b/	National Blvd, just east of Wesley St.	Severe Impact (north side of street)	Severe Impact (north side of street)	A spring-rail frog shall be used at this location
489	Exposition Blvd and Wesley Street	No Impact	No Impact	No mitigation needed

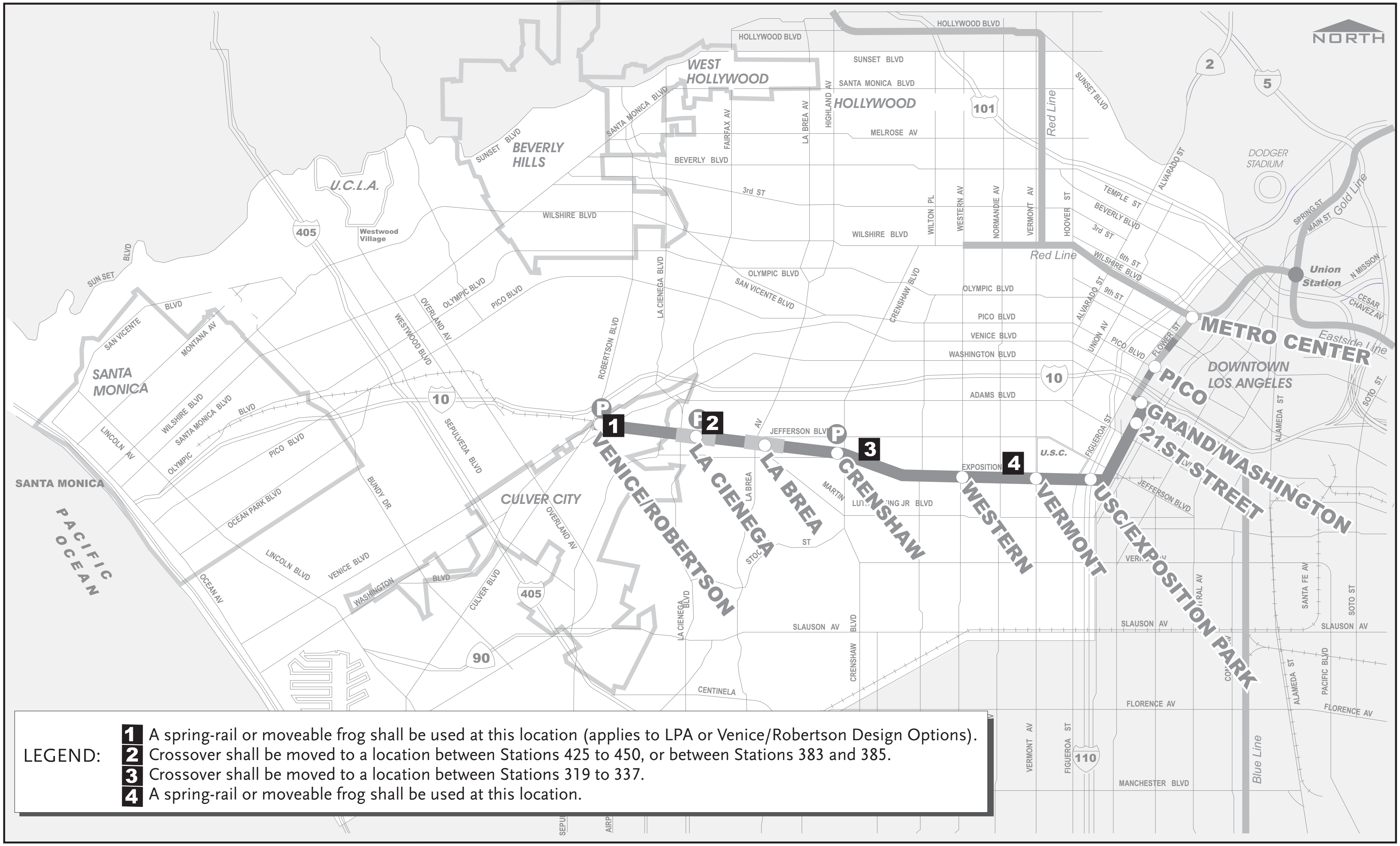
/a/ These crossovers would occur only on the Flower Street Design Option alignment. They do not apply to the LPA or the Hill Street Couplet.
/b/ The North of ROW Option A crossover would be located at Station 486. The North of ROW Option B crossover would be located at Station 484. The North of ROW Option C crossover would be located at Station 482. These possible crossover locations do not apply to the LPA or the Aerial Station Option.
SOURCE: Harris Miller Miller & Hanson, 2005

Table 4.6-12 indicates that crossover noise would result new noise impacts or increase the severity of previously identified impacts at Stations 213, 311, 413, and 489. Mitigation would be necessary to reduce these impacts. As noted in the table, the crossover locations at 311 and 413 would either be moved to less sensitive locations or a particular trackway devise called a spring-rail frog would be used at these locations thereby eliminating those impacts. At Stations 213 and 486, it is not feasible to move the crossover. Instead, a spring-rail frog shall be used and would eliminate the impact. **Figure 4.6-4** displays where the mitigated crossover locations would occur. No residual noise impacts from crossover locations are anticipated with implementation of mitigation measures.

Downtown Los Angeles Connection Options. There would not be any crossover noise impacts in the Downtown Los Angeles segment of the alignment.

La Cienega Station Parking Options. There would not be any crossover noise impact related to either parking option.

Jefferson Boulevard Design Options. There would not be any crossover noise impact related to either bridge design option.



SOURCE: Terry A. Hayes Associates LLC, 2005

Metro

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.6-4

CROSSOVER MITIGATION

Venice/Robertson Design Options. As described in **Table 4.6-12**, a crossover at Station 482, 484, or 486 (the crossover location is dictated by the design option selected) would cause further noise impacts than predicted from air-borne LRT vehicle noise alone. To mitigate this impact, a spring-rail frog would be used at the crossover. The use of a spring-rail frog would eliminate the noise impact and the need for higher sound walls.

Phased Implementation. *Vermont Segment Special Trackwork Noise Impacts* - There would be no crossover noise impacts in any of the phased implementation segments.

Crenshaw Segment Special Trackwork Noise Impacts - The crossovers at Stations 213 and 311 would result in noise impacts and would need to be mitigated as described in **Table 4.6-12**. The proposed crossover for the Crenshaw Segment would not be located near any noise sensitive receptors. The crossover for the Crenshaw Station could be located anywhere between Stations 319 and 337.

La Cienega Segment Special Trackwork Noise Impacts - The crossovers at Stations 213, 311, and 413 would result in noise impacts and would need to be mitigated as described in **Table 4.6-12**. The proposed crossover for the La Cienega Segment would also not be located near any noise sensitive receptors. The crossover for the La Cienega Station could be located anywhere between Stations 425 and 450.

4.6.2.4 Ground-Borne Vibrations and Noise from Train Operation

No Action. The No Action Alternative would not result in any ground-borne vibration or noise impacts.

LPA. For the Mid-City/Exposition LRT, the train vibration model and FTA criteria described above in the "Methodology" section were applied to identify sensitive receptors where vibration impact are projected. The results of the vibration impact assessment are summarized in **Table 4.6-13** in terms of the number of projected impacts at single-family residences, multi-family buildings and other sensitive receptors. The results were broken down by corridor area, including representative train speeds, distances and train vibration projections. In addition to the residential locations listed in **Table 4.6-13**, no vibration impacts are projected at any institutional land uses, including the West Angeles Cathedral or the Dawa Center of Masjid Umar at Vermont Avenue. The vibration levels at these locations would be well below the vibration impact criterion.

The City of Culver City expressed concern regarding LRT-caused vibration at technology-oriented businesses in the Hayden tract. Buildings in this area would be approximately 100 feet from the ROW. Based on the vibration testing conducted in this area (directly across National Boulevard at Caroline Avenue), the vibration levels would be below 60 VdB at that distance. At this level, only extremely sensitive equipment, such as electron microscopes would be likely to be affected. No such sensitive uses are present in the Hayden tract. In addition, the vibration levels from the trains would be similar to existing vibration from heavy trucks in the eastbound lanes of National Boulevard.

Table 4.6-13 indicates that without mitigation, vibration impacts are projected at 150 single-family residences and 23 multi-family buildings. As shown in the table, all of the vibration impacts are projected to occur at residences along Exposition Boulevard between Vermont Avenue and Crenshaw Boulevard. Within this area, the greatest concentration of impacts are projected to occur at single-family residences on the south side of the corridor between Vermont Avenue and Western Avenue and between Arlington Avenue and Crenshaw Boulevard, where residential properties abut the route, and in some cases where the LRT tracks would be within ten feet of residences. Impacts to sensitive receptors would be adverse. Appendix J contains detailed maps showing where vibrations impacts would occur along the alignment.

TABLE 4.6-13: SUMMARY OF GROUND-BORNE VIBRATION IMPACT ASSESSMENT					
Track Segment	Train Speed (mph)	Dist. from Near Track Centerline (ft)	Proj. Levels (VdB)	No. of Vibration Impacts	
				SF /a/	MF /a/
Downtown to Exposition Blvd.	There are no Category 2 impacts in this segment.				
Exposition Blvd., from Vermont Ave. to Western Ave.	35	50	75	93	18
Exposition Blvd., from Western Ave. to Arlington Ave.	50	25	81	3	5
Exposition Blvd., from Arlington Ave. to Crenshaw Blvd.	55	10	92	54	0
Exposition Blvd., from Crenshaw Blvd. to La Brea Ave.	55	55	72	0	0
Jefferson Blvd., from La Brea Ave. to La Cienega Blvd.	55	60	72	0	0
National Blvd., from La Cienega Blvd. to Venice Blvd.	55	40	67	0	0
			Total	150	23

/a/ SF = single-family residence, MF = multi-family residential building.
SOURCE: Harris Miller Miller & Hanson Inc., 2004

Vibration Attenuation Methods - The vibration assessment assumes that the LRT vehicle wheels and track would be maintained in good condition with regular wheel truing and rail grinding. Beyond this, there are several approaches to reduce ground-borne vibration from LRT operation, as described below.

1. 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.

2. Resilient Fasteners - Resilient fasteners can be used in place of standard track fasteners to attach the track to concrete slabs. Resilient fasteners are typically much less stiff compared with the standard fasteners, and can provide significant vibration reduction, particularly in frequencies above 40 Hz. Vibration reduction would be roughly comparable to a ballast mat depending on the vibration frequency.

3. Resiliently Supported Ties - Resiliently supported ties consist of concrete ties supported on rubber pads. Vibration reduction is achieved through the isolation of the track system on the rubber elements. As with resilient fasteners, resiliently supported ties are effective at reducing high frequency vibration, more effective than resilient fasteners in reducing low frequencies in the 30 to 40 Hz range. Vibration reduction would be roughly comparable to a ballast mat depending on the vibration frequency.

4. 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, providing a three to five VdB reduction.

5. 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.

6. Relocation of Crossovers or Special Trackwork - Because the impacts of wheels over rail gaps at track crossover locations increases vibration by about 10 dBA, 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.

Table 4.6-14 displays the results of the vibration impact assessment with mitigation applied.

TABLE 4.6-14: SUMMARY OF VIBRATION MITIGATION

Track Segment	Vibration Mitigation Description			Residual Impacts	
	Civil Stations	Length (ft)	Vibration Attenuation Methods /b/	SF /b/	MF /b/
Exposition Blvd., from Vermont Ave. to Western Ave.	209 - 249	4,000	1,2,3,4,5	0	0
Exposition Blvd., from Western Ave. to Arlington Ave.	280 - 286	600	1,2,3,4,5	0	0
Exposition Blvd., from Arlington Ave. to Crenshaw Blvd.	286 - 313	2,700	1,2,3,4,5	0	0
Total		**7,300**		**0**	**0**

/a/ The numbers in this column refer to the list of vibration attenuation methods that precedes the table. At the EIS stage of a project, specific mitigation measures cannot be recommended, as there is not enough detailed engineering information available. Final mitigation measures will be determined during the engineering phase of the Project. The vibration mitigation recommendations show the locations and extent of vibration mitigation.
/b/ SF = single-family residence, MF = multi-family residential building
SOURCE: Harris Miller Miller & Hanson Inc., 2004

Downtown Los Angeles Connection Options. There would be no ground-borne vibration or noise impacts related to any of the downtown Los Angeles connection options.

La Cienega Station Parking Options. There would be no ground-borne vibration or noise impacts related to the parking options.

Jefferson Boulevard Design Options. There would be no ground-borne vibration or noise impacts related to either bridge design at Jefferson Boulevard.

Venice/Robertson Design Options. There would be no ground-borne vibration or noise impacts related to the Aerial Station or ROW Station Options. No ground-borne vibration or noise impacts are anticipated LRT operations.

Additionally, the North of ROW station option A would pass within approximately ten feet of a sound recording studio located at 3431 Wesley Street. Significant vibration and ground-borne noise impacts are projected at this building due to LRT operations. The criterion for vibration impact for this type of building is 65 VdB. The projected ground-borne vibration level at the closest edge of this building is 77 VdB. In addition, and probably more importantly for a studio, the ground-borne noise impact criterion is 25 dBA and the projected ground-borne noise level at the closest edge of this building is 47 dBA. The projections for ground-borne noise are based on the projected ground-borne vibration levels at the building edge.

If the North of ROW station option A is adopted for the site of the Venice/Robertson Station, a detailed, specific noise impact assessment for this business shall be required in accordance with Federal Transit Administration noise impact criteria to measure the specific nature of the business and the site specific impacts of the LRT vehicles. Outdoor to indoor vibration measurements would be conducted to evaluate the building foundation coupling loss, the effects of any existing construction (such as floating floors or insulated walls) currently used to isolate the recording areas from other noise and vibration sources and the existing noise levels in the studio. Due to such factors, it is likely that the projected ground-borne noise and vibration levels inside the studio would be lower than the projections above, but vibration mitigation would probably still need to be employed to reduce the projected levels to meet the criterion.

In addition, the ground-borne noise criterion may not be stringent enough based on the sensitivity and use of the studio. Other criteria, such as a Noise Criterion curve, might be appropriate for this location. The Project shall be required to fully mitigate the sound impacts of the LRT vehicles on this business, and if it is determined that such mitigation measures do not meet the above threshold criteria, Metro shall be required to relocate the business and acquire the property.

Phased Implementation. *Vermont Segment Vibration Impacts.* There would be no ground-borne vibration or noise impacts for the Vermont Segment of the Phased Implementation.

Crenshaw Segment Vibration Impacts. For the Crenshaw Segment, **Table 4.6-13** indicates that there would be 173 impacts (150 single-family residences and 23 multi-family residences). These impacts would occur in the first three Track Segments in **Table 4.6-13**. As shown in **Table 4.6-14**, mitigation would eliminate all of the anticipated vibration impacts in the Crenshaw Segment.

La Cienega Vibration Impacts. Impacts in the La Cienega Segment would be the same as those for the Crenshaw Segment. No additional vibration impacts are anticipated between Crenshaw Boulevard and La Cienega Boulevard. As shown in **Table 4.6-14**, the anticipated vibration impacts would be resolved through mitigation.

There would be no additional ground-borne vibration or noise impacts related to Phased Implementation.

4.6.2.5 Special Trackwork Vibration Impacts

No Action. The No Action Alternative would not result in any crossover vibration impacts.

LPA. As previously discussed in "4.6.2.3 Special Trackwork Noise Impacts," crossover or turnout locations are areas where the wheels pass over gaps in the trackway. Crossovers and turnouts can result in up to a 10 VdB increase in vibration levels. **Table 4.6-15** shows the results of the crossover vibration evaluation. The table identifies where impacts would occur and what mitigation would reduce the vibration impacts.

TABLE 4.6-15: SUMMARY OF VIBRATION IMPACTS FROM PROPOSED CROSSOVER LOCATIONS

Station Number	Crossover Location	Level of Impact without Crossover	Level of Impact with Crossover	Mitigation
103	Flower St. between 18th St. and Washington Blvd.	No Impact	No Impact	No mitigation needed
111 /a/	Flower St. and 20th St.	No Impact	No Impact	No mitigation needed
152 /a/	Flower St. and 33rd St.	No Impact	No Impact	No mitigation needed
213	Exposition Blvd and Catalina St.	Impact	Impact	A moveable or spring-rail frog shall be used at this location
311	Exposition Blvd between 7th St. and 9th St.	Impact (south side of street) No Impact (north side of street)	Impact (south side of street) Impact (north side of street)	This crossover would be moved to a less sensitive location or a spring-rail frog shall be used at this location
413	Exposition Blvd and Cloverdale Avenue	No Impact	Impact	This crossover would be moved to a less sensitive location or a spring-rail frog shall be used at this location
482, 484, or 486 /b/	National Blvd, just east of Wesley Avenue	No Impact	Impact	A moveable or spring-rail frog shall be used in this location
489	Exposition Blvd and Wesley Street	No Impact	Impact	A moveable or spring-rail frog shall be used in this location

/a/ These crossovers would occur only on the Flower Street Design Option alignment. They do not apply to the LPA or the Hill Street Couplet.
/b/ The North of ROW Option A crossover would be located at Station 486. The North of ROW Option B crossover would be located at Station 484. The North of ROW Option C crossover would be located at Station 482. These possible crossover locations do not apply to the LPA or the Aerial Station Option.
SOURCE: Harris Miller Miller & Hanson, 2005

As shown in **Table 4.6-15**, the crossover locations would result in new vibration impacts at Station 311, 413, and 489 and increase the severity of the impact at Station 213. Mitigation would be necessary to reduce these impacts. As noted in the table, the crossover locations at 311 and 413 would be moved to less sensitive locations or a spring-rail frog would be used at these locations thereby eliminating those impacts. At stations 213 and 489, it is not feasible to move the crossover. Instead, a spring-rail frog shall be used and would eliminate the impact. **Figure 4.6-4** displays where the mitigated crossover locations would occur. No residual vibration impacts from crossover locations are anticipated with implementation of mitigation measures.

Downtown Los Angeles Connection Options. There would not be any crossover vibration impacts related to either design option.

La Cienega Parking Options. There would not be any crossover vibration impacts related to either La Cienega Parking Options.

Jefferson Boulevard Design Options. There would not be any crossover vibration impacts related to either Jefferson Boulevard Design Option.

Venice/Robertson Design Options. As described in **Table 4.6-12**, a crossover at Station 482, 484, or 486, (the crossover location is dictated by the design option selected) would cause further vibration impacts than predicted from LRT operations alone. To mitigate this impact, a spring-rail frog would be used at the crossover. The spring-rail frog would eliminate the vibration impact.

Phased Implementation. *Vermont Segment Crossover Vibration Impacts* - The proposed crossover locations for the phased implementation segments would not result in vibration impacts in the Vermont Segment.

Crenshaw Segment Crossover Vibration Impacts - The proposed crossover locations would result in vibration impacts to residences adjacent to Stations 213 and 311. These impacts would be mitigated as described in **Table 4.6-15**. The Crenshaw Segment would not have any other crossover vibration impacts.

La Cienega Segment Crossover Vibration Impacts - The proposed crossover locations at Stations 213, 311, and 413 would result in impacts to surrounding residences. These impacts would be mitigated as described in **Table 4.6-15**. The La Cienega Segment would not have any other crossover vibration impacts.

4.6.2.6 Ancillary Equipment

This section addresses noise from equipment related to the operation of the light rail vehicles. Ancillary equipment is not an actual part of the light rail vehicle but assists in powering the LRT system. The most important piece of ancillary equipment is the traction power substation. There would be six TPSS sites located along the length of the alignment.

No Action. The No Action Alternative would not result in any ancillary equipment noise impacts.

LPA. There is one TPSS location where an ancillary equipment noise impact would occur. The TPSS on the northwest corner of Farmdale Avenue and Exposition Boulevard would result in an ancillary equipment noise impact at the motel on the northeast corner of the intersection. However, because of audible warning device noise at the grade-crossing at Farmdale Avenue, sound insulation has been recommended for this receiver.

Downtown Los Angeles Connection Options. There would be no ancillary equipment noise impacts for either of the Downtown Los Angeles Connection options.

La Cienega Station Parking Options. There would be no ancillary equipment noise impacts for either parking option.

Jefferson Boulevard Design Options. There would be no ancillary equipment noise impacts for either bridge design option at Jefferson Boulevard.

Venice/Robertson Design Options. There would be no ancillary equipment noise impacts for any of the station design options.

Phased Implementation. There would be no additional ancillary equipment noise impacts related to TPSS in the Vermont or Crenshaw Segments. As described for the LPA, an ancillary equipment noise impact would occur in the La Cienega Segment, at a motel at Farmdale Avenue and Exposition Boulevard. However, because of audible warning device noise at the grade-crossing at Farmdale Avenue, sound insulation has been recommended for this receiver.

4.6.2.7 Maintenance Yards

Vibration sources at the maintenance yard would generally be limited to light rail vehicle movements within the yard. Other activities such as coupling and uncoupling of trains, vehicle cleaning, vehicle maintenance, and vehicular traffic from employees coming into and out of the facility would not be significant sources of vibration. The proposed Mid-City/Exposition LRT Project would include an expansion of the existing Division 11 Blue Line Yard located in Carson. There are no nearby vibration-sensitive receptors to this facility. Therefore, no impacts are projected.

4.6.3 MITIGATION MEASURES

4.6.3.1 Air-Borne Noise from Light Rail Vehicles

NV1 To achieve Federal Transit Administration noise standards for residential uses adjacent to the Exposition ROW, sound walls shall be constructed approximately eight feet from the near track centerline. They shall be constructed at the following locations (indicated in **Table 4.6-10** above) and according to the specified height:

- Between Van Ness Avenue to Arlington Avenue, on the south side of the ROW, at a height of eight feet;
- Between 2nd Avenue and 7th Avenue, on the south side of the ROW, at a height of eight feet;
- Between 7th Avenue and 9th Avenue, on the south side of the ROW, at a height of eight feet;
- Between Somerset Drive to Buckingham Road, on the south side of the ROW, at a height of six feet;
- Between Buckingham Road and Farmdale Avenue, on the south side of the ROW, at a height of six feet;
- Between La Brea Avenue to 600 feet east of Hauser Boulevard, on the south side of the ROW, at a height of six feet for at-grade sound wall and four feet for the wall along the elevated structure; and
- Between Fay Avenue to Wesley Street, on the north side of the ROW, at a height of six feet.

All of the sound walls shall incorporate landscape screening or public art features to enhance their appearance and reduce visual intrusion. Specific heights and lengths may be modified slightly as the design process progresses, but shall comply with all federal and state noise regulations.

NV2 In addition to the sound walls required by mitigation measure **NV1**, a combination of the following source, path and receiver options shall be employed to augment reduction of noise from Mid-City/Exposition LRT operations where necessary to comply with federal and state noise regulations. These methods shall be employed where sound walls alone would not fully attenuate LRT noise levels to federal and state noise regulations. The following methods shall be employed:

- Sound Absorption Treatment;
- Sound Insulation;
- Relocation of turnouts (switches) to minimize proximately to residence or other sensitive receptors;
- Spring-Rail Frogs shall be used where turnouts cannot be relocated to avoid residences or sensitive receptors; and
- Increased wheel and rail maintenance only when all other methods all fail as it is a reoccurring operational expense.

4.6.3.2 Grade Crossing Audible Warning Devices

NV3 In addition to the sound walls required by mitigation measure **NV1**, the following options to control noise from audible warnings at grade crossings shall be employed at the following locations along the ROW:

- Arlington Avenue: Crossing bell noise shall be reduced to 64 dBA at 50 feet and the same sound barrier prescribed in **NV1** shall be constructed;
- 7th Avenue: Crossing bell noise shall be reduced to 64 dBA at 50 feet, the sound barrier prescribed in **NV1** shall be constructed, the noise walls shall extend south for approximately 50 to 100 feet on both the east and the west side of 7th Avenue at a height of eight feet; or if extending the noise wall is infeasible, then sound insulation at affected residences shall be put in place;
- 9th Avenue: Crossing bell noise shall be reduced to 64 dBA at 50 feet and the same sound barrier prescribed in **NV1** shall be constructed;
- Buckingham Road: Crossing bell noise shall be reduced to 64 dBA at 50 feet and the sound barrier prescribed in **NV1** shall be constructed; and sound insulation at affected residences near Buckingham Road shall be put in place.
- Farmdale Avenue: Crossing bell noise shall be reduced to 64 dBA at 50 feet, the sound barrier prescribed in **NV1** shall be constructed, and sound insulation at affected residences near Farmdale Avenue shall be put in place.

4.6.3.3 Special Trackwork Noise

NV4 The crossover at Station 311 shall be relocated to a location between Stations 319 and 337 or a spring-rail frog shall be used at this location. The crossover at Station 413 shall be relocated to a location between Stations 425 and 450 or between Stations 383 and 385 or a spring-rail frog shall be used at this location.

NV5 A spring-rail or moveable frog shall be used at the Station 213 crossover.

NV6 A spring rail frog shall be used at one of the following locations depending on the Venice/Robertson Design Option selected:

- Station 489 for the LPA or the Aerial Station Option;
- Station 486 for the ROW Option or the North of ROW Option A;
- Station 482 for North of ROW Option B; and
- Station 484 for North of ROW Option C.

4.6.3.4 Ground-borne Vibration

The vibration impact assessment assumes that the LRT vehicle wheels and track would be maintained in good condition with regular wheel truing and rail grinding (**Table 4.6-13**). Beyond this, there would be several potential mitigation approaches for the Mid-City/Exposition LRT Alternative as follows.

NV7 The vibration mitigation locations are shown in **Table 4.6-14**. Because detailed engineering drawings and information are not available during the EIS phase of a project, specific recommendations are not finalized until the engineering and design phase of the project. All vibration mitigation shall be designed to a performance specification that will reduce vibration levels at all impacted residential locations to below the FTA vibration criterion. The types of mitigation measures listed above provide examples of potential mitigation measures that might be used to meet the performance specification. As shown above in **Table 4.6-14**, vibration mitigation shall be recommended at vibration-sensitive receptors along 7,300 feet of the corridor.

Methods to mitigate vibration impacts may include the following:

- Ballast Mats
- Resilient Fasteners
- Resiliently Supported Ties
- Tire Shred or Recycled Rubber Chip Underlay
- Floating Slabs
- Relocation of Crossovers or Special Trackwork

NV8 A detailed, site-specific noise impact assessment for the sound studio at Wesley Street shall be performed. The assessment shall be performed in accordance with FTA ground-borne noise and vibration impact criteria to measure site-specific impacts from LRT vehicles. Any necessary actions recommended by the assessment to attenuate vibration impacts to the studio shall be undertaken by Metro.

4.6.3.5 Special Trackwork Vibration

See mitigation measures **NV4** to **NV6**.

4.6.4 CEQA DETERMINATION

Under CEQA, a substantial noise increase may result in a significant adverse environmental effect, although CEQA does not provide specific thresholds for significant adverse noise effects. For the purposes of this study, a *severe* noise impact as defined by FTA is used as the CEQA threshold for significance. Following CEQA guidelines, this means that all severe noise impacts must be either mitigated or identified as a noise impact for which it is likely that no, or only partial, abatement measures are available because of specific economic, social, environmental, legal or technological conditions that make complete mitigation of the noise impact unfeasible.

The noise impact criteria are summarized in **Table 4.6-3**. 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 total future noise exposure would be the combination of the existing noise exposure and the additional noise exposure caused by the transit Project. Ldn is used to characterize noise exposure for residential land uses and Leq is used for other land uses.

A substantial vibration increase may also result in a significant adverse environmental impact under CEQA. However, CEQA does not provide specific thresholds for significant adverse vibration effects.

For the purposes of this study, a vibration impact as defined by FTA is used as the CEQA threshold for significance. Following CEQA guidelines, this means that all vibration impacts must be either mitigated or identified as an impact for which it is likely that no, or only partial, abatement measures are available because of specific economic, social, environmental, legal or technological conditions that make complete mitigation of the noise impact unfeasible.

Significant Impacts Remaining after Mitigation

Air-Borne Noise from Light Rail Vehicles. **Table 4.6-10**, shows that mitigation measures would eliminate all of the severe impacts and most of the moderate impacts. Residual moderate impact would remain at ten single-family residences. Mitigation recommended to address audible warning noise, including lowered bell decibel levels or building sound insulation, would fully eliminate all noise impacts.

Grade-Crossing Audible Warning. Noise impacts from audible warnings would occur at five grade crossings. By reducing the sound level of the bells at crossings near noise-sensitive land uses to 64 dBA at 50 feet, and in some cases providing building sound insulation, audible warning noise impacts would be eliminated.

Special Trackwork Noise Impacts. The mitigation provided in **Table 4.6-12** addresses increased noise impacts at five crossover locations. Implementation of the mitigation provided in **Table 4.6-12** would reduce crossover noise impacts to a less-than-significant level.

Ground-borne Vibration Mitigation Measures. The vibration mitigation locations are shown in **Table 4.6-14**. Because detailed engineering drawings and information are not available during the EIS phase of a project, specific recommendations are not finalized until the engineering and design phase of the project. Vibration mitigation measure **NV7** is designed to a performance specification that will reduce vibration levels at all impacted residential locations to below the FTA vibration criterion.

Maintenance Yard. There are no nearby noise- or vibration-sensitive receptors to this facility. Therefore, no impacts are anticipated.

4.7 GEOLOGY, SOILS, AND SEISMICITY

Geology, soils and seismicity are factors that often determine design criteria for the development of transit improvements, particularly when subsurface or aerial stations or structures are involved. This section summarizes the geologic materials, faults and seismic characteristics, and other subsurface conditions of the Study Area.

Impacts associated with geotechnical considerations have been identified from a review of available published and unpublished literature. These include, but are not limited to: the safety elements of the general plans for the City and County of Los Angeles; Official Alquist-Priolo Earthquake Fault Zone Maps; Official Seismic Hazard Zone Maps; geologic and topographic maps and other publications by the California Division of Mines and Geology, U.S. Geological Survey, and California Division of Oil and Gas.

4.7.1 AFFECTED ENVIRONMENT

4.7.1.1 Regulatory Framework

The Alquist-Priolo Geologic Hazards Zone Act was passed in 1972 by the State of California to mitigate the hazard of surface faulting to structures for human occupancy. The Act has been amended ten times and was renamed the Alquist-Priolo Earthquake Fault Zoning Act on January 1, 1994. Surface rupture is the most easily avoided seismic hazard. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards.

The Seismic Hazards Mapping Act of 1990 was enacted, in part, to address seismic hazards not included in the Alquist-Priolo Act, including strong ground shaking, landslides, and liquefaction. Under this Act, the State Geologist is assigned the responsibility of identifying and mapping seismic hazards.

Metro Design Criteria (Rail and Transit Design Criteria and Standards, 1996) requires that for important structures such as the LRT, special earthquake protection criteria be followed. "The guiding philosophy of earthquake design for the Metro Rail projects is to provide a high level of assurance that the overall system will continue to operate during and after an Operating Design Earthquake (ODE)." Operating procedures assume safe shut down and inspection before returning to operation. "Further, the system design will provide a high level of assurance that public safety will be maintained during and after a Maximum Design Earthquake (MDE)." The ODE is defined as the earthquake event with a 40 percent probability of exceedance in 100 years, which corresponds to an average recurrence interval of 200 years. Such an event can reasonably be expected to occur during the 100-year facility design life. The MDE is defined as the earthquake event with a five percent probability of exceedance in 100 years, which corresponds to an average recurrence interval of 2,000 years.

4.7.1.2 Active and Potentially Active Faults

The proposed Project is located within a geological area called the Los Angeles Basin (Basin). The Basin is surrounded by the Santa Monica Mountains, the Simi Hills, the Santa Susana Mountains to the west, the San Gabriel Mountains on the north, and the Santa Ana Mountains, San Joaquin and Puente Hills to the east. The Pacific Ocean and the Palos Verdes Hills make up the southern border of the basin. Within the basin there are a range of landforms including high mountains (i.e., the San Gabriel Mountains), broad valleys, low hills, and coastal plains.

Like most of California, the area surrounding the proposed Project area has many faults and fault zones that generally run parallel to the San Andreas Fault zone. Faults are characterized by the California Geological Survey (CGS) as active, potentially active, or inactive, according to when the fault last was seismically active. The Los Angeles Basin is an area known to be seismically active and there are a number of active and potentially active faults within the proposed Project area.

Active faults are those that are believed to have moved within historic or recorded time, or have been included in the State of California Fault Rupture Studies Zones in accordance with the Alquist-Priolo Act of 1972. Potentially active faults are those faults that are believed to have moved between 11,000 and 2 million years ago. Potentially active faults are further subdivided into high and low-potential subgroups. High-potential faults are those faults which have evidence or movement in shallower Holocene deposits (i.e. evidence of movement within the last 11,000 years). Low-potential faults show evidence of movement in deeper Pleistocene Age deposits (i.e., movement within 11,000 to 2 million years). Inactive faults are those without recognized Holocene or Pleistocene Age activity.

There are a number of regional faults which may effect the proposed Project area. This includes the Anacapa-Dume fault (approximately 26 miles west southwest of the Project's alignment), the San Andreas Fault (approximately 30 miles northeast of the LRT alignment), San Gabriel Fault (approximately 17 miles north of the LRT alignment), and the Cucamonga Fault (approximately 25 miles northeast of the LRT alignment). The faults of particular concern to the Project area are the Hollywood-Santa Monica fault and the Newport-Inglewood fault. **Figure 4.7-1** illustrates the generalized fault zones within the Mid-City/Exposition LRT Corridor area. Characteristics of these faults are described below.

Hollywood-Santa Monica Fault Zone. This fault is oriented in an east-west direction. Approximately 24 kilometers in length, it is a left-reverse north-dipping fault. Its slip rate may be greatest at its western end. The slip rate is estimated to be between 0.27 and 0.39 millimeters per year. The probable magnitude of a seismic event on this fault is projected to range from 6.0 to 7.0 on the Richter Scale.

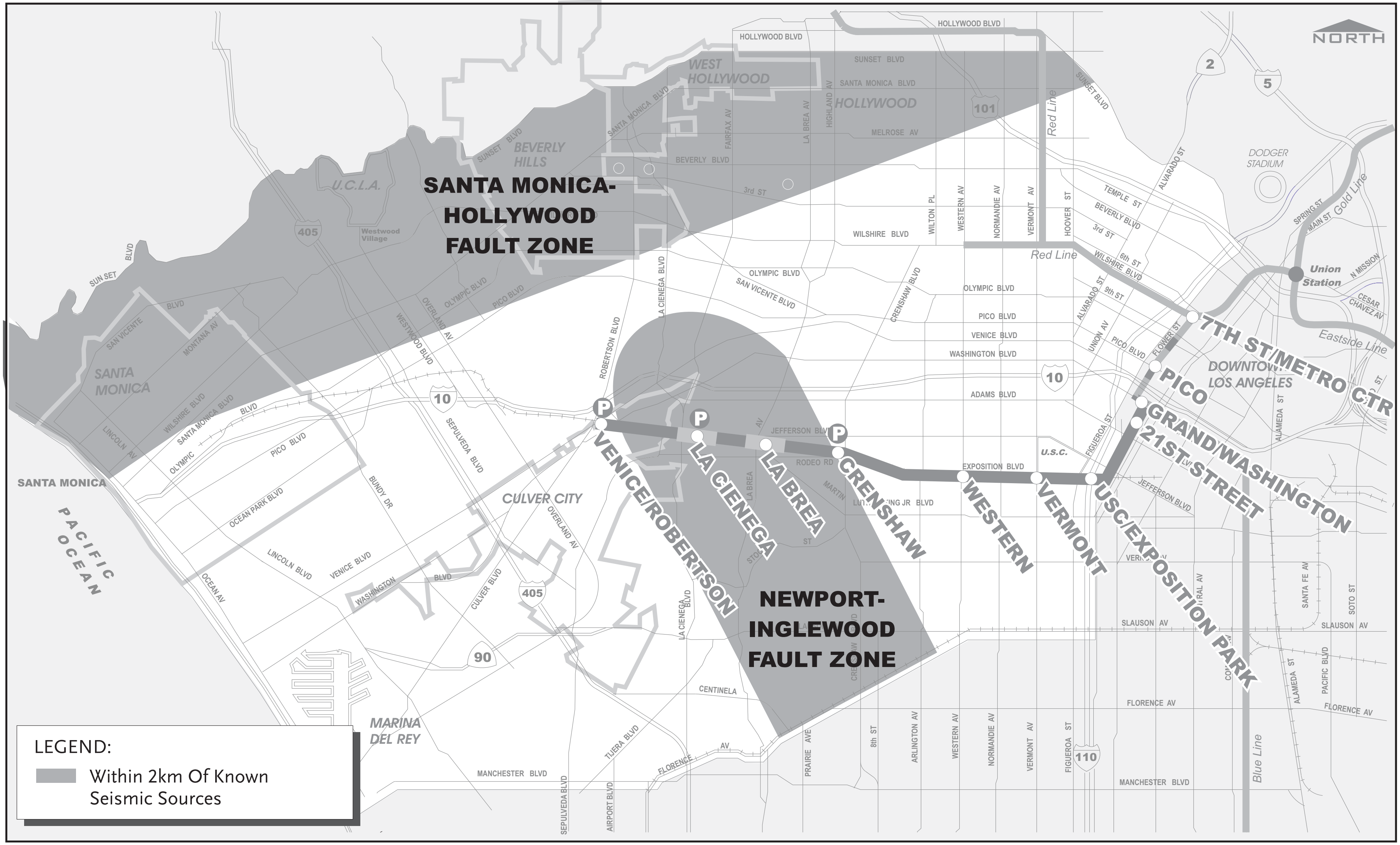
Newport-Inglewood Fault Zone. The surface trace of this 75-kilometer fault is discontinuous in the Los Angeles Basin, but the fault zone can easily be noted there by the existence of a chain of low hills extending from Culver City to Signal Hill. The fault complex is oriented in a northwest to southeast diagonal direction. South of Signal Hill, it roughly parallels the coastline until just south of Newport Bay where it heads offshore and becomes the Newport-Inglewood-Rose Canyon fault zone. The fault is characterized as a right lateral, local reverse slip associated with fault steps. The slip rate of the fault is 0.6mm per year. The probable magnitude of a seismic event would range from 6.7 to 7.4 on the Richter Scale.

4.7.1.3 Alquist-Priolo Fault Hazard Zones

A review of Alquist-Priolo Fault Hazard maps from the California Department of Conservation (Division of Mines and Geology) indicates that there is one fault hazard zone designated within the Mid-City/Exposition LRT Project area as shown in **Figure 4.7-2**. This zone is located southeast of the La Cienega and Washington Boulevards intersection. This zone crosses the Exposition Railroad right-of-way at National Boulevard and Fay Street in Culver City.

4.7.1.4 Liquefaction Potential and Other Soil Considerations

In addition to faults, the corridor area is also characterized by soils that are subject to liquefaction. Liquefaction takes places during a seismic event when soils combined with a high water table are unable to support the load bearing weight from structures or foundations. **Figure 4.7-3** illustrates that about two-thirds of the corridor area is located within areas of potential liquefaction.



SOURCE: City of Los Angeles

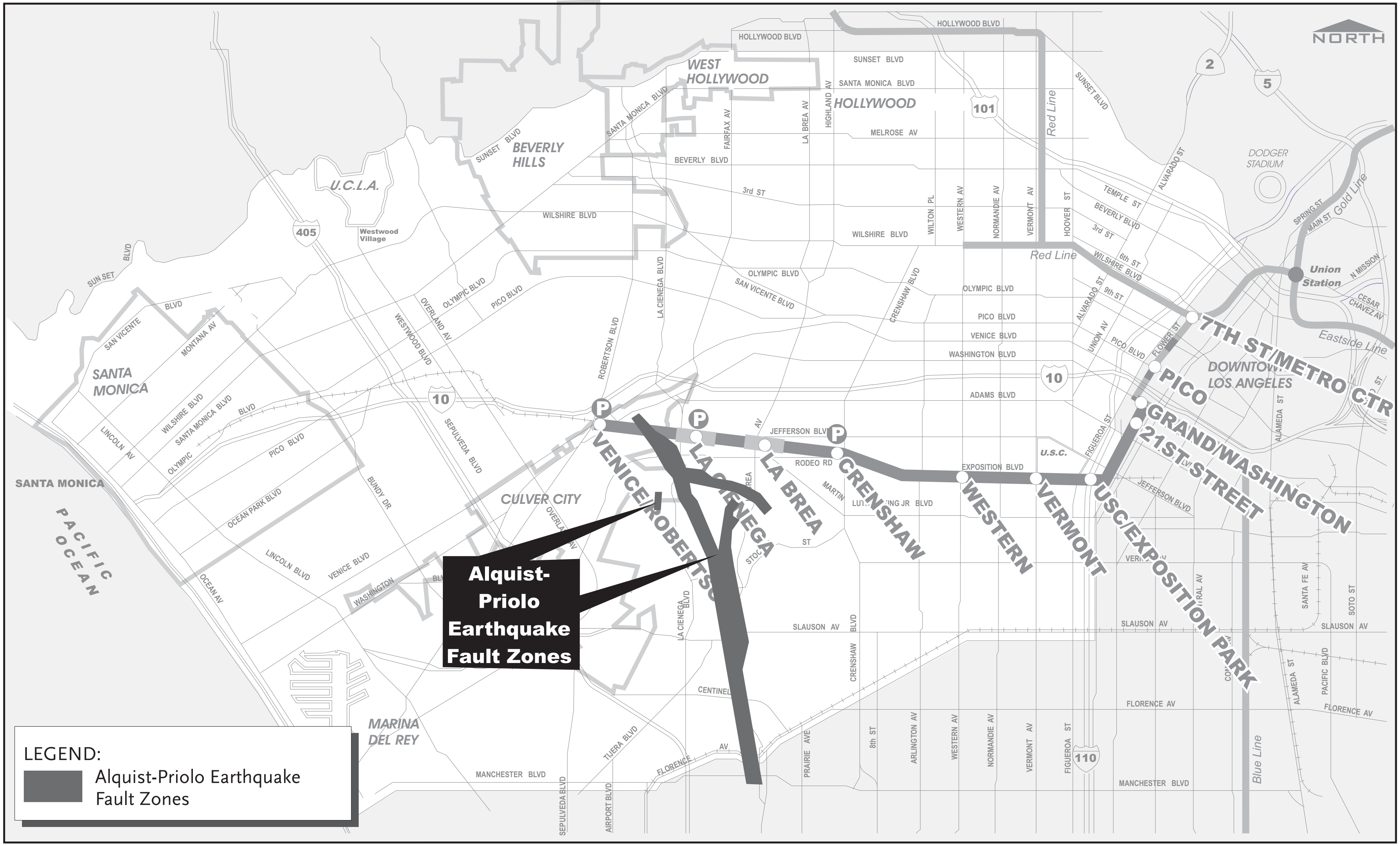
Metro

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.7-1

ACTIVE FAULT ZONES



SOURCE: City of Los Angeles

Metro

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.7-2

ALQUIST-PRIOLO EARTHQUAKE FAULT HAZARD ZONES

SOURCE: City of Los Angeles

Metro

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.7-3

POTENTIAL LIQUEFACTION AREAS

The Project area soils are classified by the U.S. Soil Conservation Service as alluvial deposits remaining from the Los Angeles River (which in the past ran in a northeast to southwest direction through the southern part of the corridor area. Major soil associations found in the corridor area include: Chino Silt Loam, Hanford Clay Loam, Hanford Fine Sandy Loam, Montezuma Clay Adobe, Ramona Clay Loam, Ramona Loam, Ramona Sandy Loam, Yolo Clay Loam, and Yolo Loam.

4.7.1.5 Other Subsurface Conditions

The City of Los Angeles has designated a Methane Hazard Zone which is located approximately two miles north of the proposed transit corridor (**Figure 4.7-4**). Exposure to methane should not exceed the lower explosive limit of five percent volume per volume in air. Previous MTA Metro Red Line environmental studies have also disclosed that there are high levels of hydrogen sulfide captured within the San Pedro geologic formation about 40 feet below the surface. These levels are potentially lethal.

A primary area of hydrogen sulfide appears to be centered near the Pico and San Vicente Boulevards intersection. This is approximately 1.75 miles north of the corridor. The Occupational Safety and Health Administration (OSHA) has established a hydrogen sulfide exposure limit for workers of 10 parts per million (ppm), while public exposure is not to exceed 0.03 ppm.

Borings conducted by the City of Los Angeles Bureau of Engineering as part of the North Outfall Interceptor Sewer Project further suggest that there are few, if any, subsurface gas concerns (methane or hydrogen sulfide) in the southern portions of the corridor centering along Exposition Boulevard (from the Exposition Park Area to Culver City).

4.7.2 IMPACT ASSESSMENT

Methodology

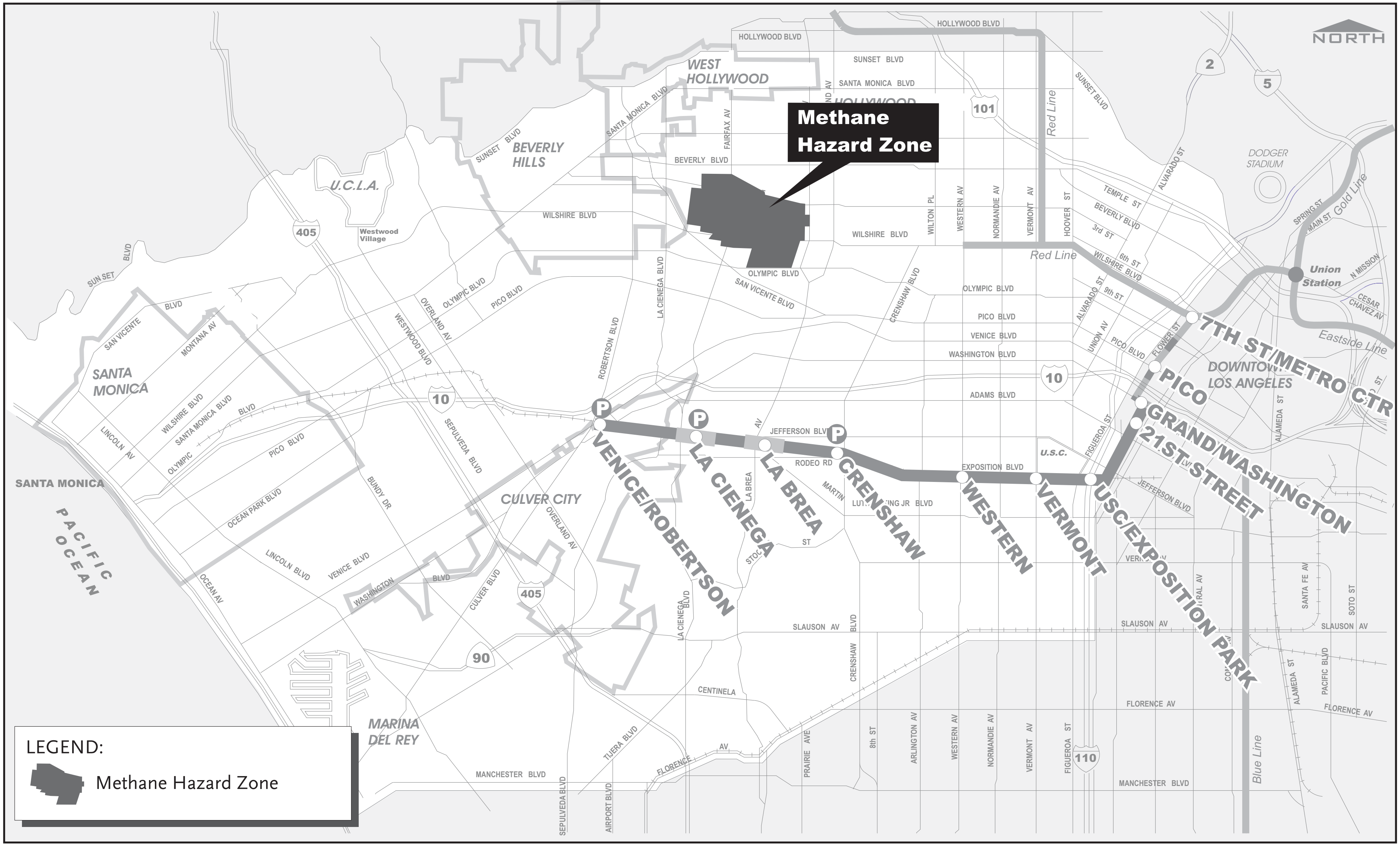
The method for assessing impacts involves examining the Mid-City/Exposition LRT Project for known geologic hazards. If stations or structures are located within or directly adjacent to a geologic hazard area there would be a potential for an impact that would require additional geotechnical studies and enhanced design to eliminate or mitigate the potential impact.

4.7.2.1 Active or Potentially Active Faults

No Action. The No Action Alternative would not result in any impacts related to active or potentially active faults.

LPA. The following geotechnical hazards would be associated with the proposed Project:

- the route alignment would traverse the Newport-Inglewood Fault Zone;
- the grade separation proposed for La Cienega Boulevard and La Brea Avenue would be located in the Newport-Inglewood Fault Zone;
- the proposed multi-story parking structures at Venice/Robertson, La Cienega, and Crenshaw would occur in or within close proximity to the Newport-Inglewood Fault Zone; and
- the route alignment would traverse an Alquist-Priolo Fault Hazard Zone near the intersection of Fay Avenue and National Boulevard in Culver City.



SOURCE: City of Los Angeles

Metro

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.7-4

METHANE HAZARD ZONE

As in all of Southern California, there would be risks associated with the activity of regional faults. However, implementation of the proposed Project would not exacerbate the pre-existing seismic conditions. The proposed Project would be a mass transportation corridor to be built in an already highly developed area. The Project would primarily serve people already living or commuting in Los Angeles. It would not cause an increased risk to residents or commuters or would not expose additional people to additional risk. Nonetheless, because the grade separations proposed for La Cienega Boulevard and La Brea Avenue and the proposed parking structures would be located in the Newport-Inglewood Fault Zone, structural design mitigation measures would be required to ensure the stability of the bridges and parking structureseach bridge.

Downtown Los Angeles Connection Options. These design options would be proposed for the route just south of Downtown. None of the proposed design options would traverse or occur close to a fault line. No impacts related to active or potentially active faults is anticipated.

La Cienega Station Parking Options. The construction of a multi-story parking structure would result in similar seismicity concerns as described for the LPA and the construction of aerial trackway structures. Mitigation would be required for the parking structure at La Cienega Station.

Jefferson Boulevard Design Options. The impacts are the same as described for the LPA. A greater risk would not be associated with one bridge design over the other, and mitigation would be required for either design option.

Venice/Robertson Design Options. The construction of an aerial station would result in similar seismicity concerns as those described for the LPA. Mitigation would be required for the aerial station design option at Venice/Robertson.

Phased Implementations. The Vermont Segment of the route would not occur on or directly adjacent to a fault. Although the Crenshaw Segment of the route would occur within the Newport-Inglewood Fault Zone, there would be no aerial structures or undercrossings proposed in this segment of the alignment that would require extra design considerations. In the La Cienega Segment, mitigation measures would be required to address the structural sufficiency of the proposed grade separation at La Brea Avenue and the parking option.

4.7.2.2 Liquefaction and Expansive Soils

No Action. The No Action Alternative would not result in any impacts related to liquefaction.

LPA. Over two-thirds of the proposed Project would traverse potential liquefaction areas. The potential liquefaction areas run from approximately Figueroa Street to just past Syd Kronenthal Park on the western edge of Culver City. Additionally, in this same portion of the route, the dominant soil type of the Chino association exhibits moderate shrink-swell behavior.[1] Generally, implementation of the proposed Project would not exacerbate these geologic pre-existing conditions. However, in the case of an earthquake, the Project's aerial quideway structures at La Brea Avenue and La Cienega Boulevard would be more vulnerable to damage. The three proposed multi-story parking structures would also be more vulnerable to damage. Because the grade separations and the parking structures proposed for La Cienega Boulevard and La Brea Avenue would be located in a potential liquefaction area and moderately expansive soil, structural design mitigation measures would be required to ensure the stability of each structure bridge.

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[1] *General Soil Map, Los Angeles County, California*, U.S. Dept. of Agriculture, Soil Conservation Service and Soil Conservation Districts in Los Angeles County, December 1969.

Downtown Los Angeles Connection Options. No impacts related to liquefaction or expansive soils are anticipated as a result of the Hill Street Couplet design options. The Flower Street design options, however, propose an underground crossing that traverses a potential liquefaction areas. As a result, additional geotechnical studies would be required before the start of construction to ensure the undercrossing's stability in earthquake conditions.

La Cienega Station Parking Options. The parking options would be constructed in a potential liquefaction zone. Impacts would be similar to those described for the LPA. Mitigation would be required to assure the parking structure's stability.

Jefferson Boulevard Design Options. In both design option cases, impacts would be the same as described for the LPA. Mitigation would be required to assure an aerial structure's stability in this location.

Venice/Robertson Design Options. Implementation of the at-grade station design options would not exacerbate pre-existing liquefaction and soil conditions. However, in the case of an earthquake, the aerial station would be more vulnerable to damage. The aerial station design option would require mitigation measures to ensure its structural stability.

Phased Implementation. Phased Implementation would not result in any impacts related to liquefaction or expansive soils. The Vermont and Crenshaw Segments do not include any undercrossings or aerial structures the design of which would require extra seismic considerations. The aerial structure that would be part of the La Cienega Segment would require mitigation measures to ensure its structural stability.

4.7.2.3 Other Subsurface Conditions

No Action. The No Action Alternative would not result in any impacts on subsurface conditions.

LPA. As previously mentioned, the proposed Project area is approximately two miles away from the nearest known methane deposit and approximately 1.75 miles from the nearest known hydrogen sulfide deposit. This is too far to cause an impact to the proposed Project.

Downtown Los Angeles Connection Options. The impacts would be the same as described for the LPA.

La Cienega Station Parking Options. The impacts would be the same as described for the LPA.

Jefferson Boulevard Design Options. The impacts would be the same as described for the LPA.

Venice/Robertson Design Options. The impacts would be the same as described for the LPA.

Phased Implementation. The impacts would be the same as described for the LPA.

4.7.3 MITIGATION MEASURES

GS1 A geotechnical study for any above-grade or below-grade transit structure shall be required. This technical study shall identify design specifications for maintaining structural integrity under earthquake conditions. The study shall be performed before the commencement of Final Design.

GS2 A geotechnical study for the Crenshaw, La Cienega, and Venice/Robertson parking structures shall be required. This technical study shall identify design specifications for maintaining structural integrity under earthquake conditions. The study shall be performed before the commencement of Final Design.

4.7.4 CEQA DETERMINATION

Categories of potential geotechnical impacts are set forth by the California Environmental Quality Act (CEQA), the California Public Resources Code, and State CEQA Guidelines. According to CEQA, the proposed Project would have a significant impact if it would:

- Expose people or structures to adverse effects, including the risk of loss, injury or death involving rupture of known earthquake faults, strong seismic ground shaking, landslides, liquefaction, or expansive soils; and/or
- Have soils incapable of adequately supporting the use of septic tanks.

No Action. The No Action alternative would not result in any impacts on geology, soils or seismicity.

LPA. The proposed Project would traverse the Newport-Inglewood Fault Zone, as well as a potential liquefaction zone. As discussed previously in the "4.7.2 Impact Assessment," throughout all of Southern California, there would be risks associated with the activity of regional faults. The proposed Project would not result in an increased exposure to the risk associated with fault lines nor would it exacerbate pre-existing seismic conditions. However, there would be two grade separations proposed that would be more vulnerable to damage during an earthquake. This would be a significant impact and a structural design mitigation measure would be required to ensure the stability of each bridge.

Over two-thirds of the proposed Project would traverse potential liquefaction areas. The potential liquefaction areas run from approximately Figueroa Street to just past Syd Kronenthal Park on the western edge of Culver City. Additionally, in this same portion of the route, starting slightly west of USC, the dominant soil type exhibits moderate shrink-swell behavior.[2] Generally, implementation of the proposed Project would not exacerbate these geologic pre-existing conditions. However, in the case of an earthquake the aerial structures at La Brea Avenue and La Cienega Boulevard would be more vulnerable to damage. Because the grade separations proposed for La Cienega Boulevard and La Brea Avenue would be located in a potential liquefaction area and moderately expansive soil, structural design mitigation measures would be required to ensure the structures' stability.

The soils in the Project area already support septic tanks and a large infrastructure of sewer pipes. The small additional demand for septic tanks generated by Project restrooms or auxiliary facilities would be accommodated by the existing infrastructure.

Downtown Los Angeles Connection Options. None of the proposed design options would traverse or occur within close proximity to a fault line. The Hill Street Couplet Design would be at grade-level. It would not result in an increased exposure to seismic hazards, and no impacts are anticipated. The Flower Street Design Option, however, proposes an underground crossing that traverses a potential liquefaction areas. As a result of the subsurface element, additional geotechnical studies would be required before the start of construction to ensure the undercrossing's stability in earthquake conditions.

La Cienega Station Parking Options. The parking options would be located in or directly adjacent to the Newport-Inglewood fault zone and a potential liquefaction zone. Because of these geologic conditions, there would be an increased risk of damage during an earthquake to a multi-story structure. A greater

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[2] *General Soil Map, Los Angeles County, California*, U.S. Dept. of Agriculture, Soil Conservation Service and Soil Conservation Districts in Los Angeles County, December 1969.

risk would not be associated with one parking option over the other. As described for the LPA, the exposure to increased risk associated with the parking structure would constitute a significant impact and would require a structural design mitigation measure to ensure the structure's stability. No impact would be anticipated from other sub-surface conditions.

Jefferson Boulevard Design Options. Because these options would be aerial structures, there would be an increased risk of damage during an earthquake. A greater risk would not be associated with one bridge design over the other. As described for the LPA, the exposure to increased risk associated with the aerial structure would constitute a significant impact and would require a structural design mitigation measure to ensure the bridges' stability.

Venice/Robertson Design Options. The Venice/Robertson design options would not be located in a fault zone or potential liquefaction zone. However, in the case of an earthquake, the aerial station option would be more vulnerable to damage. As described for the LPA, the exposure to increased risk associated with the aerial structure would constitutes a significant impact and would require a structural design mitigation measure to ensure the bridge's stability. No impact is anticipated from other sub-surface conditions.

Phased Implementation. The Vermont Segment of the route would not be located in or directly adjacent to a fault zone. The eastern most portion of the segment would occur in a potential liquefaction zone, but the LPA Vermont Segment would not include any aerial or below-grade structures requiring extra design considerations. Although the Crenshaw Segment of the route would occur within the Newport-Inglewood Fault Zone and a potential liquefaction zone, there would be no aerial structures or undercrossings proposed in this segment of the alignment that would require extra design considerations. The La Cienega Segment would also occur with the Newport-Inglewood Fault Zone and a potential liquefaction zone. Mitigation measures would be required to address the structural stability of both the proposed grade separation at La Brea and the parking option. No impact is anticipated from other sub-surface conditions.

Significant Impacts Remaining after Mitigation. Implementation of mitigation measures **GS1** and **GS2** would reduce seismic impacts to less-than-significant levels.

4.8 EXPOSURE TO HAZARDOUS SUBSTANCES

This section identifies current locations within the Project area that have the potential for contamination from hazardous materials or from the migration of contaminants from nearby hazardous waste sites. The possible hazards from the electromagnetic field (EMF) generated by the light rail's overhead power system are also discussed.

4.8.1 AFFECTED ENVIRONMENT

Certain chemical and physical properties of a substance may cause it to be considered hazardous. As defined by the California Code of Regulations (CCR), Title 22, Section 66084, a "hazardous material" is a "substance or combination of substances which, because of its quantity, concentration, physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed."

According to the California Health and Safety Code, Section 25124, a "hazardous waste" is any hazardous material that is abandoned, discarded or in storage prior to recycling. For example, excavated soil containing hazardous materials would be considered hazardous waste if the concentration of contaminants exceeded specific CCR Title 22 criteria.

4.8.1.1 Soil and Water Contaminants

A study of the ROW conditions was prepared by Diaz Yourman & Associates in November 2003.[1] The report focused on potential hazardous substances that may be encountered by construction activities associated with the proposed Project. As grading and excavation work for the proposed Project would generally be limited to a depth of five feet or less, the report findings and conclusions pertain to the identification of potential near-surface contamination from on-site or adjacent sources rather than potential deeper soil or groundwater contamination from more distant sources.

In preparing the Initial Site Assessment (ISA), Section 3.16 Hazards, of Metro Mid-City/Westside Transit Corridor Draft EIS/EIR, was reviewed. This section contained an earlier, cursory evaluation of potential hazardous substances identified on the April 1998 State Cortese List of known sites with hazardous materials. The summary of this previous review did not appear to indicate any specific sites of environmental concern to the Project area.

The ISA, however, identified three potential areas of concern for the ROW. First, in the easternmost portion of the corridor, there are existing service stations with underground storage tanks (UST) or database records of former service stations that had USTs on the corners with Figueroa Avenue, Vermont Avenue, and Western Avenue where these streets intersect with the Exposition ROW. Second, from Gramercy Place to La Brea Avenue, small soil stockpiles with concrete and asphalt debris were observed, as well as an oily stain with a chemical odor in the central area of the ROW at the southwest corner of the intersection of Exposition Boulevard and 11th Avenue. Third, an existing auto maintenance shop located between La Brea Avenue and La Cienega Avenue, north of the Project corridor, appears as though it may have been a former UST site that was not listed on the 1992 database.

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[1] *A Preliminary Environmental Initial Site Assessment, Mid-City/Exposition Boulevard Light Rail Transit Project* (ISA), November 14, 2003.

At La Cienega Boulevard and La Brea Avenue, where grade separations are planned, encountering contaminated soil at deeper levels is possible. A pile foundation requiring much deeper earthwork would be necessary to support the LRT crossover, and consequently, in this instance, soil testing was conducted at significantly greater depths. Field evidence of contamination was not encountered during drilling for soil borings. When tested, composite soil samples taken from the site indicated that the material was non-hazardous. The report notes that additional sampling and testing may be required to confirm the absence of hazardous materials.

Furthermore, lead arsenates were historically used by railroad companies as a means of weed control along ROWs. Lead arsenates can leave harmful levels of lead and arsenic in the soil; these contaminants were recently encountered during the construction of the Metro Orange Line. It is likely that lead and arsenic contaminants are present in the Exposition ROW.

4.8.1.2 Electro-Magnetic Radiation

Operation of the light rail would introduce new EMF sources associated with the overhead electrical power system used to propel the vehicles. EMFs are generated from any electrical device including power lines, electric wiring, and electrical appliances. An EMF is an invisible, low frequency radiation that is emitted from electrical sources. Everyday sources include power lines, hair dryers, microwave ovens, video terminals, electric blankets, and other household appliances. High voltages generate the electrical fields, while the movement of these voltages in wires generates the magnetic fields. As the electrical current being transmitted through wires or devices strengthens, so does the magnetic field it generates. An EMF weakens as the field extends from the source.

Exposure to an EMF can pose health risks. A particularly strong EMF combination could cause shock and burn injuries. The operations of electrical and magnetic devices can be perturbed by an EMF. Hospitals are considered potentially sensitive receptors to EMFs because of the presence of patients under care and specialized equipment.

Because the field is composed of two components, an electrical and a magnetic, an EMF is measured in two distinct units. Electric field strength is measured in units of volts per meter. The magnetic field strength is typically measured in milligaus. Electrical fields are also associated with particular frequencies. In North America, electricity has a frequency of 60 cycles per second or 60 Hertz.[2]

4.8.2 IMPACT ASSESSMENT

Methodology

The methodology used to identify the potential impact consisted of locating potentially hazardous sites and comparing their locations with the route of the proposed Project. A Preliminary Environmental Initial Site Assessment (ISA) was prepared by Diaz Yourman & Associates in November 2003 in which hazardous assessment documents previously prepared for the right-of-way (ROW) were reviewed and potential hazards on the Project site were evaluated.

The Orange County Transportation Authority is currently planning to construct a 9.3-mile light rail line called “CenterLine” to improve existing transportation systems in Orange County. A Supplemental Draft Environmental Impact Statement/Revised Draft Environmental Impact Report (Supplemental Draft EIS/EIR) was prepared for the proposed development in October 2003. The document included pertinent information on EMFs generated from light rail that was referenced in preparing this section

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[2]The CenterLine Supplemental Draft Environmental Impact Statement/Revised Draft Environmental Impact Report, October 2003.

for the Mid-City/Exposition LRT Project. The CenterLine Supplement Draft EIS/Revised Draft EIR, October 2003 (SCH No. 98051072) is hereby incorporated by reference in this report. The CenterLine Supplemental Draft EIS/Revised Draft EIR is available in digital format or hard copy by contacting Ali Taghavi at the Orange County Transportation Authority at (714) 560-5713.

To assess EMF impacts, the thresholds from two organizations with expertise in the area were consulted. The International Commission on Non-Ionizing Radiation Protection and the American Conference of Governmental Industrial Hygienists put forth guidelines on EMF exposure levels that were in turn adopted by The Occupational Safety and Hazards Administration. The guidelines from each organization are shown below in **Tables 4.8-1** and **4.8-2**.

TABLE 4.8-1: OSHA THRESHOLDS FOR EMF EXPOSURE PER INTERNATIONAL COMMISSION ON NON-IODIZING RADIATION PROTECTION

Exposure to 50/60 Hertz	Electrical Field - kilovolts per meter (kV/m)	Magnetic Field - milligaus (mG)
OCCUPATIONAL		
Whole working day	10	5,000
Short-term /a/	30 /b/	50,000
Limbs	-	250,000
GENERAL PUBLIC		
Up to 24 Hours per day	5	1,000
Few hours per day	10	10,000

/a/ For electric fields of 10 to 30 kV/m, field strength (kV/m) multiplied by hours of exposure should not exceed 80 for the whole working day. Whole-body exposure to magnetic fields up to 2 hours per day should not exceed 50,000 milligaus.
/b/ Protective devices (e.g. suits, gloves, and insulation) should be used in fields above 15 kV/m.
SOURCE: The CenterLine Supplemental Draft Environmental Impact Statement/Revised Draft Environmental Impact Report, October 2003.

TABLE 4.8-2: OSHA THRESHOLDS FOR EMF EXPOSURE PER AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

Exposure to 50/60 Hertz	Electrical Field - kilovolts per meter (kV/m)	Magnetic Field - milligaus (mG)
OCCUPATIONAL		
Levels should not exceed	25 (from 0 to 100 Hertz)	10,000
Worker with cardiac pacemakers	1 or below	1,000

SOURCE: The CenterLine Supplemental Draft Environmental Impact Statement/Revised Draft Environmental Impact Report, October 2003.

Although it is anticipated that the proposed Project will not create EMFs with strength above the defined threshold levels, mitigation measures for minimizing and managing EMF sources will be applied during design and construction.

4.8.2.1 Construction

No Action. The No Action Alternative would not result in any construction impacts.

LPA. The primary concern for the proposed Project would be the potential for encountering hazardous materials during grading and excavation within the ROW. The construction work for the proposed Project would generally be contained to the upper five feet of soil, thereby limiting the possibility of unearthing contaminated soil. The ISA indicated that in or adjacent to the ROW there are instances of potentially leaking USTs, stained soil, and small soil stockpiles. Furthermore, it is likely that lead and arsenic have leached into the soil along the ROW and may occur at hazardous levels. The potential for an encounter with a hazardous material is a significant impact. The mitigation measures in this section provide the appropriate methods for safely approaching potential hazardous situations.

As stated in "4.8.1 Affected Environment" above, deeper soil testing was conducted at La Brea Avenue and La Cienega Boulevard where more significant digging would occur. No contaminants were found in the analyzed soil samples. However, the ISA notes that additional sampling and testing may be required to confirm the absence of hazardous materials. Mitigation addresses this need for further studies.

Downtown Los Angeles Connection Options. For the Hill Street Couplet Design Option, impacts would be the same as described for the LPA in the limited potential to encounter contaminated soil. For the Flower Street Design Options, digging would occur at depths significantly deeper than five feet to construct the undercrossing, increasing the possibility to encounter contaminated soils. Initial soil testing would need to be completed in the location of the undercrossing before construction began to verify that no contaminants were present.

La Cienega Station Parking Options. For the Southwest Corner Option, digging would occur at depths significantly deeper than five feet to construct the lower two levels of parking. This greater depth increases the possibility of encountering contaminated soils. At the time of this document's preparation, a preliminary Phase I Hazardous Waste Assessment for the site was prepared. An environmental database search and survey of aerial photos were conducted. The site has a history of industrial uses from the 1950s on, and possibly earlier. Based on the preliminary findings, Phase I assessment recommends a Phase II subsurface soil testing program. This further study would be required to assure that any contaminated soil is properly identified and removed.

Jefferson Boulevard Design Options. Impacts would be the same as described for the LPA. Mitigation would be necessary to address the limited potential to encounter contaminated soil.

Venice/Robertson Design Options. For the ROW and North of ROW station options, impacts would be the same as described for the LPA in the limited potential to encounter contaminated soil. The Aerial Station Option would require more significant excavation to construct the support columns. Digging at a greater depth increases the possibility of encountering contaminated soils. Initial soil testing would need to be completed at the site before construction began. This further study would be required to assure that any contaminated soil is properly identified and removed.

Phased Implementation. Phased Implementation would result in the same risk of encounter with contaminated soils as described for the LPA. Mitigation would be necessary to address the limited potential to encounter contaminated soil.

4.8.2.2 Operation

No Action. The No Action Alternative would not result in any operational impacts.

LPA. The overhead catenary system and traction power substations (TPSS) would be the sources of EMFs from the LRT operation. TPSSs receive utility company power which is self-contained within the facility. The LRT overhead contact system distributes a nominal 750 volts of direct current (DC) or 0.6

kilovolts (kV) along the alignment. For comparison, overhead power lines carry a much higher voltage of up to 400 kVAC. As the comparison suggests, the electrical field generated by light rail would be weak. Additionally, tests to gauge the strength of EMFs were conducted on light rail lines similar to that of the proposed Project in the Washington D.C. area. Magnetic fields of 80 to 150 milligaus were recorded at 10 to 15 feet from the source.[3] This is far below the most conservative standard of 1000 milligaus (for workers with cardiac pacemakers) and equitable to that produced by the average computer monitor.[4] Evidence points to the light rail-generated EMFs being too low to adversely affect riders or nearby sensitive receptors. No impact from the operation of the proposed Project and associated EMFs would result.

The proposed Project would not prohibit emergency responsiveness and could increase the City's preparedness should a large-scale evacuation ever be required. Expanding public transportation, in particular light rail that does not depend on roadways, would provide an efficient way to move many people in case of an emergency evacuation situation.

Downtown Los Angeles Connection Options. Impacts would be the same as described for the LPA.

La Cienega Station Parking Options. Impacts would be the same as described for the LPA.

Jefferson Boulevard Design Options. Impacts would be the same as described for the LPA.

Venice/Robertson Design Options. Impacts would be the same as described for the LPA.

Phased Implementation. Impacts would be the same as described for the LPA.

4.8.3 MITIGATION MEASURES

The following mitigation measures are recommended per the conclusions of the ISA prepared for the proposed Project.

HS1 Government agency records for database sites, such as adjacent leaking USTs that appear to have the potential to impact the Project shall be reviewed for site-specific information. Within areas that would experience ground disturbance during construction, any site containing contaminated soil from a previously or currently leaking UST that could affect or be affected by the proposed Project shall be removed, remediated according to State law, and transported to an approved disposal location.

HS2 The future geotechnical investigation scope of work shall be expanded to include walking observation of the surface soil within areas of the Exposition ROW where there is an appearance of illegal dumping. Borings will be taken at locations that are determined by close-up observations or as a result of the database search to be an environmental concern. Geotechnical soil sampling should include environmental screening for contamination by visual observations and field screening for volatile organic compounds with a photo ionization detector (PID). Soil samples that are suspected of contamination based on field observations and PID readings shall be analyzed for suspected chemicals by a certified laboratory. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated according to State law.

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[3] National Institute of Environmental Health Services and US Department of Energy, 1995.

[4] The CenterLine Supplemental Draft Environmental Impact Statement/Revised Draft Environmental Impact Report, October 2003.

HS3 The patch of oil-stained soil with chemical odor observed on the southwest corner of the intersection of Exposition Boulevard and 11th Avenue shall be sampled and analyzed for petroleum hydrocarbons with carbon chain definition, PCBs, metals, and volatile organic compounds. If chemical contamination is found, the soil shall be removed, transported to an approved disposal location, and the site remediated according to State law.

HS4 The appropriate jurisdictional agency shall be notified of soil stockpiles observed adjacent to the ROW in the vicinity of 9th Avenue to 11th Avenue intersections. The owner of this property shall be notified to remove this material to an approved disposal location. These stockpiles appear to be associated with an adjacent construction-contractor yard.

HS5 Additional soil sampling and testing shall be conducted in the area of the La Cienega Boulevard and La Brea Avenue grade separations to confirm the lack of contaminated materials. In the event that the Flower Street Design Option is adopted, soil sampling and testing shall be conducted in the area of the proposed undercrossing to confirm the lack of contaminated materials. If contaminated soil is discovered, it shall be removed, transported to an approved disposal location, and remediated according to State law.

HS6 If the Southwest Corner Option is selected, and the La Cienega station parking facility is constructed on the southwest corner of La Cienega and Jefferson Boulevards, a Phase II Hazardous Waste Assessment shall be prepared for the site. As part of the Phase II assessment, a soil testing program to identify any contaminated soil shall be conducted, and protocol for contaminated soil removal shall be established.

HS7 A Phase II assessment shall be conducted for the Exposition ROW to determine the extent, if any, of soil contamination by lead arsenate. Metro shall implement recommendations of the Phase II based on the study's results and remove contaminated soil where ever necessary. This testing shall include the site selected for the Venice/Robertson Station.

4.8.4 CEQA DETERMINATION

According to CEQA, a significant impact would occur if the proposed Project would:

- Routinely expose the public or the environment to hazardous materials;
- Create the potential for upset or accident conditions involving the release of hazardous materials;
- Emit hazardous emissions or handle 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;
- Be located within two miles of a public airport or public use airport where the Project would result in a safety hazard for people residing or working in the Project area;
- Physically interfere with an adopted emergency response or evacuation plan; and/or
- 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.

No Action Alternative. The No Action Alternative would not result in any impacts related to hazardous substances.

LPA. The potential for encounter with contaminated soil during the grading and excavation phase of the Project would be the primary concern for exposure to hazardous materials. As discussed previously in the "4.8.2.1 Construction," the construction work for the proposed Project would generally be contained to the upper five feet of soil, thereby limiting the possibility of unearthing contaminated soil. Sites identified in the Phase I ISA as possibly contaminated are listed in "4.8.1 Affected Environment." The mitigation measures in this section provide the appropriate methods for safely approaching potentially hazardous situations, thereby reducing a potential significant impact to less-than-significant levels.

There are numerous schools within one-quarter mile of the Exposition Transit Corridor. The potential for exposure to contaminated materials would be limited to the confines of the ROW. The mitigation measures providing for the proper disposal of any contaminated substances would ensure the safety of nearby schools.

Operation of the proposed Project would not result in exposure to hazardous materials. As discussed in the "4.8.2.2 Operation" above, exposure to EMFs is considered too low to cause an impact. No impacts related to hazardous substances would result from the operation of the proposed Project.

The Project area does occur in close proximity to wildlands where a potential for fire exists. The Exposition Transit Corridor is located within an entirely developed area and risk of loss involving wildlands fires is insignificant. Since no public airport or private airstrip occurs within a two-mile radius of the Project area, safety hazards impacts would be insignificant to persons residing or working in the Project area.

Downtown Los Angeles Connection Options. Potentially significant impacts would result in the construction of the Flower Street Eastside Design Option undercrossing. The greater depths required for excavation could increase the potential for exposure to contaminated soil. As stated above in "4.8.2.1 Construction" above, mitigation would be necessary to reduce this potential impact to less-than-significant levels. Impacts associated with the Hill Street Couplet and Flower Street Westside Design Options are the same as described for the LPA.

Operation of the proposed Project would not result in exposure to hazardous material. As discussed in "4.8.2.2 Operation," above, exposure to EMF is considered too low to cause an impact. No impacts related to hazardous substances would result from the operation of the proposed Project.

La Cienega Station Parking Options. Potentially significant impacts would result in the construction of the Southwest Corner Option. The greater depths required for excavation could increase the potential for exposure to contaminated soil. The Phase I assessment prepared for the site recommends further study and testing of this site in a Phase II assessment. As stated above in "4.8.2.1 Construction", this further study would be necessary to reduce this potential impact to less-than-significant levels.

Jefferson Boulevard Design Options. Potentially significant impacts would result in the construction of either Design Options. The greater depths required for excavation could increase the potential for exposure to contaminated soil. As stated above in "4.8.2.1 Construction," mitigation would be necessary to reduce this potential impact to less-than-significant levels.

Venice/Robertson Design Options. Potentially significant impacts would result in the construction of the Aerial Station Option. The greater depths required for excavation could increase the potential for exposure to contaminated soil. As stated above in "4.8.2.1 Construction," mitigation would be necessary to reduce this potential impact to less-than-significant levels.

Phased Implementation. In the Vermont Segment of the route, impacts from the Hill Street Couplet and the Flower Street Westside Design Options would be the same as described for the LPA. For the Flower Street Eastside Design Option, digging would occur at depths significantly deeper than five feet to construct the undercrossing, increasing the possibility to encounter contaminated soils. Initial soil testing would need to be completed in the location of the undercrossing before construction began to verify that no contaminants were present. Mitigation measures described earlier in this chapter would address this potential impact.

In the Crenshaw Segment of the alignment, impacts would be the same as described for the LPA. Mitigation would address the limited potential to encounter contaminated soil.

Operation of the proposed Project would not result in exposure to hazardous material. As discussed in the "4.8.2.2 Operations,", exposure to EMFs is considered too low to cause an impact. No impacts related to hazardous substances would result from the operation of the proposed Project.

Significant Impacts Remaining after Mitigation. Implementation of mitigation measures **HS1** through **HS5** would reduce the impacts related to hazardous materials during the construction and operational phase of the proposed Project to a less-than-significant level.

4.9 WATER RESOURCES

This section provides a discussion of the existing local surface water bodies, local drainage patterns, and water quality conditions within the Mid-City/Exposition LRT Project area.

4.9.1 AFFECTED ENVIRONMENT

4.9.1.1 Executive Order Pertaining to Flood Plains

Executive Order 11988 (Flood Plain Management) links the need to protect lives and property with the need to restore and preserve natural and beneficial flood plain values. Specifically, Federal agencies are directed to avoid conducting, allowing, or supporting actions on the base flood plain unless the agency finds that the base flood plain is the only practicable alternative location. Similarly, Department of Transportation (DOT) Order 5650.2, which implements Executive Order 11988 (Flood Plain Management) and was issued pursuant to the National Environmental Policy Act of 1969, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973, prescribes policies and procedures for ensuring that proper consideration is give to the avoidance and mitigation of adverse flood plain impacts in agency actions, planning programs, and budget requests.

4.9.1.2 Municipal Water Supply

The Los Angeles Department of Power and Water (LADWP) supplies water for the City of Los Angeles. LADWP is entitled to draw from three main water sources for its supply: the San Fernando Groundwater Basin, the Los Angeles aqueduct, and the Metropolitan Water District (MWD). Other water supply agencies in the Study Area include the City of Santa Monica and the West Basin MWD. The majority of Culver City's water is supplied by the Southern California Water Company, with a small area on the west side of the City supplied by LADWP.

4.9.1.3 Flooding

Los Angeles County is subject to a wide range of flood hazards, including those caused by earthquakes, intense storms, and failure of man-made structures. Two damaging regional tsunamis caused by the 1812 Santa Barbara and the 1927 Point Arguello earthquakes indicate that faults off the coast of Southern California are capable of producing large local tsunamis. The tsunami concern is heightened because the short historical record does not adequately characterize the long-term tsunami risk.

The Federal Emergency Management Agency (FEMA) has prepared flood maps identifying areas in Los Angeles County that would be subject to flooding during 100- and 500-year storms events. These maps indicate that a portion of the Project routes are located within these flood zones, although the risk for flood is not any greater than that for most areas in the Central Los Angeles Basin.

4.9.1.4 Local Surface Water Bodies

The Project route stretches ten miles to the east of the Santa Monica Bay and the Pacific Ocean, the ultimate receiving water body in the region. The only surface water body located near the Project area is Ballona Creek. Santa Monica Bay is a United States Federal navigable water body, and is listed as an impaired water body in the Federal listing established under the Clean Water Act, Sections 131.1, 303, 304, and 319.

The Project route is located within the Los Angeles-San Gabriel Hydrologic Unit and more specifically fall within the Ballona Creek Watershed Management Area. Beneficial uses of Ballona Creek include:

contact and non-contact water recreation; warm freshwater habitat; wildlife habitat; rare and endangered species preservation, marine habitat; ocean, commercial, and sport fishing; and saline water habitat.

4.9.1.5 Groundwater

Regional groundwater levels are estimated at 75 to 150 feet below existing ground surface.[1] Borings conducted by the City of Los Angeles Bureau of Engineering as part of the North Outfall Interceptor Sewer Project reported encountering groundwater seepage in the boreholes at depths of approximately 15 to 50 feet below ground surface at various locations along the proposed Project ROW, but no ground monitoring wells were installed.[2]

4.9.1.6 Local Drainage Patterns

The surface of the Project area is mainly impervious (paved or occupied by structures), thus the infiltration of surface water into groundwater is negligible. Major storm drains in the vicinity of the Project route include two major storm drains in the Mid-Corridor area that collect and convey runoff from the Mid-Corridor area to Ballona Creek. The Los Angeles County Department of Public Works, Hydrologic and Water Conservation Division, maintains the northernmost storm drain. The City of Los Angeles Department of Public Works, Bureau of Engineering maintains the southernmost storm drain. The portion of the County storm drain located in the north Mid-Corridor area is currently estimated to provide about a one-year level of flood protection, well below the ten-year capacity considered by the County to provide a basic level of flood protection. The City storm drain located in the south Mid-Corridor area is estimated to provide at least a ten-year flood level of protection.

Ballona Creek is a major source of drainage in the Project area. The easterly terminus of Ballona Creek is located about 1.5 miles west of Crenshaw Boulevard near the intersection of Pickford Street and South Cochran Avenue. Ballona Creek is a concrete-lined flood control channel designed to pass local runoff and floodwaters into the Santa Monica Bay. Flows from Ballona Creek originate from many sources, including point-source discharges from industrial sources and storm water. In addition, irrigation runoff, residential car washing, fire fighting, waterline flushing, swimming pool draining, groundwater denaturing at construction sites, and miscellaneous materials from illegal dumping are discharged into the Creek.

Along the Mid-City/Exposition alignment, surface drainage flows easterly from Flower Street to the Los Angeles River. Surface drainage north of Exposition Boulevard flows from the northeast towards Ballona Creek. South of Exposition Boulevard, drainage flows in a western and southern pattern towards Dominguez Channel.

The rate of surface flow is heavily influenced by the character of the underlying land. Paved streets and buildings cover most of the Project area, which offers little opportunity for percolation, and thus has conditions suitable for higher flow. However, Exposition Boulevard has a greater presence of pervious surfaces, due to the presence of Exposition Park, and thus, a lower drainage flow is experienced at this portion of the alignment.

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[1] *Preliminary Geotechnical Review Mid-City/Exposition Light Rail Transit Project*, November 3, 2003.

[2] *Preliminary Environmental Initial Site Assessment Mid-City/Exposition Boulevard Light Rail Transit Project*, November 11, 2003.

4.9.1.7 Water Quality

The *Water Quality Control Plan, Los Angeles Region (Basin Plan)*, prepared by the California Regional Water Quality Control Board, Los Angles Region (RWQCB), notes that the major contributors to impaired water quality in Ballona Creek are pollutants from industrial and municipal effluent and urban non-point runoff. In addition, untreated sewage overflows discharged into Ballona Creek during the rainy season historically have caused beach closures along the Santa Monica Bay. Specific pollutants include high levels of dissolved solids (e.g., chlorides, sulfates, heavy metals), bacteria, nutrients from fertilizers and other sources, petroleum hydrocarbons, sediment, solid waste and debris. Rainfall results in these contaminants entering municipal storm drains, which subsequently convey the contaminants to surface waters. In addition, high concentrations of DDT in sediments at the mouth of Ballona Creek and in Marina del Rey provide evidence of past discharges that have resulted in long-term water quality issues.

4.9.1.8 Federal Regulatory Framework

Clean Water Act. The primary federal law governing water quality is the Federal Water Pollution Control Act of 1972, amended as the Clean Water Act in 1977. This landmark legislation established the National Pollutant Discharge Elimination System (NPDES) permit process to regulate point source discharges to surface waters. The 1987 amendment to the Clean Water Act added Section 402(p) that requires the United States Environmental Protection Agency (USEPA) to develop regulations for the control of non-point source discharges, such as urban storm water runoff, that ultimately ends up in receiving waters such as Ballona Creek.

State Regulatory Framework

Porter-Cologne Act. The Porter-Cologne Water Quality Act of 1969 established the principal California program for water quality control. This Act authorizes the State Water Resources Control Board (SWRCB) to implement the provisions of the Federal Clean Water Act, and divides the State of California into nine Regional Water Quality Control Board (RWQCB) areas. The Project area is located in RWQCB Region 4.

In addition, the SWRCB has adopted a General Construction permit, requiring that discharges of storm water from construction activities (e.g., clearing, grading, or excavation of land) on five acres or more must be regulated as an industrial activity and must be covered by a NPDES permit. Such projects must obtain a General Construction Activity Storm Water Permit. Permit applicants are required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and implement Best Management Practices (BMPs) to reduce construction effects on receiving water quality. The General Construction permit requires dischargers to eliminate/reduce non-storm water discharges to storm water systems, develop and implement a storm water pollution prevention plan (SWPPP), and inspect storm water control structures and pollution prevention measures.

Examples of typical BMPs included in SWPPPs are the use of temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment in a manner that reduces the potential for spills or leaks to enter the storm drain system or surface water system; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that could enter drains or surface waters.

Groundwater Resources. The State of California is not authorized by the California State Water Code to manage groundwater use; instead, case law from various court decisions regulates groundwater use. California landowners have a correlative right to extract as much groundwater as they can put to beneficial use. In some basins, a court has defined that correlative right. In other basins, the correlative right has not yet been defined. The Project area is neither regulated by a groundwater management district or by city or county ordinances. Furthermore, none of the local water districts have been granted statutory authority to regulate groundwater extraction or groundwater recharge.

Maintenance of the Water Quality of Municipally Separate Storm Drainage Systems. The purpose of the municipal storm water runoff permit is to provide a mechanism for monitoring the discharge of pollutants to "waters of the United States" and for establishing appropriate controls for municipally separate storm sewer systems located in municipalities with populations of 100,000 or more. The City currently operates under the Los Angeles NPDES Municipal Storm Water Permit. As such, the City must ensure that runoff to the storm drain system meets certain minimum water quality requirements. In order to accomplish this, the City must compile existing data regarding the storm drain system, identify and implement BMPs, and implement a monitoring program for non-point source pollutants.

Waste Discharge Requirements (WDRs) for Specified Discharges to Groundwater in Santa Clara River and Los Angeles River Basins (Order No. 93-010). This WDR allows the discharge of water resulting from the following activities: hydrostatic testing of tanks, pipes, and storage vessels; construction dewatering; dust control application; water irrigation storage systems; subterranean storage systems; subterranean seepage dewatering; well development and test pumping; aquifer testing; and monitoring well construction. This WDR is expected to apply to the proposed Project due to the potential for construction dewatering activities.

4.9.1.9 Regional Regulatory Framework

SCAG Regional Comprehensive Plan and Guide. The Southern California Association of Governments (SCAG) adopted a Water Quality Chapter in January 1995 for its *Regional Comprehensive Plan and Guide* (SCAG 1995). The Water Quality Chapter provides a regional perspective on current water quality issues, and has no direct application to the proposed transit alternatives.

4.9.2 IMPACT ASSESSMENT

Methodology

The methodology for the evaluation of impacts to hydrology and/or water quality involves an analysis of existing data related to flooding, drainage, and water quality, and an assessment of whether the proposed action would substantially degrade surface or ground water quality; alter drainage patterns in a manner that would cause flooding, erosion, or siltation; result in exposure of people and/or property to water-related hazards; or otherwise conflict with applicable laws related to hydrology and water quality.

4.9.2.1 Water Quality

No Action. The No Action Alternative would not result in any impacts on water quality.

LPA. Operations of the proposed Project would not result in violations of federal, state, and local water quality standards. Specific mitigation to guard against water pollution can be found in Section 4.16 Division #11 Operations and Maintenance Facility Expansion of this document. Additionally, the Project would be subject to existing NPDES permit requirements.

Downtown Los Angeles Connection Options. Impacts would be the same as described for the LPA. The Project would be subject to existing NPDES permit requirements.

La Cienega Station Parking Options. Impacts would be the same as described for the LPA. As part of the proposed Project, the parking options would be subject to existing NPDES permit requirements.

Jefferson Boulevard Design Options. Impacts would be the same as described for the LPA. As part of the proposed Project, the Jefferson Boulevard options would be subject to existing NPDES permit requirements.

Venice/Robertson Design Options. Impacts would be the same as described for the LPA. As part of the proposed Project, the station options would be subject to existing NPDES permit requirements.

Phased Implementation. Impacts would be the same as described for the LPA. The Project would be subject to existing NPDES permit requirements.

4.9.2.2 Sewer Systems

No Action. The No Action Alternative would not result in any impacts on sewer systems.

LPA. The proposed Project does not include elements which would result in overloads to sewer systems. Operation of the Exposition LRT would not generate a large amount of wastewater. The restroom facilities at new stations would be a source of new wastewater. However, these new facilities would easily be accommodated by the existing sewage system.

Downtown Los Angeles Connection Options. Impacts would be the same as described for the LPA.

La Cienega Station Parking Options. Impacts would be the same as described for the LPA.

Jefferson Boulevard Design Options. Impacts would be the same as described for the LPA.

Venice/Robertson Design Options. Impacts would be the same as described for the LPA.

Phased Implementation. Impacts would be the same as described for the LPA.

4.9.2.3 Storm Water Runoff

No Action. The No Action Alternative would not result in any storm water runoff impacts.

LPA. The proposed Project would be largely contained within a former railroad ROW now owned by Metro or within the limits of city streets. Implementation of the proposed Project would result in limited grading (to replace the dirt railroad ROW with light rail tracks) and a slight increase in impermeable surface area. Therefore, runoff volumes, flows, and velocities would be slightly altered; however, surface runoff would be directed into an existing drainage system. Additionally, landscaping would be an integral element of the proposed Project that would assist in reducing the amount of storm water runoff, due to the addition of more permeable surfaces. The Venice/Robertson Station Parking Facility would include new surface parking on The Exposition ROW. A large expanse of parking area is identified on the ROW from Venice Boulevard to Watseka Avenue, which may result in potential impact to existing, nearby drainage systems. To reduce impact, permeable surfaces would be provided along all parking area within the ROW.

Downtown Los Angeles Connection Options. This portion of the route is almost entirely paved over with very little permeable surface area. Runoff volumes, flows, and velocities of stormwater would be slightly altered as a result of limited grading; however, surface runoff would be directed into an existing drainage system, and impacts from any of the design options are be anticipated.

La Cienega Station Parking Options. The Southwest Corner Option would not alter the amount of impermeable surface as this site is already developed and paved. Redirecting parking demand to Crenshaw Station would eliminate the construction of a new parking structure and preserve unpaved land on the existing ECIS site. If a new parking structure is constructed, runoff volumes, flows and velocities of stormwater runoff would be slightly altered. Design of the new structure would direct surface runoff into an existing drainage system. Landscaping around the structure would assist in offsetting loss of permeable surfaces, thereby reducing the amount of runoff. No impacts are anticipated.

Jefferson Boulevard Design Options. Both of the design options would require street reconfiguration. During the reconfiguration process, the streets would be redesigned so that surface runoff would be directed into an existing drainage system. Impacts are be anticipated.

Venice/Robertson Design Options. The alteration of surface runoff would be similar to that described for the LPA. Design of the station option would direct surface runoff into an existing drainage system, and landscaping around the structure would assist in offsetting the loss of permeable surfaces. No impact is anticipated.

Phased Implementation. Construction of the Vermont Segment of the route would not reduce permeable surface area as virtually none exists in this area. Runoff volumes, flows, and velocities of stormwater would be slightly altered as a result of limited grading; however, surface runoff would be directed into an existing drainage system.

Construction of the Crenshaw and La Cienega Segments of the route would reduce slightly permeable surface area in the ROW. However, landscaping would be an integral element of the proposed Project that would assist in offsetting this loss. Runoff volumes, flows, and velocities of stormwater would be slightly altered as a result of limited grading; however, surface runoff would be directed into an existing drainage system. No impacts from phased implementation are anticipated.

4.9.2.4 Flooding

No Action. The No Action Alternative would not result in any flooding impacts.

LPA. As illustrated by **Figure 4.9-1**, Ballona Creek would be subject to flooding during the 100-year storm events. During these storm events, the Creek, which acts as a flood channel would be subject to limited flooding of short duration. As the Project crosses the flood plain on a bridge, it does not significantly encroach on a flood plain. Additionally, the Project would be built in accordance with all state and local flood plain protection standards. The bridge would not reduce the capacity of the creek.

Downtown Los Angeles Connection Options. There are no waterways adjacent to this portion of the route. No impacts would be anticipated from flooding.

La Cienega Station Parking Options. The Southwest Corner option would occur within the vicinity (within 0.25 mile) of Ballona Creek. Related impacts would be the same as those described for the LPA. No flooding impacts would be associated with redirecting parking demand to the Crenshaw Station.

Metro

SOURCE: Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map

FIGURE 4.9-1

100-YEAR FLOOD PLAINS

Jefferson Boulevard Design Options. Both bridge options would cross over Ballona Creek. Impacts would be the same as those described for the LPA.

Venice/Robertson Design Options. No waterways would be adjacent to the Venice/Robertson station options. No impacts from flooding are anticipated.

Phased Implementation. There would be no waterways adjacent to the Vermont or Crenshaw Segments of the route. No impacts are anticipated from flooding. The La Cienega Segment would terminate just east of the Ballona Creek. Impacts related to flooding for this segment would be the same as those described for the LPA.

4.9.2.5 Groundwater Resources

No Action. The No Action Alternative would not result in any impacts on groundwater resources.

LPA. An increase impervious surfaces would result in a limited reduction in local groundwater recharge opportunities. Precipitation in the Project area, however, is characterized by infrequent storms during a brief rainy season, and surface water infiltration is minimal, particularly along the narrow railroad ROW. The majority of recharge to the groundwater supply in Los Angeles County comes from large, natural stream systems or constructed groundwater recharge basins. The implementation of the landscaping element of the Exposition Transit Parkway would ensure maximum permeability along the alignment. No impacts to groundwater resources are anticipated to occur.

Downtown Los Angeles Connection Options. There would be little permeable surface in this portion of the route. None of the design options would greatly affect the amount of permeable surface in the area, and no impact to groundwater resources is anticipated.

La Cienega Parking Options. The Southwest Corner option would not alter the amount of impermeable surface as this site is already paved. Redirecting parking demand to Crenshaw would eliminate the construction of a new parking structure and preserve unpaved land on the existing ECIS site. Under the Southwest Corner option, landscaped would help offset the loss of permeable surface and facilitate the replenishment of groundwater. The No Parking option would not introduce any new paved areas and would not affect groundwater recharge potential. No impacts to groundwater resources are anticipated.

Jefferson Boulevard Design Options. Landscaping would accompany either of the bridge options which would help to offset the loss of permeable surface and facilitate the replenishment of groundwater. One bridge option would not greatly affect the amount of permeable surface area more than the other. No impacts are anticipated from either of the Jefferson Boulevard Design Options.

Venice/Robertson Design Options. Landscaping would accompany all of the station design options. Landscaped areas would help to offset the loss of permeable surface and facilitate the replenishment of groundwater. One design option would not greatly affect the amount of permeable surface area more than the other. No impacts are anticipated from any of the Venice/Robertson design options.

Phased Implementation. Construction of the Vermont Segment would not greatly affect the amount of permeable surface in the area as there is very little. Construction of the Crenshaw and La Cienega Segments of the route would remove landscaping from the ROW, reducing permeable surface area. The implementation of the landscaping element of the Exposition Transit Parkway would help to offset the loss of permeable surfaces and facilitate groundwater recharge. No impact to groundwater resources is anticipated.

4.9.3 MITIGATION MEASURES

WR1 A drainage plan shall be developed and implemented to ensure that the Mid-City/Exposition LRT is engineered so that no new source of direct water resulting from flooding is created that would affect nearby properties. Metro shall secure all necessary Federal and local permits prior to bridge construction over Ballona Creek.

WR2 To reduce surface runoff, all new surface parking facilities within the Exposition ROW shall include permeable surfaces.

4.9.4 CEQA DETERMINATION

According to CEQA, the proposed Project would result in a significant impact to water resources if it would:

- Conflict with applicable legal requirements related to hydrology or water quality, including a violation of state water quality standards or waste discharge requirements;
- Substantially degrade groundwater quality or interfere with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards, such as subsidence;
- Alter the existing drainage pattern of the site or area in a manner that would cause substantial flooding, erosion, or siltation;
- Create or contribute to runoff that would exceed the drainage and flood control capacity of existing or planned storm water drainage systems; or
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows, or otherwise expose people and/or property to water-related hazards, such as flooding.

No Action. There would be no impacts to water resources under the No Action alternative.

LPA. As discussed throughout "4.9.2 Impact Assessment" above, it was determined that the proposed Project would not result in any significant impacts on water resources. The proposed Project would be subject to existing NPDES permit requirements to regulate impacts from runoff to water quality. The Project would not result in a noticeable increase in runoff. In reconfiguring the ROW, a drainage plan would be implemented to direct stormwater and runoff to existing storm drains. The storm drains would be able to accommodate the flow. In addition, mitigation measure **WR2**, would assure that permeable surface is included in all new parking areas. Less-than-significant impacts are anticipated from Project-related runoff.

Where the LRT alignment crosses Ballona Creek, there would be limited potential for flooding. Ballona Creek, which acts as a flood channel, would be subject to flooding short duration during the 100-year storm events.

Mitigation measure **WR1** would ensure no impacts result from the limited potential of flooding.

The development of the ROW for the proposed Project would result in the removal of existing landscaping and a small reduction in the amount of permeable surface along the alignment. An integral element of the proposed Project, however, would be its landscaping features, which would replace a portion of the removed landscaping and recreate pervious surface. Overall a limited amount of surface area would be paved which would not result in a significant effects on regional groundwater recharge. No impact to groundwater resources is anticipated.

Downtown Los Angeles Connection Options. As part of the proposed Project, the design option selected would be subject to NPDES permit requirements. A suitable drainage plan would be implemented for the chosen design option that would direct runoff and storm water to existing storm drains. No impact is anticipated from Project-related runoff.

There would be no waterways adjacent to this portion of the route. No impacts are anticipated from flooding.

There would be little permeable surface in Downtown Los Angeles Connection portion of the route where the design options would be proposed. None of the design options would greatly affect the amount of permeable surface in the area, and no impact to groundwater resources is anticipated.

La Cienega Station Parking Options. As part of the proposed Project, the parking option would be subject to NPDES permit requirements. A new structure would be designed to direct surface runoff to existing drainage systems. In addition, mitigation measure **WR2**, would assure that permeable surface would be included in all new parking areas. Less-than-significant impacts related to runoff are anticipated.

Potential impacts for the Southwest Corner Option related to flooding would be the same as those described for the LPA. Mitigation measure **WR1** would ensure no significant impacts result from the limited potential of flooding. For the No Parking option, no impacts relating to flooding would result.

The Southwest Corner Option would be constructed on a previously developed site. This option would not notably change the amount of impervious surface on-site. Landscaping would accompany this option. Landscaped areas would help to offset any loss of permeable surface and facilitate the replenishment of groundwater. The No Parking Option would not require any new construction, and thus, would have any impacts on water resources. No impacts to groundwater are anticipated from either of the parking options.

Jefferson Boulevard Design Options. As part of the proposed design Project, the design option would be subject to NPDES permit requirements. Both of the Jefferson Boulevard Design Options would require street reconfiguration. During the reconfiguration process, the streets would be redesigned so that surface runoff would be directed into an existing drainage system. Impacts from Project-related runoff are not anticipated.

Potential impacts related to flooding would be the same as those described for the LPA. Both of the Jefferson Boulevard Design Options cross over the Ballona Creek which is situated in a 100-year flood plain. Mitigation measure **WR1** would ensure no significant impacts result from the limited potential of flooding.

Landscaping would accompany either of the bridge options which would help to offset any loss of permeable surface and facilitate the replenishment of groundwater. One bridge option would not greatly affect the amount of permeable surface area more than the other. No impacts to groundwater are anticipated from either bridge option.

Venice/Robertson Design Options. As part of the proposed design option, the station design option would be subject to NPDES permit requirements. The station would be designed to direct surface runoff to existing drainage systems. In addition, mitigation measure **WR2**, assures that permeable surface would included in the station area parking. Less-than-significant impacts related to runoff would result.

This station area would not be adjacent to any body of water or a 100-year flood plain. No impacts related to flooding would occur.

The site for the proposed North of ROW Option A is already paved over. Permeable surface area would not be notably altered by this option. The other design options would occur on partially unpaved areas, however, landscaping would accompany all of the station design options. Landscaped areas would help to offset any loss of permeable surface and facilitate the replenishment of groundwater. No impacts to groundwater are anticipated from any of the Venice/Robertson Design Options.

Phased Implementation. Phasing the implementation of the Project would not result in new impacts. As stated for the LPA, a drainage plan would be put in place to direct surface runoff and stormwater to existing storm drains. In the Vermont Segment, no permeable surface would be lost in constructing the proposed Project and there would be not impact to groundwater resources. In the Crenshaw and La Cienega Segments, landscaping accompanying the proposed Project would offset the loss of existing landscaping and permeable surface. No impacts to groundwater resources are anticipated in the Crenshaw Segment.

The Crenshaw Segment runs only as far west as Crenshaw Boulevard, and thus, the alignment would not cross Ballona Creek or the 100-year flood plain. No impacts from flooding are anticipated. The La Cienega Segment would terminate just east of Ballona Creek and a 100-year flood plain. Mitigation measure **WR1** would ensure that no significant impacts would result from the limited potential of flooding.

Significant Impacts Remaining after Mitigation. Implementation of mitigation measure **WR1** would reduce impacts to water resources to less-than-significant levels.

4.10 BIOLOGICAL RESOURCES

This section outlines the primary biological resource impacts considerations in the corridor. Because of the urbanized and developed character of the Mid-City/Exposition LRT Project, biological resources are not expected to be significantly affected by the proposed Project.

4.10.1 AFFECTED ENVIRONMENT

The Study Area is one of the most densely developed and urbanized areas in the southern California region. As a result, open space is largely limited to man-made parks and golf courses. With the exception of the Baldwin Hills, there are no natural open space or significant ecological areas (SEA) within the Study Area.[1] The only surface water body extending into the Exposition Corridor area is Ballona Creek. The creek is maintained by the Los Angeles County Flood Control District as a flood channel and flows from east to west. The surface flow (consisting largely of urban runoff) is contained within a concrete-lined channel with the exception of the estuary area in Marina del Rey.

Executive Order Pertaining to Wetlands

This order issued in 1977 directs all Federal agencies to avoid, if possible, adverse impacts to wetlands and to preserve and enhance the natural and beneficial values of wetlands. Each agency shall avoid undertaking or assisting in wetland construction projects unless the head of the agency determines that there is no practicable alternative to such construction and that the proposed action includes measures to minimize harm.

Executive Order Pertaining to Endangered Species

Adopted in 1973, this act requires Federal agencies, in consultation with and with the assistance of the Secretary of the Interior or of Commerce, as appropriate, to insure that actions they authorize, fund or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species.

Species in the Project Area

Table 4.10-1 lists animal and plant species known to exist within, or in close proximity to the Study Area, as identified in the California Natural Diversity Database (CNDDB).

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[1] City of Los Angeles Environmental and Public Facilities Map of Significant Ecological Areas (SEA), September 1, 1996.

TABLE 4.10-1: CNDDB SPECIES LISTING FOR THE PROJECT STUDY AREA			
Scientific Name	Common Name	Federal Status	Status in California
Athene cunicularia	Burrowing Owl	Species of Concern	None
Polioptila californica californica	Coastal California Gnatcatcher	Threatened	None
Phrynosoma coronatum	Coast (San Diego) Horned Lizard	None	None
Danaus plexippus	Monarch Butterfly	None	None
Nama stenocarpum	Mud Nama	None	None
Helianthus nuttallii ssp. Parishii	Los Angeles Sunflower	None	None
Atriplex serenana var. davidsonii	Davidson's Saltscale	None	None
Calystegia sepium ssp. Binghamiae	Santa Barbara Morning-Glory	None	None
Dudleya multicaulis	Many-stemmed Dudleya	None	None
Astrangalus brauntonii	Brauton's Milk-Vetch	Endangered	None
Astrangalus tener var. titi	Coastal Dunes Milk-Vetch	Endangered	Endangered
Navarrretia prostrata	Prostrate navarretia	Species of Concern	None
Calochortus plummerae	Plummer's Mariposa Lily	None	None
Centromadia parryi ssp. australis	Southern Tarplant	None	None
Dithyrea maritima	Beach Spectaclepod	Species of Concern	Threatened
Atriplex parishii	Parish's Brittlescale	None	None
Astragalus pycnostachyus var. lanosissimus	Ventura Marsh milk-vetch	Endangered	Endangered
Sidalcea neomexicana	Salt Spring Checkerbloom	None	None
Cordylanthus maritimus ssp. maritimus	Salt marsh bird's-beak	Endangered	Endangered
SOURCE: California Natural Diversity Database, March 20, 2004.			

Regulatory Setting

Environmental laws governing biological resources relevant to the proposed Project are summarized below.

Federal

- **Federal Endangered Species Act of 1973 (FESA).** Species listed as endangered and threatened by the U.S. Fish and Wildlife Service (USFWS) are protected under this legislation. No species currently listed by FESA are expected to be affected directly or indirectly by the proposed Project. Thus, although the Project would be a federal action under the National Environmental Policy Act (NEPA), no consultation with the USFWS under Section 7 of the FESA would be required.

- **Migratory Bird Treaty Act (MBTA).** The MBTA, first enacted in 1916, prohibits any person to: "pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase . . ." any migratory bird. It is illegal under MBTA to directly kill or destroy a nest of, nearly any bird species, not just endangered species. Activities that result in removal or destruction of an active nest (a nest with eggs or young being attended by one or more adults) would violate the MBTA. Removal of unoccupied nests, or bird mortality resulting indirectly, would not represent violations of the MBTA. However, if nesting birds are present during construction, such as under bridges, and construction activities were allowed to result in destruction of such nests, these activities may violate the MBTA.

- **Section 404 of the U.S. Clean Water Act.** The objective of the Clean Water Act of 1977 is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 404 of the Act regulates activities that result in discharge of dredged, fill, or excavated material into "waters of the United States." This generally includes any waterway, intermittent stream, man-made wetland, or reservoir. Projects that include physical modification of a "water of the United States" must generally comply with Section 404 which is under the jurisdiction of the U.S. Army Corps of Engineers (Corps). Impacts on streambeds are calculated in terms of the area that would be modified between "mean high water" marks of the streambed.

State

- **California Endangered Species Act (CESA).** This legislation was enacted in 1984 and is intended to provide additional protection to endangered and threatened species in California. No "take" of a species as defined per CESA would occur during construction or operation of the proposed Project.

- **California Fish and Game Code Sections 1600 through 1607.** California Department of Fish and Game (CDFG) oversees streambeds and their associated habitats pursuant to Sections 1600 to 1607 of the code, which manages activities that would "substantially change" the " . . . bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource, or from which these resources derive benefit." In addition to complying with Section 404 of the Clean Water Act, any modification of streambed habitat may require a Streambed Alteration Agreement from CDFG.

- **California Fish and Game Code Sections 4150 through 4154.** CDFG's regulations address how non-game mammals may be taken. Non-game mammals include all mammals occurring naturally in California that are not game mammals, fully protected mammals, or fur-bearing mammals. These sections allow CDFG to enter into cooperative agreements with agencies of the state or the United States for the purpose of controlling nongame mammals.

- **California Code of Regulations, Title 14, Natural Resources.** Under the provisions of Section 251.1, Harassment of Animals, no person is allowed to harass any game or non-game bird or mammal or fur-bearing mammal, except as otherwise authorized by regulations (such as under Section 4150 through 4154, as discussed above.) Harassment is defined as an intentional act that disrupts an animal's normal behavior patterns, which includes breeding, feeding, or sheltering. This regulation would require the Project to avoid construction work on bridges if roosting bats or nesting birds are present or sign cooperative agreements with CDFG under the California Fish and Game Code Sections 4150 through 4154.

4.10.2 IMPACT ASSESSMENT

Methodology

The evaluation method for impacts to biological resources entails a review of the California Natural Diversity Database to determine whether there are threatened or endangered plant or animal species within the Study Area, and a comparison of the proposed alignment to determine whether these improvements traverse sensitive ecological areas, including rivers and streams, wetlands, wildlife migratory corridors and/or habitat conservation areas. If the alignment is located within or adjacent to one of these areas, there would be a potential for an adverse impact.

4.10.2.1 Wetlands

No Action. The No Action Alternative would not result in any impacts on wetlands.

LPA. The proposed Project would not affect any wetlands. The nearest wetland is the Ballona Wetland located approximately 4.5 miles west of the proposed Project. No impact to wetlands is anticipated.

Downtown Los Angeles Connection Options. No impact to wetlands is anticipated.

La Cienega Station Parking Options. No impact to wetlands is anticipated.

Jefferson Boulevard Design Options. No impact to wetlands is anticipated.

Venice/Robertson Design Options. No impact to wetlands is anticipated.

Phased Implementation. No impact to wetlands is anticipated.

4.10.2.2 Sensitive Species and Habitat

No Action. The No Action Alternative would not result in any impacts on sensitive species.

LPA. The proposed Project follows existing public ROWs and would largely be contained within existing limits of city streets or a former railroad ROW now owned by Metro. It would not affect wildlife corridors nor does it interfere with a Habitat Conservation Plan. As stated above, the area surrounding the Exposition ROW is highly urbanized. A search of the California Natural Diversity Database (NDDB) found eight species listed federally or by the state of California as Species of Concern, Threatened, or Endangered. Although these species may have been observed in the Study Area, the ROW and surrounding area generally does not have habitat suitable for these species. There is very little undisturbed natural land left; most of the Study Area is built or paved space. What green space is left consists of a patchwork of landscaping shrubbery, palm trees, or grassy parks that are too fractured from one another and lacking in overall floral diversity to function as a livable environment for most species. One Sensitive Ecological Area (SEA) occurs along the alignment at Baldwin Hills Recreation Park, but the proposed Project would not affect the park or the SEA.[2]

Within the Mid-Corridor segment extending from Vermont Avenue in the east to Farmdale Avenue on the west, a distance of approximately four miles, the route would require the removal of existing landscaping. This landscaping has more aesthetic than natural habitat value because of its isolated location within a street median or former railroad ROW. However, one species that finds the tall trees in the median hospitable habitat are nesting raptors during breeding season. Removal of the tall palms trees has the potential to adversely affect a designated sensitive species. The Exposition Transit Parkway Component includes a landscaping element that would replace removed landscape. This addition of landscaping would help to mitigate the negative effects of the removed landscape, as well as contribute aesthetically to the parkway.

The Project would cross Ballona Creek in east Culver City. This crossing would be accomplished on a new bridge structure at a point along Ballona Creek where the creek is in a concrete-lined flood control channel. Columns or piers would not be placed within the creek. This is not a waterway in which fish can migrate. The bridge structure would not affect the creek or the select species that are present in the

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[2]City of Los Angeles Environmental and Public Facilities Maps, *Significant Ecological Areas in the City of Los Angeles*, Los Angeles City Planning Department Citywide Division, September 1, 1996.

waterway such as mallards and other birds. Mitigation measures would be implemented to ensure no impact would occur. **Figure 4.10-1** shows the portion of Ballona Creek that would be crossed by the Project.

Downtown Los Angeles Connection Options. This portion of the route is generally characterized by commercial and semi-industrial development. Along Hill Street, there is no existing landscaping or suitable habitat for wildlife. No sensitive species or habitat would be affected.

Along Flower Street from Washington Boulevard to Exposition Boulevard, the street is lined with tall palm trees. The trees would have to be removed to construct the LRT. As described for the LPA, removal of tall palms could affect nesting raptors during breeding season. The landscaping element of the proposed Project would replace removed landscape. In addition, mitigation measures would be required to mediate the potential impact to raptors.

La Cienega Station Parking Options. The Southwest Corner Option would utilize a currently developed site. The No Parking Option would transfer parking demand to the Crenshaw Station structure and would leave the ECIS site undeveloped. No impacts to sensitive species or habitat would result from the La Cienega parking options.

Jefferson Boulevard Design Options. Within the close environs of Jefferson Boulevard, there is no suitable habitat for wildlife. Neither of the proposed bridge design options would affect the creek or the select species that are present in the waterway such as mallards and other birds. Mitigation measures would be implemented to ensure no impact would occur.

Venice/Robertson Design Options. The area for the proposed station design options is characterized by commercial and semi-industrial development. There is no existing suitable habitat for wildlife in the Venice/Robertson station area. No sensitive species or habitat would be affected.

Phased Implementation. Implementation of the Vermont, Crenshaw, and La Cienega Segments have the potential to affect sensitive species. From Figueroa Street to La Cienega Boulevard, all of the existing landscaping would be removed. As described for the LPA, removal of tall palms from the median could affect nesting raptors during breeding season. The landscaping element of the proposed Project would replace removed landscape. In addition, mitigation measures would be required to mediate the impact to raptors.

4.10.3 MITIGATION MEASURES

BR1 Fifteen days before and again, 72 hours prior to construction, a biological survey shall be conducted to look for raptor species. If raptor species are found on Metro Property, the construction schedule shall be modified so as not to disturb birds during breeding season. Such disturbances could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. The construction schedule shall take into account work stoppages that may occur in order to implement this measure.

BR2 Metro shall give official notification of the Project to the California Department of Fish and Game so that they may comment upon the portion of the LRT crossing Ballona Creek. Any measures determined necessary by the Department of Fish and Game upon their review of the Project shall be implemented.

Portion of Ballona Creek crossed by proposed Exposition LRT.

SOURCE: Terry A. Hayes Associates LLC

FIGURE 4.10-1

BALLONA CREEK

4.10.4 CEQA DETERMINATION

According to CEQA, it is expected that a significant impact to biological resources would result if development of the proposed Project would:

- Result in a substantial adverse effect on any federally, state, or locally designated sensitive species, including threatened, endangered, or candidate species as identified by the United States Fish and Wildlife and Service and/or the California Department of Fish and Game;
- Result in a substantial adverse effect on riparian habitat or other sensitive natural communities;
- Remove or have an adverse affect on any federally protected wetlands;
- Interfere with the movement of any native or migratory fish or wildlife species;
- Conflict with local policies or ordinances protecting biological resources; or
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP).

No Action. The No Action alternative would not result in any impacts to biological resources.

LPA. As discussed in "4.10.2 Impacts Assessment," it was determined that the proposed Project would not result in any significant impacts on biological resources. The proposed Project would be developed in a railroad ROW occurring in an urbanized environment. Despite this unlikely habitat, there would be one sensitive species that the Project could affect: raptors who nest in the tall trees in the existing median during breeding season. Mitigation measure **BR2** would assure that this sensitive species is not disturbed. Aside from potential impacts to raptors, no other federally, state or locally designated species would be affected.

The proposed Project would not disturb riparian habitat or other sensitive natural communities. It would cross over the Ballona Creek, a concrete-lined flood channel. This is not a waterway in which fish can migrate. Although no piles or concrete pillars would be placed in the creek, and it is not foreseen that the LRT bridge structure would affect the creek, mitigation measure **BR2** would be implemented to ensure no impact would occur.

The proposed Project would not affect any wetlands. The nearest wetland is the Ballona Wetland located approximately 4.5 miles west of the proposed transit corridor. No impact to wetlands would be anticipated. As the Project's alignment would be in a highly developed area with no undisturbed habitat, the proposed Project would not interrupt any wildlife migration or conflict with any policies, ordinances, or Habitat Conservation Plans designed to protect biological resources. No impact to biological resources is anticipated.

Downtown Los Angeles Connection Options. This portion of the route is characterized by commercial and semi-industrial development. Along Hill Street, there is no existing landscaping or suitable habitat for wildlife.

Along Flower Street from Washington Boulevard to Exposition Boulevard, the street is lined with tall palm trees. The trees would have to be removed to construct the LRT. As described for the LPA, removal of tall palms could affect nesting raptors during breeding season. This would be a potentially significant impact. The landscaping element of the proposed Project would replace removed landscape. In addition, mitigation measures would be required to mediate potential impact to raptors.

The alignment in this portion of the route would not cross the Ballona Creek or a riparian habitat. There are no wildlife migration corridors, conservation policies, ordinances or Habitat Conservation Plans in this area of the route. The nearest wetland is the Ballona Wetland located approximately 4.5 miles west of the proposed Project. No impact to biological resources is anticipated.

La Cienega Station Parking Options. The Southwest Corner option would utilize a currently developed site. The No Parking option would transfer parking demand to the Crenshaw Station structure and would leave the ECIS site undeveloped. No impacts to sensitive species or natural communities would result from the La Cienega parking options. There are no conservation policies or ordinances, or Habitat Conservation Plans with which the options might conflict. The sites for the proposed options would not be part of a wildlife migratory corridor. The nearest wetland would be the Ballona Wetland located approximately 4.5 miles west of the proposed transit corridor. No impact to wetlands would be anticipated. No impact to biological resources is anticipated.

Jefferson Boulevard Design Options. The intersection of Jefferson and La Cienega Boulevards is a heavily-trafficked intersection surrounding by commercial and semi-industrial. There is no suitable habitat for wildlife in this area. There are no sensitive species or natural communities present in this specific location, nor are there conservation policies, ordinances or Habitat Conservation Plans. The choice of bridge design would not affect any sort of wildlife migration.

Under both design options, the LRT would cross the Ballona Creek on an aerial guideway, neither of the proposed bridges would affect the creek or the select species that are present in the waterway such as mallards and other birds. However, mitigation measure **BR2** must be implemented to ensure no impact would occur.

Venice/Robertson Design Options. The area for the proposed station design options is characterized by commercial and semi-industrial development. There is no suitable habitat for wildlife in the Venice/Robertson station area. There are no sensitive species or natural communities present in this specific location, nor are there conservation policies, ordinances or Habitat Conservation Plans with which the options might conflict. The choice of station design option would not affect the migratory patterns of wildlife. The nearest wetland is the Ballona Wetland located approximately 5.1 miles west of the proposed transit corridor. No impact to biological resources is anticipated. No sensitive species or habitat would be affected.

Phased Implementation. Implementation of the Vermont Segment would not result in an impact to biological resources. In the Crenshaw and La Cienega Segments, all of the existing landscaping would be removed. As described for the LPA, removal of tall palms from the median could affect nesting raptors during breeding season. The landscaping element of the proposed Project would replace removed landscape. In addition, mitigation measure **BR1** would be required to mediate the impact to raptors. No other sensitive species or sensitive natural communities would be affected by the proposed Project.

None of the LRT segments would cross the Ballona Creek or a riparian habitat. There are no migration corridors, conservation policies, ordinances or Habitat Conservation Plans in this area of the route. The nearest wetland is the Ballona Wetland located approximately 4.5 miles west of the proposed transit corridor. No impact to biological resources is anticipated.

Significant Impacts Remaining After Mitigation. Implementation of mitigation measures **BR1** and **BR2** would reduce impacts to biological resources from the LPA, the Downtown Los Angeles Connection Design Options, La Cienega Parking Options, Jefferson Boulevard Design Options, and Phased Implementation to less-than-significant levels.

4.11 ENERGY RESOURCES

This section examines the proposed Project's energy needs (petroleum and equivalent British Thermal Units (BTU)) and its effects on the region's energy resources. Implementation of the proposed Project is expected to result in changing dynamics of all vehicle classes with regard to vehicle miles traveled (VMT). Changes in VMT, in turn, would affect energy consumption.

4.11.1 AFFECTED ENVIRONMENT

California's overall energy consumption continues to be dominated by growth in passenger vehicles, which is growing faster than the population. Since 1973, the number of vehicles within the state has increased by 75 percent. Although the average fuel economy of these vehicles has improved, the fuel savings achieved are less noticeable due to an increase in the number of miles traveled. Currently, California's 22 million automobiles consume more than 13 billion gallons of gasoline a year, making California the third largest consumer of gasoline in the world.[1]

Currently, urban rail, commuter rail, buses, and automobiles in the County of Los Angeles consume a total of approximately 620,250 billion BTUs annually.[2] Automobiles consume the most oil (approximately 105,243,547 barrels) and urban rail consumes the least amount of oil (approximately 53,485 barrels). **Table 4.11-1** shows the existing amount of energy used annually for each vehicle class.

TABLE 4.11-1: ANNUAL ENERGY USAGE IN LOS ANGELES COUNTY

Vehicle Class	Total BTU Consumption (Billions)	Total Barrels of Oil or Equivalent
Bus	9,158	1,578,968
Urban Rail	310	53,485
Commuter Rail	369	63,682
Automobiles	610,413	105,243,547
Annual Total	620,250	106,939,683

Note: Totals have been adjusted to account for rounding.
SOURCE: Terry A. Hayes Associates LLC and Manuel Padron Associates.

4.11.2 IMPACT ASSESSMENT

Methodology

Direct energy consumption involves energy used by the operation of vehicles (automobile, truck, bus, or train) within the corridor. In assessing the direct energy impact, consideration was given to the following factors:

- Annual vehicle miles traveled (VMT) for automobiles, trucks, buses, and heavy rail vehicles
- Variation of fuel consumption rates by vehicle type

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[1]California Energy Commission, 2000

[2]One BTU is the quantity of energy necessary to raise the temperature of one pound of water one degree Fahrenheit.

The direct energy analysis for each alternative was based on projected year 2020 Mid-City/Exposition Corridor traffic volumes and the total VMT. The 2020 daily traffic volumes for the Mid-City/Exposition Corridor were provided by Metro model and annualized based on transit statistics. The VMT fuel consumption method utilized for this Project is outlined in the *Technical Guidance on Section 5309 New Starts Criteria*.[3] Energy consumption factors for the various modes identified in **Table 4.11-2** were developed by Oak Ridge Laboratory and published in the 1996 *Transportation Energy Book: Edition 16.* These factors are used in this section to calculate energy consumed by various modes of travel.

TABLE 4.11-2: ENERGY CONSUMPTION FACTORS	
Mode	**Factor (BTU/Vehicle Mile)**
Passenger Vehicles (automobiles, vans, light trucks)	6,233
Heavy Duty Trucks	22,046
Transit Bus (all vehicle types) /a/	41,655
Rail (light or heavy)	77,739
Commuter Rail	100,000

/a/ FTA recommends utilizing a transit bus energy consumption factor of 41.655 BTUs/VMT for all bus types (including alternative fueled buses). Sufficient data has not been available to develop consumption factors for alternative fuels such as CNG (compressed natural gas), LNG (liquefied natural gas), and others.
BTU = British thermal unit.
SOURCE: Oak Ridge Laboratory, 1996.

The energy consumption of LPA and the Phased Implementation segments for year 2020 is compared to the projected 2020 Baseline conditions. The 2020 Baseline conditions assume that certain transportation improvements such as expanded bus service have occurred, but that the proposed Project was not implemented.

4.11.2.1 Changes in Regional Vehicle Miles Traveled

No Action. The No Action Alternative would result in higher passenger VMT than the LPA. The No Action Alternative would result in lower bus and light/heavy rail VMT than the LPA.

LPA. Estimated changes in regional VMT for each vehicle class are summarized in **Table 4.11-3**. Implementation of the proposed Project would affect VMT for passenger vehicle, bus, and light/heavy rail. Overall, implementation of the proposed Project would result in less passenger vehicle VMT and higher bus and light/heavy rail VMT. As shown, total annual VMT would decrease with implementation of the proposed Project.

TABLE 4.11-3: CHANGE IN REGIONAL VEHICLE MILES TRAVELED (VMT) WITH MID-CITY/EXPOSITION LRT – YEAR 2020

	Passenger Vehicle	Bus	Light/Heavy Rail	Commuter Rail	Total Change
Change in VMT/Year (LPA vs 2020 Baseline)	-69, 897,590	4,421,876	1,031,588	0	-64,444,126
Percent Change	-0.05%	1.82%	9.25%	0%	-0.035%

Note: Totals have been adjusted to account for rounding.
SOURCE: Los Angeles County Metropolitan Transit Authority (LACMTA) regional transportation model.

[3] Federal Transit Administration, 1999.

Downtown Los Angeles Connection Options. These design options would have similar regional VMT as the LPA.

La Cienega Parking Options. These parking options would have similar regional VMT as the LPA.

Jefferson Boulevard Design Options. These design options would have similar regional VMT as the LPA.

Venice/Robertson Design Options. These design options would have similar regional VMT as the LPA.

Phased Implementation. Projected 2020 changes in regional VMT for the Vermont, Crenshaw, and La Cienega Segments are summarized in **Table 4.11-4.** Phasing the implementation of LRT would affect VMT for passenger vehicle, bus, and light/heavy rail. Overall, implementation of the proposed Project would result in less passenger vehicle VMT and higher bus and light/heavy rail VMT. As shown, total annual VMT would decrease with implementation of the proposed segments.

TABLE 4.11-4: CHANGE IN REGIONAL VEHICLE MILES TRAVELED (VMT) WITH PHASED IMPLEMENTATION – YEAR 2020

	Passenger Vehicle	Bus	Light/Heavy Rail	Commuter Rail	Total Change
VERMONT SEGMENT VS BASELINE					
Change in VMT/Year	7,560,635	-15,937	383,870	0	192,701
Percent Change	-0.006%	-0.007%	3.4%	0%	-0.005%
CRENSHAW SEGMENT VS BASELINE					
Change in VMT/Year	30,617,398	534,425	666,853	0	-29,416,119
Percent Change	-0.02%	0.2%	5.5%	0%	-0.02%
LA CIENEGA SEGMENT VS BASELINE					
Change in VMT/Year	-56,485,960	1,658,278	918,021	0	-53,909,661
Percent Change	-0.04%	0.7%	8%	0%	-0.04

Note: Totals have been adjusted to reflect rounding.
SOURCE: Los Angeles County Metropolitan Transit Authority (LACMTA) regional transportation model.

4.11.2.2 Energy Consumption

No Action. The No Action Alternative would consume more energy than existing conditions since VMT would increase by year 2020.

LPA. Table 4.11-5 shows the projected 2020 annual fuel consumption of the proposed Project compared to the Baseline. As shown for year 2020, the LPA is anticipated to consume slightly less oil than the Baseline condition. With the implementation of the LPA, a total of approximately 150,404,954 barrels of oil, or approximately 872,349 billion BTU, would be consumed in the region per year. Projected fuel consumption for the LPA is approximately 0.02 percent less than the Baseline condition.

The LACMTA, through plans and specifications, will further ensure that stations and other elements of the LRT infrastructure use the most energy efficient designs and equipment.

TABLE 4.11-5: ANNUAL 2020 OPERATIONAL ENERGY CONSUMPTION			
	Baseline	LPA	Percent Change
Annual Passenger Vehicle BTU (billions)	860,478	860,042	-0.05%
Annual Bus BTU (billions)	10,146	10,330	1.81%
Annual Light/Heavy Rail BTU (billions)	867	947	9.25%
Annual Commuter Rail BTU (billions)	1,029	1,029	0%
Total Annual Direct BTU (billions)	872,520	872,349	-0.02%
Total Annual Barrels of Oil /b/	150,434,485	150,404,954	-0.02%

Not: Totals have been adjusted to reflect rounding.
/a/ One British thermal unit (BTU) is the quantity of energy necessary to raise one pound of water one degree Farhrenheit.
/b/ One barrel of crude oil is equal to 5.8 million BTUs.
SOURCE: Energy Consumption Factors (Oak Ridge National Laboratory, 1996).

Downtown Los Angeles Connection Options. The design options would require approximately the same amount of energy as the LPA. No energy impacts are anticipated from the design options.

La Cienega Station Parking Options. The parking options would result in similar energy demands as the parking structures proposed under the LPA. No energy impacts are anticipated.

Jefferson Boulevard Design Options. The bridge design options would require approximately the same amount of energy as the LPA bridge design. No energy impacts are anticipated.

Venice/Robertson Design Options. The station design options would require approximately the same amount of energy as the LPA. No energy impacts are anticipated from the station design options.

Phased Implementation. **Table 4.11-6** shows the projected annual fuel consumption of the Vermont, Crenshaw and La Cienega Segments compared to the 2020 Baseline. The Vermont, Crenshaw and La Cienega Segments would consume less oil than the Baseline. With the implementation of the Vermont Segment, a total of approximately 150,431,391 barrels of oil, or approximately 872,502 billion BTU, would be consumed in the region per year. Fuel consumption for the Vermont Segment is approximately 0.002 percent less than the Baseline.

With the implementation of the Crenshaw Segment, a total of approximately 150,414,358 barrels of oil, or approximately 872,403 billion BTU, would be consumed in the region per year. Fuel consumption for the Crenshaw Segment is approximately 0.01 percent less than the Baseline. With the implementation of the La Cienega Segment, a total of approximately 150,397,996 barrels of oil, or approximately 872,308 billion BTU, would be consumed in the region per year. Fuel consumption for the La Cienega Segment is approximately 0.02 percent less than the Baseline. The LACMTA, through plans and specifications, will further ensure that stations and other elements of the LRT infrastructure use the most energy efficient designs and equipment.

TABLE 4.11-6: ANNUAL 2020 OPERATIONAL ENERGY CONSUMPTION - PHASED IMPLEMENTATION			
	Baseline	**Phased Implementation**	**Percent Change**
VERMONT SEGMENT			
Annual Passenger Vehicle BTU (billions)	860,478	860,430	-0.06%
Annual Bus BTU (billions)	10,146	10,145	-0.007%
Annual Light/Heavy Rail BTU (billions)	867	897	3.4~~6~~%
Annual Commuter Rail BTU (billions)	1,029	1,029	0%
Total Annual Direct BTU (billions)	872,520	872,502	-0.002%
Total Annual Barrels of Oil /b/	150,434,485	150,431,391	-0.002%
CRENSHAW SEGMENT			
Annual Passenger Vehicle BTU (billions)	860,478	860,287	-0.032%
Annual Bus BTU (billions)	10,145	10,168	0.2%
Annual Light/Heavy Rail BTU (billions)	867	919	5.5%
Annual Commuter Rail BTU (billions)	1,029	1,029	0%
Total Annual Direct BTU (billions)	872,520	872,403	-0.01%
Total Annual Barrels of Oil /b/	150,434,485	150,414,358	-0.01%
LA CIENEGA SEGMENT			
Annual Passenger Vehicle BTU (billions)	860,478	860,126	-0.04%
Annual Bus BTU (billions)	10,145	10,215	0.68%
Annual Light/Heavy Rail BTU (billions)	867	939	8.2%
Annual Commuter Rail BTU (billions)	1,029	1,029	0%
Total Annual Direct BTU (billions)	872,520	872,308	-0.02%
Total Annual Barrels of Oil /b/	150,434,485	150,38297,120996	-0.0~~1~~2%

/a/ One British thermal unit (BTU) is the quantity of energy necessary to raise one pound of water one degree Farhrenheit.
/b/ One barrel of crude oil is equal to 5.8 million BTUs.
SOURCE: Energy Consumption Factors (Oak Ridge National Laboratory, 1996).

4.11.3 MITIGATION MEASURES

As no significant energy impacts would occur, no mitigation measures are required.

4.11.4 CEQA DETERMINATION

Direct energy, measured in BTUs, was converted to the equivalent barrels of crude oil for comparison of the proposed Project to the No Action Alternative. By comparing the projected energy demands of the proposed Project to that of the No Action Alternative, it is possible to determine whether the proposed Project would have a significant effect on energy supplies. Although there are no State significance thresholds for energy use, a one-percent or greater increase in demand on energy supplies over the No Action Alternative would be considered significant.

No Action. The No Action Alternative would consume more energy than existing conditions since VMT would increase by year 2020.

LPA. As shown in **Table 4.11-5** above, the proposed Project is anticipated to reduce energy consumption in the region by approximately 0.02 percent. This impact is considered beneficial.

The LACMTA, through plans and specifications, will further ensure that stations and other elements of the LRT infrastructure use the most energy efficient designs and equipment.

Downtown Los Angeles Connection Options. The design options would all require approximately the same energy inputs to operate.

La Cienega Station Parking Options. The parking options would all require approximately the same energy inputs to operate.

Jefferson Boulevard Design Options. These design options would consume the same amount of energy as the LPA. Similar to the LPA, projected fuel consumption would be less than the 2020 Baseline and beneficial impacts would be anticipated.

Venice/Robertson Design Options. The station design options would all require approximately the same energy inputs to operate.

Phased Implementation. As shown in **Table 4.11-6** above, the Vermont, Crenshaw, and La Cienega Segments would consume less oil than the 2020 Baseline. This is considered a beneficial impact.

Significant Impacts Remaining after Mitigation. The proposed Project would reduce energy consumption in the region. A beneficial impact would result and no mitigation would be required.

4.12 SAFETY AND SECURITY

The purpose of this section is to characterize existing and future safety and security issues for passengers, pedestrians, motorists, and the surrounding community. This section will identify any potentially significant safety and security impacts that could occur due to transit improvements related to the Mid-City/Exposition LRT Project. Of concern is the potential for pedestrian/motorist conflict. Safety issues include station accidents, boarding, and disembarking accidents, and right-of-way (ROW) accidents. Another aspect of the safety question is security, particularly whether transit station and/or parking design, location, and layout would compromise the safety of transit patrons or surrounding communities making them more susceptible to criminal activity.

4.12.1 AFFECTED ENVIRONMENT

The Mid-City/Exposition LRT Project runs approximately 9.6 miles. Proposed operations would occur largely within the Metro-owned (former railroad) right-of-way along Exposition Boulevard from downtown Los Angeles to downtown Culver City. The existing transportation ROW was purchased by the Metro from the Southern Pacific Railroad Company in the early 1990s to provide high capacity transit service to the Westside. The alignment is surrounded by a mixture of residential, commercial, and industrial land uses including schools and parks (for a complete description of land uses see Section 4.1 Land Use/Neighborhoods).

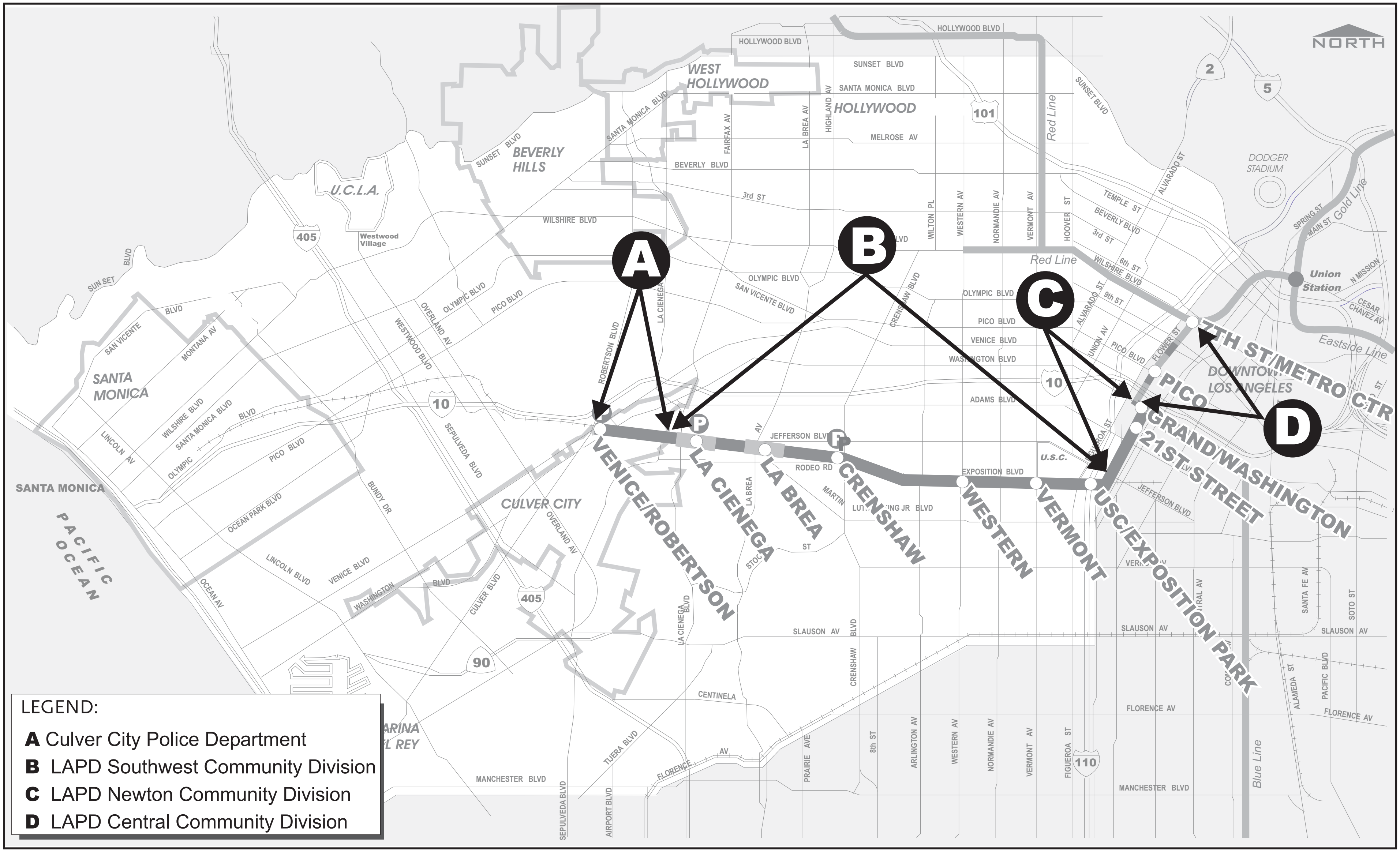
4.12.1.1 Police Service Areas

The addition of increased pedestrian levels and activity at transit stations raises the potential for security problems that must be handled by either Metro security personnel or local police departments. The Metro maintains a security force that is authorized to carry weapons. Metro security jurisdiction includes Metro properties and/or events. Primary duties include revenue pickup and Metro light rail station patrol of the Metro Blue and Green Line. Local law enforcement (local police departments and the Los Angeles County Sheriff Department) provide all other security related functions. The Mid-City/Exposition LRT Project will also be served by police departments in the City of Los Angeles and Culver City (**Figure 4.12-1**).

The Los Angeles Police Department is divided into four bureaus, which are then broken down into divisions. The proposed Project area extends through two bureaus that contain four LAPD Divisions (Newton, Rampart, Central Community, and Southwest). Key characteristics of these departments are described below.

- The Newton Community Police Station serves the neighborhoods of Produce/North-End Business District, Fashion District, South Park District, and Pueblo Del Rio Housing Development, and is under the jurisdiction of the Central Bureau. Newton Area encompasses an area of nine square miles and has a population of roughly 150,000 people.

- The Central Community Police Station is staffed by approximately 400 sworn and civilian members of the Los Angeles Police Department and is responsible for all police operations in downtown Los Angeles. The Area has a population of 40,000 people and covers approximately 4.5 square miles including the downtown communities of Chinatown, Little Tokyo, South Park, Central City East, Historic Core, Financial District, Artists Lofts, Olvera Street, Jewelry District, the Convention Center, and the Fashion District. Central Area is under the jurisdiction of Central Bureau.



SOURCE: Terry A. Hayes Associates LLC

Metro

MID-CITY/EXPOSITION LRT PROJECT FINAL EIS/EIR

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 4.12-1

POLICE SERVICE AREAS

- The Southwest Area Community Police Station serves approximately 13.11 square miles, bordered by the I-10 Freeway on the North, I-110 Freeway on the east, Vernon Avenue on the south, and La Cienega Boulevard on the west. It is a culturally diverse community, with a population of over 175,816 people. Southwest Community Police Station is under the jurisdiction of South Bureau. Its 352 sworn personnel and 32 civilian personnel serve the culturally diverse community. The region includes the following neighborhoods and communities: Baldwin Village, Baldwin Vista, Crenshaw Community, Jefferson Park, Leimert Park, Crenshaw District, West Adams Community, and University Park.

The City of Culver City is approximately five square miles and is located at the intersection of the I-405 and I-10 Freeways. The Culver City Police Department serves a population of approximately 39,119 persons.

4.12.1.2 Metro Transit Policing Through Los Angeles County Sheriff's Department

Metro oversees the operation of bus and light rail services throughout Los Angeles County. Metro is also responsible for implementing its own *System Safety Program Plan* to maintain and improve the safety and security of commuter operations, reduce the cost associated with accidents and comply with state regulations. These safety measures were established to provide worker and passenger safety, crime prevention, adequate emergency response, and emergency procedures following natural disasters. Furthermore, Metro currently provides police surveillance, non-uniformed police inspectors on transit and at major transit nodes, closed circuit television, and an emergency radio system to provide quick response to emergencies.

Metro has established several projects to enhance the safety of the passengers, employees and the community.

These projects include:

- Photo equipment has been installed on buses, permitting live video to be observed, to increase the safety of the passengers and employees;
- Direct communication services on the buses with the Los Angeles Police Department or the Los Angeles Sheriff's Department Transit Dispatch/Emergency Response Center;
- The Transit Safety Awareness Program communicates safety information to motorists and pedestrians in an attempt to change unsafe behaviors. Safety information is communicated through transit user aids such as timetables and bus stop information signs and via the internet;
- Metro personnel are offered Community Emergency Response Training (CERT) in collaboration with the Los Angeles City Fire Department. Employees are trained in earthquake awareness, disaster medical procedures, and rescue operations;
- Four quadrant gates have been installed at highway-LRT grade crossings to deter motorists from driving around the lowered gates;
- Pedestrian swing gates and pedestrian automatic gates have been installed at pedestrian crossings of LRT trackways, to control pedestrian movement; and
- Photo enforcement of grade crossing violations has been installed at various crossings along the Blue Line to discourage motorists from driving around lowered gate arms.

Table 4.12-1 illustrates the relative Part I crime rates within the corridor. Part I offenses include homicide, rape, aggravated assault, robbery, burglary, larceny, and vehicle theft. The data illustrates, all areas of Los Angeles traversed by the Project's alignment, except Rampart, have a crime rate higher than the City as a whole.

TABLE 4.12-1: PART I CRIME RATE		
	Part I Offenses	Crime Rate (Part I offenses Per 1000 Population)
Culver City Police Department	1,452	36.7
LOS ANGELES POLICE DEPARTMENT		
Newton	9,717	63.8
Rampart	11,019	38.6
Central Community	8,046	187.2
Southwest	13,699	77.9
Los Angeles City Average	**188,341**	**48.4**
SOURCE: www.lapdonline.org, March 29, 2004 ; www.fbi/gov, March 30, 2004.		

4.12.2 IMPACT ASSESSMENT

Methodology

Pedestrian and motorist safety along the alternatives considered in this document are evaluated on a qualitative level based on the experience of LRT systems throughout North America with similar alignment types. Research conducted on pedestrian and motorist safety referenced in this section include *Transit Cooperative Research Program (TCRP) Report 17 – Integration of Light Rail Transit into City Streets* and *TCRP Report 69 – Light Rail Service: Vehicular and Pedestrian Safety*.

4.12.2.1 Pedestrian Safety

No Action. The No Action Alternative would not result in any pedestrian safety impacts.

LPA. The introduction of LRT along the Exposition corridor will have various safety impacts. A review of data from prior research, safety oversight authorities and direct surveys of LRT system staff in the western United States conducted in recent years reveals that collisions between pedestrians and light rail vehicles (LRV) are divided into two general location types. The first location type, at station platforms, represents the largest percentage of LRV-pedestrian collisions. This high percentage may be attributed to the inherent purpose of a station, where large numbers of people converge near light rail vehicles, and cross the trackway. The second location type is along the LRT right-of-way. This location type includes crossings at intersections where pedestrians cross over the light rail tracks, and intrude on the ROW (trespassing).

Although the low number and unique circumstances of historic pedestrian collisions do not allow a valid quantitative projection for the Mid-City/Exposition LRT alignment, some trends are present in the background data of collision causes. For example, collisions with pedestrians are more likely to occur near station areas where large numbers of persons cross the tracks. Inattention to pedestrian warning devices, whether due to distractions present in the environment or other causes, is a factor in many collisions.

Achieving a low number of pedestrian involved collisions with LRVs is a result of several conditions including safety orientated design, light rail operator training, and public education that warns pedestrians of potential hazards involved with light rail transit.

Pedestrian safety along the LRT right-of-way can be separated into three categories based on the relationship between the pedestrian and the trackway. The three categories are:

- Pedestrian safety near the trackway

- Pedestrian safety at designated grade crossings
- Pedestrian safety at station locations

Trackway Crossings. At locations where pedestrian crossings are not provided across the trackway, pedestrian travel patterns must be identified to determine if pedestrians are likely to attempt to cross the tracks at locations other than designated pedestrian crossings. Trespassing is a concern for LRT alignments because pedestrian warning devices are not provided between designated crossings. In adherence to State guidelines, the Mid-City/Exposition LRT Project will include fencing along the Project where the trains travel at speeds in excess of 35 mph. In addition, as design plans are completed to a higher degree of detail, it is anticipated that fencing will be provided at select locations including all school zones, irrespective of train speed. This additional fencing along the corridor would reduce the likelihood of pedestrians crossing the tracks at locations other than designated pedestrian crossings.

In general, pedestrians can legally cross a street at any signalized or unsignalized crosswalk, or at an intersection with an unmarked crosswalk. Along the route alignment, the introduction of light rail transit would result in the elimination of 17 legal, yet unmarked, pedestrian crossings. These crossings would be eliminated as the intersections would be designed to only allow right turns into or out of the cross street. As such, the trackway would not be able to be crossed by motorists or pedestrians. The reduced number of legal crosswalks would require pedestrians to walk longer distances to cross streets, but would allow for a greater degree of protection for pedestrians at designated crosswalks due to the installation of traffic signals and other pedestrian safety treatments.

Designated Grade Crossings. Pedestrian safety at designated grade crossings is a key factor to be considered in the design of LRT alignments. Twenty-seven designated pedestrian grade crossings would result from the Mid-City/Exposition LRT Project. A vast majority of these pedestrian crossings would be located at motorist crossings of the tracks. Three pedestrian only crossings would be constructed as part of this Project. Every pedestrian crossing would be equipped with pedestrian grade crossing treatments. The treatments vary from pedestrian signal heads at locations where the LRT would be controlled by traffic signals to pedestrian automatic gates where required. The type of treatments and warning devices provided at the grade crossings would vary based on the LRT alignment type, grade crossing geometry, LRV operating speed and pedestrian volumes.

Each grade crossing was evaluated for pedestrian safety based on a site visit and review of the preliminary engineering design. The evaluation was conducted using the Metro Grade Crossing Policy for Light Rail Transit and was part of an overall safety evaluation which included pedestrian and motorist safety. The evaluation resulted in a list of recommended design modifications as well as mitigation measures to improve the level of safety at the crossings. The various pedestrian safety features that would be utilized for this alignment are described in Section 2.0 Alternatives Considered for this EIS/EIR. The specific warning devices would be determined by preparing a Hazard Analysis and conducting joint field diagnostic reviews with all affected parties as part of the Grade Crossing Analysis process mandated by the California Public Utilities Commission.

Each pedestrian grade crossing is listed below with recommended design modifications and safety measures:

Venice Boulevard/Robertson Boulevard

- The Venice Boulevard/Robertson Boulevard intersection is not crossed by LRT tracks; however, pedestrians would utilize this intersection to access the station;
- A pedestrian barrier would be installed on the southwest corner of the intersection to channel pedestrians to the designated crosswalks; and

- Adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks would be provided to facilitate pedestrian mobility.

Washington Boulevard

- Pedestrian generators at this crossing include Turning Point School and Culver City Middle School; Pedestrian sight distance is poor due to crossing geometry, existing buildings and fencing; and
- Pedestrian automatic gates would be provided to account for limited pedestrian sight distance.

National Boulevard

- Pedestrian generators at this crossing include Turning Point School and Culver City Middle School; Pedestrian sight distance is poor due to crossing geometry, existing buildings and fencing;
- Pedestrian automatic gates would be provided to account for limited pedestrian sight distance; and
- The Class I bike path which would approach National Boulevard from the east, north of the LRT corridor, does not cross National Boulevard at the LRT grade crossing. In order to reduce the likelihood of bicyclists crossing National Boulevard at this location, a pedestrian barricade will be installed at the northeast quadrant of the grade crossing. Pedestrians and bicyclists will be channeled to the Washington Boulevard/National Boulevard intersection.

Wesley Street

- Turning Point School students currently cross the Metro right-of-way for access to the Syd Kronenthal Park. As part of this Project, a multi-use path/Class I bikeway would be provided north of the trackway. A pedestrian only crossing of the LRT tracks would also be provided at this location to allow pedestrians to cross the tracks and access the park. Because Wesley Street is an existing signalized intersection, it would make a good location to continue the pedestrian path and allow pedestrian access between the multi-use path and Turning Point School;
- Since the pedestrian crossing of the tracks would be located adjacent to a school, pedestrian automatic gates would be provided; and
- Metro would monitor pedestrian activity during rail operation and fund crossing guards, if necessary, before school, after school and for special events.

Hayden Avenue

- The intersection of Hayden Avenue and National Boulevard is currently controlled by a traffic signal with a pedestrian crosswalk on the west leg of the intersection. The LRT alignment would not permit a pedestrian walkway between the LRT tracks and National Boulevard. As such, the pedestrian crosswalk at this location would be removed.

Jefferson Boulevard

- With the LRT tracks grade separated from Jefferson Boulevard, traffic signal controlled crosswalks would be provided to accommodate pedestrian movement.

La Cienega Boulevard

- While motorist volumes at the La Cienega Boulevard/Jefferson Boulevard intersection are high, pedestrian volumes are low. Pedestrian counts taken in 1999 show limited pedestrian activity at this intersection. However, the introduction of the La Cienega Station would increase the pedestrian traffic at this location. The station would be grade separated to minimize the potential conflicts between pedestrians and light rail vehicles; and
- Between La Cienega Boulevard and La Brea Avenue, no public pedestrian crossings would be provided. Three private motorist crossings would exist within this segment, with pedestrian sight distance to be taken into consideration in the design of the three private crossings. Similar to the public at-grade crossings, the fence height would be reduced to four feet within 200 feet of the crossing to provide adequate sight distance.

La Brea Avenue

- The pedestrian generators near the La Brea Avenue crossing include Rancho Cienega Park, Westside Park and Dorsey High School;
- Existing pedestrian counts taken in 1999 depict a moderate level of pedestrian activity at the La Brea Avenue/Jefferson Boulevard intersection. However, the presence of a station would increase the pedestrian volume. Therefore, the LRT tracks will be grade separated at La Brea Avenue and pedestrians will not cross the tracks at-grade. To discourage trespassing and enhance safety, fencing between Dorsey High School and the La Brea grade separation would be provided; and
- Bicyclists traveling along the Class II bike lanes, north of the LRT tracks on Exposition Boulevard would be required to cross La Brea Avenue at the Jefferson Boulevard intersection. To facilitate this path, pedestrian barricades and appropriate signing would be installed at the grade crossing directing pedestrians and bicyclists to the designated intersection crossing of La Brea Avenue.

Farmdale Avenue

- The primary pedestrian generator at this crossing is Dorsey High School. Pedestrian counts taken in 2004 show that over 400 pedestrians cross Exposition Boulevard in both the AM and PM peak hours. A traffic signal would be installed at the intersection of Farmdale Avenue and Exposition Boulevard to help control the pedestrian flows. A second traffic signal would be installed at the intersection of Farmdale Avenue and Exposition Place to further assist in the control of pedestrian and motorist traffic;
- Pedestrian gates would be required at this location, as shown on the plans, and adequate pedestrian queuing areas would be provided between the tracks and Exposition Boulevard, as well as between the tracks and Exposition Place;
- To discourage trespassing and enhance safety, fencing between Farmdale Avenue and Buckingham Road would be provided; and
- Security would be provided during school hours.

Buckingham Road

- While a traffic signal exists at Buckingham Road/Exposition Boulevard, a second traffic signal would be installed at Buckingham Road/Exposition Place to further assist in the control of pedestrian and motorist traffic; and
- Pedestrian gates would be required at this location, as shown on the plans, and adequate pedestrian queuing areas would be provided between the tracks and Exposition Boulevard as well as between the tracks and Exposition Place.

Crenshaw Boulevard

- The main pedestrian generators at this intersection are the God in Christ Church and the Al-Madinah School. This crossing will be controlled by traffic signals rather than by automatic gates. Pedestrians will be controlled by pedestrian signal heads; and
- Because this would be a station location, the final design would provide adequate queuing areas and crosswalk width for the anticipated pedestrian volumes.

11th Avenue

- As with the other pedestrian crossings with this alignment type, pedestrian queuing areas would be designed to accommodate anticipated pedestrian volumes; and
- Because sight distance is limited for pedestrians at this location, pedestrian automatic gates would be installed as shown on the plans.

7th Avenue

- As with the other pedestrian crossings with this alignment type, pedestrian queuing areas would be designed to accommodate anticipated pedestrian volumes; and
- Because sight distance is limited for pedestrians at this location, pedestrian automatic gates would be installed as shown on the plans.

Arlington Avenue

- As with the other pedestrian crossings with this alignment type, pedestrian queuing areas would be designed to accommodate anticipated pedestrian volumes; and
- Fencing of the park area east of Arlington Avenue would be provided to discourage trespassing.

Gramercy Place

- The pedestrian crossing at Exposition Boulevard and Rodeo Road would be controlled by the Gramercy Place traffic signal. The crosswalk would require its own phase, long enough to clear pedestrians from the north side of Exposition Boulevard to the south side of Rodeo Road, as queuing areas would not be provided in the median; and
- Bicyclists traveling eastbound on Class II bike lanes would be required to dismount at Gramercy Place and walk their bikes over to the south side of Exposition Boulevard where Class II bike lanes continue eastbound.

Western Avenue

- The pedestrian crossing of Exposition Boulevard at Western Avenue would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads; and
- The main pedestrian generator at this location is Foshay Middle School. Metro will monitor pedestrian activity during rail operations and, if necessary, fund crossing guards before school, after school and for special events.

Denker Avenue

- The initial design for this existing signalized intersection was to close the intersection to motorists and make Denker Avenue right-in-right-out only. This design would require eliminating the existing pedestrian crosswalk across Exposition Boulevard. However, recent pedestrian counts were taken at this location in 2004 and the counts show that in the AM peak hour over 50 pedestrians cross Exposition Boulevard at this location. In the PM peak hour over 90 pedestrians cross Exposition Boulevard at this location. Closing this pedestrian crossing would require these pedestrians to cross Exposition Boulevard at either Western Avenue or Normandie Avenue. As such, the Denker Avenue crossing would remain open as a signalized intersection for both motorists and pedestrians. The future geometry of this intersection would be considered an impact requiring mitigation.

Normandie Avenue

- The pedestrian crossing of Exposition Boulevard at Normandie Avenue would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads; and
- Pedestrian counts taken in 1999 report that almost 200 pedestrians cross Exposition Boulevard at this location in the PM peak hour. As such, it would be necessary to provide adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks to facilitate pedestrian mobility.

Raymond Avenue

- This crossing would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads; and
- Pedestrian counts were taken at this location in 2004, and the counts show that in the AM peak hour over 100 pedestrians cross at this location. In the PM peak hour approximately 30 pedestrians cross at this location. Adequate pedestrian refuge areas at the intersection corners would be provided to facilitate pedestrian mobility.

Vermont Avenue

- The pedestrian crossing of Exposition Boulevard at Vermont Avenue would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads; and
- Pedestrian counts taken in 2000 report that over 200 pedestrians cross Exposition Boulevard at this location in the PM peak hour. As such, it would be necessary to provide adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks to facilitate pedestrian mobility.

Watt Way

- The pedestrian crossing of Exposition Boulevard at Watt Way would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads;
- Because of the pedestrian activity levels at this location, it would be necessary to provide adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks to facilitate pedestrian mobility;
- The University of Southern California pedestrian crossing of Exposition Boulevard would be controlled by a traffic signal with the pedestrians movements controlled by pedestrian signal heads; and

- Because of the pedestrian activity levels at this location, it would be necessary to provide adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks to facilitate pedestrian mobility.

Trousdale Way

- An existing mid-block crosswalk and traffic signal is provided for pedestrians to cross Exposition Boulevard and the median ROW;
- The existing crosswalk would be upgraded to integrate with a new Trousdale Circle pedestrian area with the median ROW; and
- Pavement markings would be provided along the length of the USC/Exposition Park Station platform on Exposition Boulevard for motorist safety.

Pardee Way

- The pedestrian crossing of Exposition Boulevard at Pardee Way would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads; and
- Because of the pedestrian activity levels at this location, it would be necessary to provide adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks to facilitate pedestrian mobility.

Figueroa Boulevard

- The pedestrian crossing of Exposition Boulevard at Figueroa Boulevard would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads; and
- Because of the pedestrian activity levels at this location, it would be necessary to provide adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks to facilitate pedestrian mobility.

Flower Street

- The pedestrian crossing of the LRT alignment at Flower Street would be controlled by a traffic signal with the pedestrian movements controlled by pedestrian signal heads;
- Since the alignment would represent a side running alignment for pedestrians at this location, supplemental active warning signs would be provided to warn pedestrians of an approaching train. In addition, tactile warning strips and pavement markings would notify pedestrians of the queuing area; and
- Pedestrian sight distance limitations may result in the need for additional pedestrian safety treatments.

Hope Street

- Pedestrians would not be permitted to cross the tracks at this location;
- Pedestrian barrier channelization would be provided on the southwest quadrant of this crossing to prohibit pedestrian traffic on Exposition Boulevard under the Harbor Freeway; and
- Pedestrian barrier channelization would also be provided on the southeast quadrant of this crossing to prohibit pedestrian traffic across the tracks.

Grand Avenue

- Pedestrians would be channeled to the designated pedestrian crossing of the tracks; and

- The motorist crossing of the tracks at Grand Avenue would be gated and pedestrians would be warned of an approaching train through active warning devices associated with the motorist gates.

Hill Street (near 35th Street)

- Pedestrians would cross the tracks only on the west sidewalk. Due to the curve in the tracks at this location, the pedestrian crossing would require supplemental active warning signs to warn pedestrians of an approaching train. In addition, tactile warning strips and pavement markings would notify pedestrians of the queuing areas.

Additional Downtown Los Angeles Connection Intersections

- The proposed Project would cross 13 intersections at-grade between 35th Street/Hill Street and the Washington Street/Hill Street connection to the existing Metro Blue Line. The LRT alignment is median running and semi-exclusive along Hill Street. As such, only intersections controlled by traffic signals would remain open. The other intersections would only allow for right-in-right-out traffic;
- At the signalized intersections, pedestrians crossing Hill Street and the LRT alignment would be controlled by a traffic signal with the pedestrians movements controlled by pedestrian signal heads;
- Because of the pedestrian activity levels, it would be necessary to provide adequate pedestrian refuge areas at the intersection corners as well as wide crosswalks to facilitate pedestrian mobility; and
- At intersections that become right-in-right-out only, pedestrians would not be permitted to cross the tracks. Pedestrian signing would be provided that informs pedestrians that they are not permitted to cross the tracks at these locations.

Station Locations. In addition to the pedestrian safety measures described above for pedestrian crossings of the tracks, pedestrian safety would also be taken into account at pedestrian station locations due to the pedestrian traffic generated by stations. Adequate pedestrian queuing and refuge areas will be provided as well as wide crosswalks to facilitate pedestrian mobility. Parking and bus circulation within or around the station would also be considered to determine if any pedestrian conflicts arise.

Improvement to Safety along the Alignment. Pedestrian safety at LRT grade crossings has been addressed through safety treatments incorporated into the design of the proposed Project. Section 2.0 provides a detailed discussion of the pedestrian safety treatments which would be incorporated as part of this Project. These treatments include pedestrian channelization, tactile warning strips, pedestrian swing gates, active warning devices and pedestrian automatic gates.

The Mid-City/Exposition alignment would have a positive impact on student safety. Thirteen schools exist within one-half mile of the proposed Project alignment. Along the LPA alignment, four new traffic signals would be installed within one-half mile of an existing school. All of the traffic signals would be equipped with pedestrian signals. The additional signalized pedestrian crossings of the Exposition right-of-way will increase pedestrian safety along the alignment. In addition, at designated pedestrian crossings along the side-running alignment of the LRT located within a school zone, pedestrian automatic gates would be utilized to increase student safety.

Eight parks exist within one-half mile of the proposed Project alignment. Along the LPA, three new traffic signals would be installed within one-half mile of an existing park. All of the traffic signals would be equipped with pedestrian signals. The additional signalized pedestrian crossings of the Exposition right-of-way would increase pedestrian safety along the alignment.

Downtown Los Angeles Connection Options. See the preceding *Designated Grade Crossings* discussion from Vermont Avenue to Additional Downtown Los Angeles Connection Intersections.

La Cienega Parking Options. See the preceding *Designated Grade Crossings* discussion under La Cienega Boulevard.

Jefferson Boulevard Design Options. See the preceding *Designated Grade Crossings* discussion under Jefferson Boulevard to La Cienega Boulevard.

Venice/Robertson Design Options. See the preceding *Designated Grade Crossings* discussion under Washington Boulevard, National Boulevard, and Venice Boulevard/Robertson Boulevard.

Phased Implementation. For the Vermont Segment, see the preceding *Designated Grade Crossings* discussion from Vermont Avenue to Additional Downtown Los Angeles Connection Intersections. For the Crenshaw Segment, see the preceding *Designated Grade Crossings* discussion from Crenshaw Boulevard to Raymond Avenue.

4.12.2.2 Motorist Safety

No Action. The No Action Alternative would not result in any motorist safety impacts.

LPA. Motorist safety along the Mid-City/Exposition LRT alignment has also been evaluated using the methodology described in the *Metro Grade Crossing Policy for Light Rail Transit*. Motorist safety treatments are described in detail in Section 2.0 Alternatives Considered. **Table 4.12-2** provides the current results of a safety analysis prepared for this document for both motorist and pedestrian safety.

Downtown Los Angeles Connection Options. In the Downtown Los Angeles Connection portion of the alignment, between Vermont Avenue and 7th St./Metro Station, the LRT trains would not travel above 35 mph. As this would be the case, pedestrians and motorists would cross the LRT tracks with the standard signal phases. No additional safety features such as pedestrian gates or motorist gates would be required. The underpass that is part of the Flower Street Eastside design options would not require any special pedestrian safety features. Trains would be given priority and would operate governed by special bar-type signals.

La Cienega Station Parking Options. Safety conditions for the parking options would be addressed as part of the safety of the entire Exposition LRT Project. The structure's design would facilitate safe ingress and egress from the structure and onto the street, for both vehicles and pedestrians.

Jefferson Boulevard Design Options. The LRT tracks would be grade separated from Jefferson Boulevard. Traffic signal controlled crosswalks would be provided to control conflicts between pedestrians and roadway traffic.

TABLE 4.12-2: MID-CITY/EXPOSITION LRT SAFETY ANALYSIS

Evaluation Factor	At-Grade Crossing				
	Washington Blvd	National Blvd	Jefferson Blvd	La Cienega Blvd	La Brea Ave
Traffic Queuing	Pre-signal will be provided.	Pre-signal will be provided.	None	Grade Separation will be installed.	Grade separation will be installed.
Sight Distance					
Motorist Approach SD NB/EB	OK	Limited sight distance because of geometry. Cantilevered flashing lights will be provided.	OK	OK	OK
Motorist Approach SD SB/WB	Limited sight distance because of geometry. Median Flashing Lights will be provided.	OK	OK	OK	OK
Motorist Corner SD NB/EB	OK	Poor because of geometry and existing buildings. Gates will be provided.	OK – Limited because of geometry and existing building. Grade Separation will be installed.	Poor because of landscaping and existing buildings. Grade Separation will be installed.	Poor because of landscaping and existing buildings
Motorist Corner SD SB/WB	Limited sight distance because of geometry and existing buildings. Gates will be provided.	OK	OK – Limited because of geometry. Grade Separation will be installed.	Ok – Limited because of buildings. Grade Separation will be installed.	OK
Pedestrian SD	Poor because of existing buildings and fencing. Pedestrian gates will be provided.	Limited because of fencing and buildings. Pedestrian gates will be provided.	Poor on northbound approach because of existing building and fence. Grade Separation will be installed.	Poor because of landscaping and existing buildings. Grade Separation will be installed.	Poor northbound because of landscaping and existing buildings.
Accident History	3 Accidents (2002 data) 0 Fatalities 0 Serious Injury	3 Accidents (2002 data) 0 Fatalities 0 Serious Injury	2 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	LADOT data not obtained because crossing to be grade separated.	LADOT data not obtained because crossing to be grade separated.
Crossing Readability/Delineation	May be a concern because of intersection geometry. Skewed crossing creates a large grade crossing. Pre-signal will be installed.	May be a concern because of intersection geometry. Skewed crossing creates a large grade crossing. Pre-signal will be installed.	May be a concern because of intersection geometry. Grade Separation.	None. Grade Separation will be installed.	None. Grade Separation will be installed.
Traffic Control Compliance Issues	Possible gate drive around concern because of skew. Median will be installed.	None	None	None. Grade Separation will be installed.	None. Grade Separation will be installed.
School Zone and Pedestrian Generators	Downtown Culver City Hamilton High School Culver City Middle School Turning Point School	Downtown Culver City Hamilton High School Culver City Middle School Turning Point School	Hayden Tract Syd Kronenthal Park Baldwin Hills Recreation Ctr Westside Park	Hayden Tract Syd Kronenthal Park Baldwin Hills Recreation Ctr Westside Park	Rancho Cienega Park, Dorsey High School, Westside Park Baldwin Hills Rec. Ctr La Brea Station
Trucks and Haz-Mat	Low/Moderate (Arterial)	Low/Moderate (Arterial)	Low/Moderate (Arterial)	Moderate (Arterial)	Moderate (Arterial)

TABLE 4.12-2: MID-CITY/EXPOSITION LRT SAFETY ANALYSIS

Evaluation Factor	At-Grade Crossing				
	Farmdale Ave	Buckingham	Crenshaw Blvd	11th Ave	7th Ave
Traffic Queuing	Possible queuing concern. New traffic signal will be installed.	Possible queuing concern. New traffic signal will be installed.	Possible queuing from Rodeo. Will be controlled with signal coordination. Also Exposition Place will be equipped with a traffic signal.	Possible queuing from Rodeo. Will be controlled with signal coordination. Pre-signal will be installed.	Possible queuing from Rodeo. Will be controlled with signal coordination. Pre-signal will be installed.
Sight Distance					
Motorist Approach SD NB/EB	OK	OK	OK	OK	OK
Motorist Approach SD SB/WB	OK	OK	OK	OK	OK
Motorist Corner SD NB/EB	Limited because of landscaping and school fence. Crossing gated.	OK	OK	Limited because of buildings. Crossing gated.	Limited because of buildings. Crossing gated.
Motorist Corner SD SB/WB	OK	OK	OK	OK	OK
Pedestrian SD	Limited northbound because of landscaping and school fence. Pedestrian gates will be installed.	OK	OK	Limited northbound because of buildings. Pedestrian gates will be installed.	Limited northbound because of buildings. Pedestrian gates will be installed.
Accident History	1 accident per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	2 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	13 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	0 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	0 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)
Crossing Readability/Delineation	Median Running because of existing roadway south of tracks. No concerns.	Median Running because of existing roadway south of tracks. No concerns.	Traffic signal (pre-signal) will be installed at Exposition Place.	Pre-signal will be installed.	Pre-signal will be installed.
Traffic Control Compliance Issues	Traffic Signal and four quadrant gates will be installed.	None. Traffic Signal and four quadrant gates will be installed.	None	None. Pre-signal and four quadrant gates will be installed.	None. Pre-signal and four quadrant gates will be installed.
School Zone and Pedestrian Generators	Rancho Cienega Park Dorsey High School Westside Park	God In Christ Church Al-Madinah School Crenshaw Station	God in Christ Church Al-Madinah School Crenshaw Station		
Trucks and Haz-Mat	None	None	Moderate	Light	None

TABLE 4.12-2: MID-CITY/EXPOSITION LRT SAFETY ANALYSIS

Evaluation Factor	At-Grade Crossing				
	Arlington Ave	Gramercy Place	Western Ave	Denker Ave	Normandie Ave
Traffic Queuing	Possible queuing from Rodeo. Will be controlled with signal coordination. Pre-signal will be installed.	None (Median Running)	None (Median Running)	None (Median Running)	None (Median Running) Driveways near intersection on Normandie
Sight Distance					
Motorist Approach SD NB	OK	OK	OK	OK	OK
Motorist Approach SD SB	OK – roadway curves, but TS has supplemental head on left.	OK	OK	N/A (no approach)	OK
Motorist Corner SD NB	Poor. Crossing Gated.	OK – intersection traffic signal controlled	OK	OK	OK
Motorist Corner SD SB	OK. Crossing Gated.	OK – intersection traffic signal controlled	OK	N/A	OK
Pedestrian SD	OK	OK	OK	OK	OK
Accident History	8 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	0 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	18 accidents per year 0 Fatalities (5-yr) 2 Serious Injury (5-yr)	2 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	10 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)
Crossing Readability/Delineation	Pre-Signal will be installed. As an alternative, Rodeo Road traffic signal can be used to control traffic approaching the tracks from the south.	Intersection Geometry requires clear delineation of trackway. Existing traffic signal phasing works well.	OK	OK	OK
Traffic Control Compliance Issues	Close proximity of traffic signals may cause compliance issues if signals are not well coordinated.	None.	None	None	None
School Zone and Pedestrian Generators	Open Space at Rodeo Rd and Cimarron St Western Station	Open Space at Rodeo Rd and Cimarron St Western Station	Foshay Learning Center Western Station	Foshay Learning Center 38th and Normandie Park	38th and Normandie Park
Trucks and Haz-Mat	None	None	Minimal	None	None

TABLE 4.12-2: MID-CITY/EXPOSITION LRT SAFETY ANALYSIS

Evaluation Factor	At-Grade Crossing				
	Vermont Ave	**Menlo Ave**	**Watt Way**	**Pardee Way**	**Figueroa Street**
Traffic Queuing	None (Median Running)	None (Median Running)	None (Median Running)	None (Median Running)	None (Median Running)
Sight Distance					
Motorist Approach SD NB	OK – Maintain Landscaping	OK	N/A (no approach)	N/A (no approach)	OK
Motorist Approach SD SB	OK – Maintain Landscaping	N/A (no approach)	OK	OK	OK – Horizontal curve on approach, but existing signalized intersection.
Motorist Corner SD NB	OK	OK	N/A	N/A	OK – Limited because of buildings, but traffic signal controlled.
Motorist Corner SD SB	OK	N/A	OK	OK	OK
Pedestrian SD	OK	OK	OK	OK	OK
Accident History	13 accidents per year 0 Fatalities (5-yr) 0 Serious Injury (5-yr)	No accident data	No accident data	No accident data	No accident data
Crossing Readability/Delineation	OK	OK	OK	OK	OK
Traffic Control Compliance Issues	None	None	None	None	None
School Zone and Pedestrian Generators	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park Vermont Station	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park Vermont Station	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park Vermont Station	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park
Trucks and HazMat	Minimal	Minimal	Minimal	Minimal	Minimal

TABLE 4.12-2: MID-CITY/EXPOSITION LRT SAFETY ANALYSIS

	At-Grade Crossing				
Evaluation Factor	**Flower St**	**Hope Street**	**Grand Ave**	**Hill Street**	
Traffic Queuing	Possible queuing from Rodeo. Will be controlled with signal coordination. Pre-signal will be installed.	Possible queuing from Harbor Freeway (I-110) NB on-ramp and from Exposition Blvd/Flower St intersection. Will be controlled with signal coordination. Pre-signal will be installed.	None		
Sight Distance					
Motorist Approach SD NB	OK	OK – Maintain Landscaping	OK	OK	
Motorist Approach SD SB	OK	N/A (no approach)	OK	OK	
Motorist Corner SD NB	Limited because of buildings, but traffic signal controlled.	OK – Horizontal curve on approach, but traffic signal will be visible.	OK – gates will be provided	OK	
Motorist Corner SD SB	OK	NA	OK – gates will be provided	OK	
Pedestrian SD	OK	OK	OK	OK	
Accident History	No accident data	No accident data	No accident data	No accident data	
Crossing Readability/Delineation	OK	OK	OK	Curve in trackway alignment will require clear delineation of trackway and supplemental warning devices.	
Traffic Control Compliance Issues	None	None	None	None	
School Zone and Pedestrian Generators	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park	Univ. Southern California Masjid Umar Mosque Jesse Brewer Park Weemes Elementary School Exposition Park Museums at Expo Park		
Trucks and Haz-Mat	Minimal	Minimal	Minimal	Minimal	

SOURCE: Korve Engineering, March 2004

Venice/Robertson Design Options. Safety conditions for any of the station design options would be the same as those described for the LPA stations. Mitigation measures would apply to station design to ensure maximum safety for pedestrians and transit users.

Phased Implementation. Safety conditions for Phased Implementation would be identical to those under the LPA. In the Downtown Los Angeles Connection portion, trains would not travel over 35 mph, and therefore, traffic signals would be sufficient to control pedestrian and motorist crossings. In the Crenshaw and La Cienega Segments, all of the same safety features including pedestrian and motorist gates, audible warning devices, and warning signs would be present.

4.12.2.3 Security

No Action. The No Action Alternative would not result in any security impacts.

LPA. The design of existing bus and rail facilities (including vehicles, stations, parking lots, etc.) would provide a safe, secure, and comfortable transit system. Transit patrons along the Mid-City/Exposition Project would be provided with station and platform amenities such as covered waiting platforms and secure lighting. In addition, the Metro would include security related design features designed for the Project such as emergency telephones, public announcement (PA) systems, and closed circuit monitoring systems.

The Mid-City/Exposition LRT Project would pass through lower density residential areas as well as industrial and commercial areas. Because it is a former ROW in many segments, adjacent land uses would be somewhat removed from the ROW creating an "isolated environment." These conditions, combined with the fact that traffic and pedestrian volumes are relatively low and the existing crime rate is somewhat higher than the City of Los Angeles as a whole, raise security concerns for both station areas and for proposed parking facilities. Mitigation would be necessary to address security concerns along the alignment. A large degree of due diligence would be required to ensure the safety and security of transit patrons.

Downtown Los Angeles Connection Options. Hill Street Couplet Design Options would include one station on Hill Street (also included in the LPA), and the Flower Street Design Options would include two stations along Flower Street. The design options would provide the same security features as the LPA such as emergency telephones, public announcement (PA) systems, and closed circuit monitoring systems. As described for the LPA, the existing crime rate in the Downtown Corridor is somewhat higher than the City of Los Angeles as a whole, which raises security concerns for the station areas. Mitigation would be necessary to address security concerns in the Downtown Los Angeles Connection portion of the route.

La Cienega Station Parking Options. The same security considerations described for the LPA would be given to either parking options. Mitigation would ensure appropriate surveillance of parking facilities.

Jefferson Boulevard Design Options. No security impacts are associated with the Jefferson Boulevard Design Options. The bridge's length would not affect security in the nearby environment.

Venice/Robertson Design Options. The same security concerns for the LPA would exist for the selected station design options. Mitigation would be necessary to address station security concerns.

Phased Implementation. The Vermont, Crenshaw, and La Cienega Segments of the Exposition LRT would include the same security features as the LPA such as emergency telephones, public announcement (PA) systems, and closed circuit monitoring systems. As described for the LPA, the existing crime rate in the Downtown Corridor is somewhat higher than the City of Los Angeles as a whole, which raises security concerns for the station areas. Mitigation would be necessary to address security concerns along the alignment during Phased Implementation.

4.12.3 MITIGATION MEASURES

SS1 Metro shall provide an at-grade pedestrian and vehicular crossing at Denker Avenue to allow pedestrians to cross Exposition Boulevard.

SS2 All stations and parking facilities shall be equipped with monitoring equipment and/or be monitored by Metro security personnel on a regular basis.

SS3 Metro shall implement a security plan for LRT operations. The plan shall include both in-car and station surveillance by Metro security or other local jurisdiction security personnel.

SS4 All stations shall be lit to standards that avoid shadows and all pedestrian pathways leading to/from sidewalks and parking facilities shall be well illuminated.

SS5 Metro shall coordinate and consult with the LAPD, the LA County Sheriff's Department, and the Culver City Police Department to develop safety and security plans for the alignment, parking facilities, and station areas.

SS6 The station design shall not include design elements that obstruct visibility or observation nor provide discrete locations favorable to crime; pedestrian access at stations shall be ground-level with clear sight lines.

SS7 Metro shall monitor pedestrian crossing activity at all locations with adjacent schools and implement appropriate measures to ensure pedestrian crossing safety.

SS8 Metro shall conduct a Hazard Analysis before the start of Final Design, using current safety analysis as a reference. The Hazard Analysis shall determine a design basis for warning devices as required by the California Public Utilities Commission.

SS9 Traffic calming measures, such as signage, shall be provided on Exposition Boulevard along the length of the platforms of the USC/Exposition Park Station. These markings will be provided to alert motorists of significant pedestrian activity in the area.

4.12.4 CEQA DETERMINATION

According to CEQA, project effects on safety and security would be considered significant if they:

- Cause or create the potential for substantial adverse safety conditions, including: station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, and fires, and major structural failures; or substantially limit the delivery of community safety services, such as police, fire, or emergency services; or
- Cause or create the potential for substantial adverse security conditions, including: incidents, offenses, and crimes.

4.12.4.1 Safety

No Action. The No Action Alternative would not result in any safety impacts.

LPA. As described above in "4.12.2.1 Pedestrian Safety," around the track way would be ensured through implementation of appropriate warning devices based on comprehensive hazard analysis and field diagnostic reviews with the affected parties as part of the legally required California Public Utilities Commission grade crossing application process. Either the speed of the train would not exceed 35 mph, as in the Downtown Los Angeles Connection and crossing would occur with traffic signals, or the train speed would exceed 35 mph and barriers would impede access to the tracks. At designated crossings, pedestrian and motorist gates and visual and audible warning devices would be provided.

Table 4.12-2 provides details on motorist safety at the designated crossings. Again, design features appropriate for different intersections would ensure pedestrian and motorist safety around the LRT alignment. Through safety-oriented Project design and mitigation measures **SS1** through **SS9**, the proposed Project would not result in any significant safety impacts.

Downtown Los Angeles Connection Options. In the Downtown Los Angeles Connection portion of the alignment, the LRT trains would not travel above 35 mph. As this would be the case, pedestrians and motorists would cross the LRT tracks with the standard traffic signal phases. No additional safety features such as pedestrian gates or motorist gates would be required. The underpass that is part of the Flower Street design options would not require any special pedestrian safety features.

La Cienega Station Parking Options. Safety conditions at the parking facilities would be attended to as part of the safety of the entire Mid-City/Exposition LRT Project. The structure's design would facilitate safe ingress and egress from the structure and onto the street for both pedestrians and motorists.

Jefferson Boulevard Design Options. Under both design options, the LRT tracks would be grade separated from Jefferson Boulevard. Traffic signal controlled crosswalks would be provided to control conflicts between pedestrians and roadway traffic.

Venice/Robertson Design Options. Safety conditions for any of the station design options would be the same as those described for the LPA. Mitigation measures would apply to all station designs to ensure maximum safety for pedestrians and transit users.

Phased Implementation. Safety conditions for Phased Implementation would be identical to those under the LPA. In the Vermont Segment, trains would not travel over 35 mph, and therefore, traffic signals would be sufficient to control pedestrian and motorist crossings. In the Crenshaw Segment, all of the same safety features including pedestrian and motorist gates, audible warning devices, and warning signs would be present. Through safety-oriented Project design and mitigation measures **SS1** through **SS6**, the Crenshaw Segment would not result in any significant safety impacts.

4.12.4.2 Security

No Action. The No Action alternative would not result in any security impacts.

LPA. The design of existing bus and rail facilities (including vehicles, stations, parking facilities, etc.) would provide a safe, secure, and comfortable transit system. Transit patrons along the Mid-City/Exposition Project would be provided with station and platform amenities such as covered waiting platforms and secure lighting. In addition, the Metro would include security related design features specifically for the Project such as emergency telephones, public announcement (PA) systems, and closed circuit monitoring systems.

The Mid-City/Exposition LRT Project would pass through lower density residential areas as well as industrial and commercial areas. Because it is a former ROW in many segments, adjacent land uses would be somewhat removed from the ROW creating an isolated environment. These conditions, combined with the fact that traffic and pedestrian volumes are relatively low and the existing crime rate is somewhat higher than the City of Los Angeles as a whole, raise security concerns for both station areas and for proposed park facilities. Without mitigation, security concerns along the alignment would be considered significant. A large degree of due diligence is required to ensure the safety and security of transit patrons. Through security-oriented Project design and mitigation measures **SS1** through **SS9**, security impacts would reduce impacts to a less-than-significant level.

Downtown Los Angeles Connection Options. Hill Street Couplet Design Options would include one station on Hill Street (also included in the LPA), and the Flower Street Design Options would include two stations along Flower Street. The design options would provide the same security features as the LPA such as emergency telephones, public announcement (PA) systems, and closed circuit monitoring systems. As described for the LPA, the existing crime rate in the Downtown Corridor is somewhat higher than the City of Los Angeles as a whole, which raises security concerns for the station areas. Mitigation would be necessary to address security concerns in the Downtown Los Angeles Connection portion of the route and to reduce security impacts to a less-than-significant level (see mitigation measures **SS3** through **SS7**).

La Cienega Station Parking Options. The same security considerations described for the LPA would be given to either parking option. Mitigation would ensure appropriate surveillance of the parking facilities.

Jefferson Boulevard Design Options. No security impacts are associated with the Jefferson Boulevard Design Options. The bridge design options would not affect security in the nearby environment.

Venice/Robertson Design Options. The same security concerns for the LPA would exist for the selected station design option. Mitigation would be necessary to address station security concerns, and would reduce impacts to a less-than-significant level (see mitigation measures **SS1** through **SS9**).

Phased Implementation. The Vermont, La Cienega, Crenshaw Segments of the Exposition LRT would include the same security features as the LPA such as emergency telephones, public announcement (PA) systems, and closed circuit monitoring systems. As described for the LPA, the existing crime rate in the Downtown Corridor is somewhat higher than the City of Los Angeles as a whole, which raises security concerns for the station areas. Mitigation would be necessary to address security concerns along the alignment during Phased Implementation and to reduce impacts to a less-than-significant level (see mitigation measures **SS2** through **SS6**).

Significant Impacts Remaining after Mitigation

Implementation of mitigation measures **SS1** through **SS9** would reduce safety and security impacts to less-than-significant levels.

4.13 HISTORIC, ARCHAEOLOGICAL & PALEONTOLOGICAL RESOURCES

This section describes the potential impacts to cultural resources that could result from implementation of the proposed Project. This analysis incorporates historical and cultural technical reports prepared by the Project historic consultants, Greenwood & Associates, as well as Myra Frank/Jones & Stokes.

4.13.1 AFFECTED ENVIRONMENT

4.13.1.1 Paleontological Resources

As mapped by Yerkes in 1997, the entire route and vicinity are underlain by two generations of younger Holocene alluvium (units Qya1 and Qya2), which contain an abundance of loose to moderately dense sand with lesser amounts of silt, clay, and peat. These sediments were deposited along and adjacent to the ancestral Los Angeles River, which once flowed through the area. At or near the surface, the younger alluvium is probably too young to contain remains old enough to be considered fossilized.

As mapped by Dibblee (1992), the University of Southern California (USC) campus and vicinity are underlain by Holocene alluvium (unit Qa), which is composed of clay, sand, and gravel. Presumably, alluvium includes strata of late Pleistocene age at depth. At or near the surface, the younger alluvium, is probably too young to contain fossilized remains, and therefore, there is only a low potential for any fossil remains or previously unrecorded fossil site being encountered by shallow earth-moving activities in areas underlain by this rock unit. However, fossils on record that have been retrieved from the younger alluvium, such as those soils near USC, have high scientific importance because they have allowed the determinations of ages of their respective fossil-bearing rock units and the identification of pre-historic, regional climates. Some of these occurrences are also important because they represent time and/or geographic range extensions (including first reported occurrences) for their respective plant and animal species.

Fossil occurrences in similar geological units, as well as nearby areas, such as Downtown Los Angeles, Union Station, Vernon, El Sereno, and Universal City/North Hollywood, suggest there is a moderate to high potential for additional, similar fossil remains found in the younger alluvium present in the APE.

4.13.1.2 Archaeological Resources

Area of Potential Effects. Compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 states that the Area of Potential Effects (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of any historic properties, and is defined under 36 CFR Section 800.16 (d). The APE used for this Project is consistent with that used in surveys for previous Metro rail projects. For archaeological resources, the APE is the area that would be disturbed during construction of the undertaking.

Prehistoric archaeological remains within the APE are almost unknown because of the dense early Euroamerican settlement that would have obscured the surface indications. However, three archaeological sites (CA-LAN-69, CA-LAN-70 and CA-LAN-74) have been identified as lying adjacent (within 100 meters) to the proposed Project right-of-way (ROW) and determined potentially eligible for listing on the National Register of Historic Places (NHRP). The first two sites are adjacent to the ROW while the third site is mapped within the Project corridor where La Cienega Boulevard intersects with the ROW. All three sites were described as pre-historic in nature and when first described in the mid-1930's, sites CA-LAN-69 and CA-LAN-70 contained elements such as stone mortar fragments, milling stones, and various flakes. Archaeologists who revisited the three sites in the 1950s did not find any evidence of the resources previously observed. CA-LAN-69 and CA-LAN-70 are both located under housing tracts and light industrial uses, and CA-LAN-74 has been the site of many uses including the Pacific Electric tracks and varied commercial and industrial uses. In recent site surveys, no evidence of cultural deposits was encountered at any of the three sites.[1]

The Figueroa Adobe complex was built in the mid-1800s at 3404 S. Figueroa Street, on the southeast corner of Figureoa Street and Jefferson Boulevard. It remained there until at least 1950. This is not a documented historic archaeological site, however, it is not known if some historic archaeological artifacts or features related to the Adobe would be encountered during construction of the trench in Flower Street as it occurs less than a block to the east of the main Adobe site.

4.13.1.3 Historic Resources

Area of Potential Effects. The delineation of the APE for historic and architectural resources was discussed with the California State Historic Preservation Officer (SHPO) on October 14, 2004; an electronic version of the boundary and location of historic properties was reviewed. The APE includes all structures within the first tier of parcels adjacent to the Project alignment, stations, open cut construction areas, or areas proposed for acquisition, and within a reasonable view shed of elevated structures. Whenever reasonable, property lines or street rights-of-ways were used to establish the APE boundary.

Historic Context. The following historic context of the former railroad system is summarized from the Historic Resource Evaluation Report (HRER) prepared for the Exposition corridor.[2] The internal citations below indicate original references used by the Project historic consultants in preparing the HRER.

The emergence of the twentieth century marked a period of growth for beach towns in Southern California. This expansion was largely aided by the extension of electric railroads, specifically from Downtown Los Angeles to Santa Monica. The electric railway running from Downtown to the beach followed the alignment first put in place by Los Angeles & Independent Railroad in 1875 for the use of steam trains. By providing low cost, reliable transportation, this line permitted residents to live in Santa Monica and work in Los Angeles, contributing substantially to the continued growth of Santa Monica, Culver City, and other beach cities (Pennington and Baxter 1976:23). In 1877, the Los Angeles and Independence Railroad was sold to the Central Pacific/Southern Pacific organization.

The line operated under Southern Pacific for 34 years. From 1908-1911, the line was leased from SP by the Los Angeles Pacific Rail Road, and was electrified for passenger use. In 1911, the Southern Pacific merged all the numerous southern California interurban electric railway holdings that had been rapidly developing into one consolidated entity, the Pacific Electric Railway Company. The old Los Angeles and Independence line became the Santa Monica Air-line route, providing service from Downtown Los Angeles to Culver Junction and Santa Monica Beach. (**Figures 4.13-1** and **4.13-2**).

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[1] *Negative Archaeological Survey Report, Exposition Boulevard Right-of-Way Regional Bikeway Project, Los Angeles County, CA*, Greenwood and Associates, July 1999.

[2] *Historic Resources Evaluation Report, Exposition Boulevard Regional Bikeway Project, Los Angeles County, CA*, Greenwood & Associates, March 2000.

Metro

SOURCE: Craig A. Rasmussen & Los Angeles County Metropolitan Transportation Authority

FIGURE 4.13-1

PHOTOGRAPHS OF
SANTA MONICA AIR LINE

SOURCE: Craig A. Rasmussen & Los Angeles County Metropolitan Transportation Authority

FIGURE 4.13-2

PHOTOGRAPHS OF
SANTA MONICA AIR LINE

The Pacific Electric operated its famous Red Cars on the Santa Monica Airline from 1911-1953. After 1913, Pacific Electric service steadily declined until 1931 when only a single "franchise" car ran daily each way, not for passenger service, but to maintain operating rights on the line. Thus for 60 of the 78 years that the Santa Monica Air Line saw passenger service, either steam or electric, passenger service consisted of a single train or single electric car each way.[3] Besides the actual property right-of-way, the only physical features that have been confirmed to date to Pacific Electric Railway use are several "wig wag" signals and the Ballona Creek Bridge (1938).

Pacific Electric sold its passenger service in 1953 to the Metropolitan Coach Lines, a company that mainly operated buses in Southern California. That corporation ran Pacific Electric at a loss for five years before selling the rail line to state-owned Metropolitan Transit Authority (MTA), which formally ended all rail service across Los Angeles in 1961 (Bottles 1987:238-239). On August 13, 1965, Pacific Electric was formally merged into the Southern Pacific Railroad, and SP continued to operate the Santa Monica Air Line for freight traffic until 1993, when it was sold to the Los Angeles County Metropolitan Transit Authority for the purpose of re-establishing a rapid transit corridor between Downtown Los Angeles and the westside.

In a letter for a previous project dated April 18, 2000, the SHPO concurred with the findings of the Federal Highway Administration (FHWA) that the Southern Pacific Railroad/Pacific Electric Railway on Exposition Boulevard (SP/PE Santa Monica Air Line), between Vermont Avenue and East La Cienega Boulevard was a historic property by stating that the "aforementioned alignment [emphasis added] of the Pacific Electric Railway is eligible for inclusion on the [National Register of Historic Places] NRHP under Criterion A as defined in 36 CFR 60.4. The property, along with its contributing bridge structure at Ballona Creek, have strong associations with the settlement and development of Santa Monica, Culver City and other beach cities along its alignment during the period between 1911 and 1950. The property is also indicative of the public's usage of electric train systems in the Los Angeles area during the historic period of significance. This era preceded the period when the public's heavy reliance on the automobile forced rail companies to abandon electric train systems as economic liabilities. This alignment also retains a number of features that are reminiscent of its historic period such as its lightweight tracks, signal devices, switches, telephone station, and plate/girder bridge. These components, when functional, were key elements in the operation of the electric train system as a transportation option in Los Angeles. However, the non-operational status of these items, plus the removal of other key components associated with the system at various locations along the alignment serve to diminish the integrity of the property sufficiently to remove it for consideration under Criterion C as defined in 36 CFR 60.4."

In addition to the SP/PE Santa Monica Air Line alignment and its contributing feature, the Ballona Creek Bridge, potentially historic properties located in or within one-quarter mile of the APE were also identified. Historic properties are defined as places included in or eligible for the NRHP by virtue of their historical, archaeological, architectural, engineering, or cultural significance. Forty-one potentially eligible properties were identified in or within a one-quarter mile of the APE for the proposed Project. Tables 1.0 and 1.2 of the Cultural Resources Technical Report contained in the Mid-City/Westside Transit Draft EIS/EIR appendices list the properties, addresses, APNs, dates of construction (where appropriate), and NRHP status (where applicable).[4]

As a result of a review of previous surveys and inventories, and a field visit by a qualified architectural historian, ten historic properties were identified within the APE. These properties were previously

[3] *History of Construction and Operation of the former Pacific Electric Santa Monica Air Line and a Survey of the Physical Plant from Alameda St. To Vermont Ave.* John R. Signor, November 10, 2003.

[4] *Los Angeles Mid-City/Westside Transit Corridor Cultural Resources Technical Report*, EIP Associates and Greenwood & Associates, 2000.

determined eligible for the NRHP. The following information regarding these ten historic properties identified within the APE was presented to the SHPO and discussed in a meeting on October 14, 2004:

1) Young Apartments, 1621 South Grand Avenue; 301-309 W. 17th Street, Los Angeles. Young Apartments was determined eligible for the National Register on 6/26/1986, through the federal tax certification process, presumably under criterion C for the quality of its Classical Revival design by architect Robert Brown Young, at the local level of significance, period of significance 1911. It is also locally designated as City of Los Angeles Historic-Cultural Monument #182, and was recorded in surveys for the City of Los Angeles Community Redevelopment Agency for the Central Business District (1983).

2) Olympic Auditorium, 1801 South Grand Avenue, Los Angeles. Olympic Auditorium appears eligible for the National Register under criterion A for its association with the 1932 Olympics (Games of the Xth Olympiad) as the indoor events arena, at the local level of significance, period of significance 1925-1932. Of additional interest, it was here on stage on August 9, 1964, that heavyweight boxing champion Cassius Clay, announced that he was joining the Nation of Islam and was changing his name to Muhammad Ali. Olympic Auditorium was constructed in 1925 for $185,000, and was designed by the important Los Angeles architect Gilbert Stanley Underwood. Underwood's other designs include Desmond's Department Store at 5518-28 Wilshire Boulevard (Miracle Mile, 1928), E. Brooks Randall & Sons stores, 5901-5909 Sunset Boulevard (1935), the U.S. Post Office Terminal Annex, 900 N. Alameda Street (1938), and his most important design, the U.S. Federal Building and Courthouse, 312 North Spring Street (1938-1940). The Olympic Auditorium does not meet National Register criterion C because of exterior wall treatments over the years, and alteration of the main entrance and parapet, which have diminished its integrity of materials and design, although it appears to have undergone some recent restoration efforts. In a meeting on October 14, 2004, SHPO requested that information be provided about other important athletic events and ethnic associations with sports history that may further support the property's eligibility under criterion A.

3) Saint John's Episcopal Church, 514 West Adams Boulevard, Los Angeles. Saint John's Episcopal Church was determined eligible for the National Register on 9/15/1982, presumably under criterion C for the quality of its Northern Italian Romanesque design by architects Pierpont and Walter S. Davis, at the local level of significance, period of significance 1923. It is also locally designated as City of Los Angeles Historic-Cultural Monument #516, and was recorded in surveys for the City of Los Angeles Department of City Planning of the Southeast Los Angeles District Plan (1991), for the City of Los Angeles Community Redevelopment Agency for the Hoover Redevelopment Area (1985), and is listed in An Architectural Guidebook to Los Angeles, by Gebhard & Winter (2003, p. 282, #4).

4) Industrial Exchange Building, 155-161 W. Washington Boulevard; 1840-50 S. Hill Street, Los Angeles. The Industrial Exchange Building appears eligible for the National Register under criterion C for the quality of its Gothic Revival design by architects Meyer & Holler (Milwaukee Building Company), at the local level of significance, period of significance 1926. Some alterations have occurred, primarily to the first floor windows and wall surface, but the upper floors and windows of the 11-story building appear to be unaltered, and retain all aspects of integrity. Meyer & Holler was an important Los Angeles architectural firm, starting out in the early 1900s as the Milwaukee Building Company (until 1923), designers of some of the finest Craftsman style homes in the City. Their most important works were completed in the 1920s, when they designed Graumann's Egyptian Theatre at 6708 Hollywood Boulevard (1921-22), the Hollywood Athletic Club at 6625-35 Sunset Boulevard, the Petroleum Securities Building at 1001-1017 S. Flower Street (1924), Graumann's Chinese Theatre at 6915-6927 Hollywood Boulevard (1926-27), Hollywood First National Building at 6777-6781 Hollywood Boulevard (1927), and the E. Clem Wilson Building at 5225-5231 Wilshire Boulevard (Miracle Mile, 1929).

5) Bridge Memorial Hall (USC), 675 Exposition Boulevard; 3664 University Avenue, Los Angeles. Bridge Memorial Hall was formally determined eligible for the National Register in 1994

(HIST.RES.;DOE-19-94-0001-0008;06/29/94), apparently as a contributing building in the University of Southern California (USC) historic district. The four-story Lombardy Romanesque style building was designed by prominent Los Angeles architect John Parkinson, and was built in 1928.

6) Mudd Memorial Hall (USC), 801 Exposition Boulevard; 3709-3715 University Avenue, Los Angeles. Mudd Memorial Hall was formally determined eligible for the National Register by SHPO on June 29, 1994, as part of the USC Historic District, under criterion C as an excellent example of the Lombardy Romanesque style at the state level of significance. The two-story Lombardy Romanesque style building was built in 1929 and designed by architect Ralph C. Flewelling, who also designed Harris Hall at USC and the City of Beverly Hills U.S. Post Office.

7) Harris Hall (USC), 823-829 Exposition Boulevard; 824 West 37th Street, Los Angeles. Harris Hall of Architecture and Fine Arts was formally determined eligible for the National Register by SHPO on June 29, 1994 as a contributing building in the University of Southern California (USC) historic district. The two-story Northern Italian Romanesque style building was built in 1938-1939, and was designed by architect Ralph C. Flewelling, who also designed Mudd Hall at USC and the City of Beverly Hills U.S. Post Office.

8) Exposition Park Historic District, 700-900 Exposition Boulevard between Figueroa Street & Menlo Avenue, Los Angeles. The Exposition Park Historic District was determined eligible for the National Register on June 15, 1993, as a result of the California Museum of Science and Industry Master Plan EIR, and this status was confirmed in March 2001 as a result of the Section 106 process for the California Science Center/African American Museum Parking Structure project. Two of the district's contributing elements along the Exposition Boulevard frontage, the Rose Garden (#8a) and the Natural History Museum (#8b), are individually listed in the National Register. The Exposition Boulevard entrance (#8c) to the Rose Garden opposite USC, consists of a series of concrete features that were installed for the 1932 Olympic Games in Los Angeles (the Xth Olympiad), including memorial torches, benches, and bas-relief panels of Ancient and Modern Olympic athletes. The fourth contributing element of the district along Exposition Boulevard, the California State Armory Building (#8d) has now undergone an adaptive reuse into a school building, and there is a modern addition separating the historic building from the Exposition Building.

9) Southern Pacific Railroad/Pacific Electric Railway/(Santa Monica Air Line), 1000 to approximately 6000 Exposition Boulevard; from Vermont Avenue to Ballona Creek Bridge, Los Angeles and Culver City. The portion of the Southern Pacific Railroad/Pacific Electric Railway (Santa Monica Air Line) between Vermont Avenue and Ballona Creek was determined eligible for inclusion in the National Register of Historic Places under Criterion A by FHWA/LACMTA on March 20, 2000, as a result of the Section 106 process for the Exposition Boulevard Regional Bikeway project. The railroad right-of-way was originally constructed for the Los Angeles & Independence Railroad (1875-1877) and then was operated by the Central Pacific Railroad/Southern Pacific Railroad (SP) from 1877-1908. From 1908-1911, the line was leased from SP by the Los Angeles Pacific Rail Road, and was electrified for passenger use. In 1911, the Los Angeles Pacific and all of its property was acquired into the new Pacific Electric Railway Company, and the line began to be called the "Santa Monica Airline." The Pacific Electric operated its famous Red Cars on the Santa Monica Airline from 1911-1953. After 1913, Pacific Electric service steadily declined until 1931 when only a single "franchise" car ran daily each way, not for passenger service, but to maintain operating rights on the line. Thus, for 60 of the 78 years that the Santa Monica Air Line saw passenger service, either steam or electric, passenger service consisted of a single train or single electric car each way. Besides the actual property right-of-way, the only physical features that have been confirmed to date to Pacific Electric Railway use are several "wig wag" signals and the Ballona Creek Bridge (1938). On August 13, 1965, Pacific Electric was formally merged into the Southern Pacific Railroad, and SP continued to operate the Santa Monica Air Line for freight traffic until 1993, when it was sold to LACMTA.

The National Register eligibility finding concurred with SHPO on April 18, 2000, was based on the Historic Resource Evaluation Report prepared for the Bikeway project in July 1999 by Greenwood & Associates (Greenwood HRER), which provided the following statement of significance: "The significance of the Exposition Line lies in that it was a major force in providing for the creation and development of the City of Santa Monica, played a critical role to determine which port in southern California would serve Los Angeles, and thirdly as part of the Pacific Electric Company" (Greenwood HRER, page 21). The period of significance was stated as follows: "The period of significance is between 1875 and 1900 for the development of Santa Monica and 1911-1930 when Santa Monica and adjacent cities developed and grew into self-sustaining communities" (Greenwood HRER, page 23). The Ballona Creek Bridge was found to be a contributing feature of the historic property, however, no date of its construction was provided in the Greenwood HRER. The Ballona Creek Bridge was constructed in 1938, after the period of significance of the historic property that was stated in the Greenwood HRER. However, in the meeting on October 14, 2004, SHPO pointed out that the Ballona Creek Bridge still exceeds the 50-year age criterion of the NRHP, and requested that contextual information be provided about other bridges once used by the Pacific Electric Railway.

10) Dorsey High School, 3537 Farmdale Avenue, Los Angeles. Susan Miller Dorsey High School is a complex of one- and two-story Streamline Moderne style buildings built in 1936-1937. The complex appears eligible for the National Register under criterion C, at the local level of significance, for the quality of its architectural design by the Los Angeles architectural firm of Gogerty and Norenberg. It was built by the City of Los Angeles Board of Education on the site of the 1932 Olympic Village. In addition to the main school building, classrooms, and auditorium, the field house also exhibits a high quality of design. In a meeting on October 14, 2004, SHPO requested that information be provided about Dorsey High's athletes and athletic events that may also qualify the property's eligibility under criterion A.

A copy of the more detailed information about these ten historic properties that was submitted to SHPO on October 14, 2004, is presented in Appendix G.

4.13.2 IMPACT ASSESSMENT

Methodology

The identification process sought first to locate and define what cultural resources are within the area of potential effects (APE). A record search of the National Register of Historic Places was conducted to identify historic or potentially historic properties. The second step was to evaluate the significance of the cultural resources in the APE, which resulted in the identification of the ten historic properties listed above. Lastly, using the significance thresholds, it was determined whether the proposed Project would adversely affect any identified cultural resource.

4.13.2.1 Paleontological Resources

No Action. The No Action Alternative would not result in any impacts on paleontological resources.

LPA. The majority of the grading and excavation work for the LRT would occur at eight feet or less. At this superficial level, the soil is generally too young to contain remains old enough to be considered fossilized. Excavation for construction of caissons for aerial structure supports at the La Brea Avenue and La Cienega Boulevard grade separations would occur at significantly deeper levels and may result in alteration, removal, and destruction of paleontological resources that could be present in the soils underlying the Exposition ROW. Appropriate procedures for the potential encounter of paleontological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

Downtown Los Angeles Connection Options. Impacts would be the same as those discussed above for the LPA. For the Hill Street Couplet, superficial excavation of eight feet or less would generally be required. At this depth, the soil is generally too young to contain remains old enough to be considered fossilized. The Flower Street Design Option would require significant excavation in order to construct the undercrossing. Appropriate procedures for the potential encounter of paleontological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

La Cienega Station Parking Options. The Southwest Corner Option would include below-grade levels. Excavation for construction of this option would occur at deeper levels than elsewhere on the alignment and may result in alteration, removal, and destruction of paleontological resources. Appropriate procedures for the potential encounter of paleontological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised. The No Parking Option would use an existing structure at Crenshaw Boulevard and therefore would not involve excavation. No impact is associated with No Parking Option.

Jefferson Boulevard Design Options. Impacts would be the same as those discussed for the LPA. Excavation for construction of caissons for aerial structure supports at the La Cienega Boulevard grade separations would occur at significantly deeper levels and may result in alteration, removal, and destruction of paleontological resources that could be present in the soils underlying the Exposition ROW. The potential for accidental discovery would be the same for either bridge design option. Appropriate procedures for the potential encounter of paleontological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

Venice/Robertson Design Options. Excavation for construction of caissons for the Aerial Station Option would occur at significantly deeper levels than elsewhere on the alignment and may result in alteration, removal, and destruction of paleontological resources. Appropriate procedures for the potential encounter of paleontological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised. Excavation for the at-grade stations would occur at a more shallow depth. In superficial soil layers, the soil is generally too young to contain remains old enough to be considered fossilized. No impact is associated with the at-grade options.

Phased Implementation. Impacts related to the implementation of the Vermont Segment, the Crenshaw Segment, and La Cienega Segments would be the same as described for the LPA. The potential for accidental discovery at La Brea Avenue grade separation exists only for the La Cienega Segment as the other segments would not extend that far west. Appropriate procedures for the potential encounter of paleontological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

4.13.2.2 Archaeological Resources

No Action. The No Action Alternative would not result in any impacts on archaeological resources.

LPA. Excavation for construction of caissons for aerial structure supports for the proposed Project may result in alteration, removal, and destruction of CA-LAN-74, an archaeological site. There are two other archaeological sites that lie within 100 meters from the Exposition Corridor (CA-LAN-69 and CA-LAN-70). Due to their distance from the proposed Project sites, CA-LAN-69 and CA-LAN-70 would not be affected by earthwork for construction of the proposed Project. It is possible that archaeological remains associated with these sites may extend into the Project area and be subject to direct effect. Additionally, previously unknown and unrecorded prehistoric or historical archaeological resources may be discovered during construction. Appropriate procedures for the potential encounter of archaeological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

Downtown Los Angeles Connection Options. The Flower Street Design Option has the potential to disturb unknown archaeological resources during construction of the undercrossing. As described previously in "4.13.1 Affected Environment", the Figueroa Adobe complex was located at 3404 S. Figueroa Street, at the southeast corner of Figueroa Street and Jefferson Boulevard, until at least 1950. It is not known if some historic archaeological artifacts or features related to the Adobe would be encountered during construction of the trench in Flower Street, less than a block to the east of the main Adobe site.

La Cienega Station Parking Options. Impacts would be the same as those described above for the LPA. As the CA-LAN-74 site is within close proximity to the intersection of the ROW to La Cienega Boulevard, it is possible new resources could be discovered during the construction of the La Cienega parking structure. Additionally, previously unknown and unrecorded prehistoric or historical archaeological resources may be discovered during construction. Appropriate procedures for the potential encounter of archaeological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

Jefferson Boulevard Design Options. Impacts related to implementation of either design option would be the same as those discussed for the LPA. Appropriate procedures for the potential encounter of archaeological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

Venice/Robertson Design Options. No known archaeological sites exist within the vicinity of the Venice/Robertson design options. However, previously unknown and unrecorded prehistoric or historical archaeological resources may be discovered during construction. Appropriate procedures for the potential encounter of archaeological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

Phased Implementation. Impacts related to implementation of the Vermont, Crenshaw and La Cienega Segments would be the same as those discussed for the LPA. Appropriate procedures for the potential encounter of archaeological resources provided in the mitigation measures below would ensure that the integrity of any discovered resource would not be compromised.

4.13.2.3 Historic Resources

No Action. The No Action Alternative would not result in any impacts on historic resources.

LPA. Historically, the Los Angeles and Independent Railway and the Pacific Electric's Santa Monica Air Line (SP/PE Santa Monica Air Line, historic property #9), an electric railcar with a catenary system, provided passenger service from Downtown Los Angeles to Santa Monica. The lines traveled down the full length of the Exposition Corridor, the site the proposed Project would occupy. The proposed Project would partially reinstate a former transit system that was significant in the development of modern-day Los Angeles. The proposed Project would, therefore, support rather than detract from the historic context of the Corridor. In a letter dated April 18, 2000, regarding another Section 106 project, the Exposition Boulevard Right-of-Way Regional Bikeway Project (Bikeway Project), SHPO made it clear that the railroad right-of-way "alignment" was eligible for the NRHP under criterion A for its historical associations with the development of Culver City and Santa Monica and with the Pacific Electric Railway, but was not eligible under Criterion C because of a lack of integrity of railroad operational equipment dating from the historic property's period of significance. No railroad materials, buildings, or structures have been identified that pre-date the 1930 end of the period of significance of the SP/PE Santa Monica

Air Line that was established in the 2000 Historic Resource Evaluation Report prepared for the Bikeway Project. In the same letter, SHPO made the following determination about the conversion of the railroad to a bikeway: "The proposed work will not significantly alter or change those characteristics that qualify the Pacific Electric Railway alignment for inclusion on the NRHP. FHWA is to be commended for providing a transportation alternative for the railroad alignment that enhances its continued use by the public in a safe and efficient manner." The changes within the historic railroad right-of-way (i.e., removal of existing tracks, ties and railroad equipment) proposed for the Mid-City/Exposition LRT are nearly identical to the Bikeway Project, and are therefore, anticipated not to have a significant effect on the "alignment" or the property's eligibility under NRHP Criterion A.

In a meeting on October 14, 2004, the proposed changes to the railroad facilities and equipment in the right-of-way were discussed with SHPO, and informally determined not to be significant, with the exception of the demolition of the Ballona Creek Bridge, which is discussed under the Jefferson Boulevard Design Option below.

The historic properties identified within the APE and located west of the University of Southern California (USC) campus and Exposition Park would not be affected by the proposed Project as construction activities would not require the removal, alteration, or demolition of any of the identified properties, including #10 Dorsey High School. Therefore, there would be no Section 4(f) direct use, temporary use, or constructive use of any historic properties as a result of the proposed Project. Furthermore, the historical settings of these historic structures has already been significantly altered. Conversely, the historical setting of historic properties located within the APE on the USC Campus or in Exposition Park has been maintained. Those properties include: #5 USC Bridge Hall, #6 USC Mudd Hall, #7 USC Harris Hall, and #8 the Exposition Park Historic District, and its contributing features along Exposition Boulevard (the State Armory Building, Natural History Museum, the Rose Garden and the 1932 Olympics Entrance). While the structures would not be physically altered, the visual context of these historic properties would be affected by the addition of the LRT catenary system. Mitigation would address this significant impact.

Downtown Los Angeles Connection Options

The Hill Street Couplet Design Option would pass by three historic properties, #1 Young Apartments, #2 Olympic Auditorium, and #4 the Industrial Exchange Building.

#1 Young Apartments. The Mid-City/Exposition LRT (Hill Street Couplet Design Option) would be an at-grade configuration, with one part of a couplet running within the 17th Street right-of-way, along the southern (primary) elevation of Young Apartments. The setting to the south of 17th Street was substantially changed by the construction of the I-10 Santa Monica Freeway in the late 1950s, which is elevated at this location. Historically, the closest streetcar lines to Young Apartments were the Los Angeles Railway Yellow Coaches and Cars, which ran north-south on Grand Avenue, along the east (primary entrance) elevation of the Young Apartments. The proposed Light Rail Transit line within the 17th Street right-of-way would not obstruct views to or alter the Classical Revival architectural character of Young Apartments and would not diminish its integrity of location, design, materials, or workmanship. Historically, streetcars ran along the east side of Young Apartments within Grand Avenue, so rail transit facilities, equipment, and operations are compatible with the Young Apartment's historic setting, and would not diminish its integrity of feeling or association. The proposed Hill Street Couplet Design Option would have no effect on this historic property, including no Section 4(f) direct use, temporary use, or constructive use.

#2 Olympic Auditorium. The Mid-City/Exposition LRT (Hill Street Couplet Design Option) would be an at-grade configuration, with one part of a couplet running within the 18th Street right-of-way, along the northern (secondary) elevation of Olympic Auditorium. The setting to the north of 18th Street was substantially changed by the construction of the I-10 Santa Monica Freeway in the late 1950s, which is elevated at this location. Historically, the closest streetcar lines to Olympic Auditorium were the Los Angeles Railway Yellow Coaches and Cars which ran north-south on Grand Avenue, along the east (primary entrance) elevation of the Olympic Auditorium. The proposed Light Rail Transit line within the 18th Street right-of-way would not obstruct views to or alter the Olympic Auditorium and would not diminish its integrity of location, design, materials, or workmanship. Historically, streetcars ran along the east side of Olympic Auditorium within Grand Avenue, so rail transit facilities, equipment, and operations are compatible with the Olympic Auditorium's historic setting, and would not diminish its integrity of feeling or association. The proposed Hill Street Couplet Design Option would have no effect on this historic property, including no Section 4(f) direct use, temporary use, or constructive use.

#3 Saint John's Episcopal Church. The Mid-City/Exposition LRT (Flower Street Design Options) would be an at-grade configuration, running within the Flower Street right-of-way, along the eastern (secondary) elevation of St. John's Episcopal Church. The LRT tracks would be approximately 150 feet from the closest point of the Adams Boulevard (primary) elevation, and approximately 100 feet from the closest point of the Flower Street (secondary) elevation. The historic setting to the west of St. John's was substantially changed by the construction of the I-110 Harbor Freeway in the late 1950s just east of Flower Street. Historically, the closest street car lines to St. John's were the Los Angeles Railway Line 49 "Yellow Coaches" which ran north-south on Figueroa Street, along the west (secondary) elevation of St. John's, and parallel to Flower Street. The proposed Light Rail Transit line within the Flower Street right-of-way would not obstruct views to or alter the Romanesque architectural character of St. John's Episcopal Church and would not diminish its integrity of location, design, materials, or workmanship. Historically, streetcars ran along the west side of St. John's within Figueroa Street, so rail transit facilities, equipment, and operations are compatible with the Church's historic setting, and would not diminish its integrity of feeling or association. The proposed Flower Street Design Options would have no effect on this historic property, including no Section 4(f) direct use, temporary use, or constructive use.

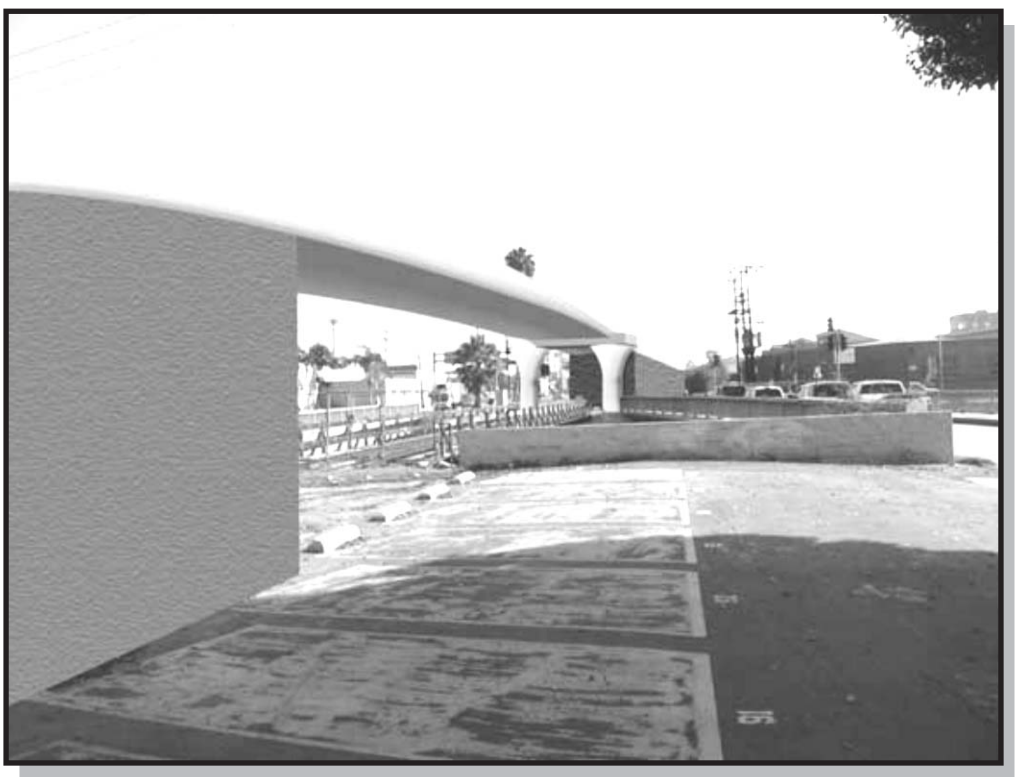
#4 Industrial Exchange Building. The Mid-City/Exposition LRT (Hill Street Couplet Design Option) would be at-grade configuration, running within the Hill Street right-of-way, along the western (secondary) elevation of the Industrial Exchange Building. The setting along Washington Boulevard has already been changed by the re-introduction of light rail service with the Blue Line in the late 1980s. Historically, the closest streetcar line to the Industrial Exchange Building, was the Los Angeles Railway Yellow Car "W Line" which ran east-west on Washington Boulevard, essentially the present route of the Blue Line, along the south (primary) elevation of the building. The proposed Light Rail Transit line within the Hill Street right-of-way would not obstruct views to or alter the Industrial Exchange Building and would not diminish its integrity of location, design, materials, or workmanship. Historically, streetcars ran along the south side of the building within Washington Boulevard, so rail transit facilities, equipment, and operations are compatible with the property's historic setting, and would not diminish its integrity of feeling or association. The proposed Hill Street Couplet Design Option would have no effect on this historic property, including no Section 4(f) direct use, temporary use, or constructive use.

La Cienega Station Parking Options. There are no historical resources where the La Cienega Station Parking Options are proposed. No historical impacts are associated with the parking options.

Jefferson Boulevard Design Options

Option B (LPA) Construction of the Locally Preferred Alternative would result in the destruction of the Ballona Creek Bridge, which was formally determined eligible for the NRHP as a contributing element of historic property #9, the SP/PE Santa Monica Air Line. The SHPO concurred with FHWA's finding of NRHP eligibility of the SP/PE Santa Monica Air Line in a letter dated on April 18, 2000, regarding the Section 106 review of the Bikeway Project. In a meeting on October 14, 2004, the SHPO informally stated that the destruction of the Ballona Creek Bridge for the Jefferson Boulevard Design Options would be an adverse effect. Even though the bridge was built in 1938, after the 1930 end of the period of significance of the SP/PE Santa Monica Air Line, the finding that it contributed to the SP/PE Santa Monica Air Line was made because the bridge is over 50 years of age, the NRHP age criterion. On October 14, 2004, the SHPO also asked that information be provided about the continuing existence of other SP/PE bridges in the Los Angeles area to provide context to better understand the importance of the Ballona Creek Bridge within the overall SP/PE system, and this information was provided on November 2, 2004. Furthermore, construction of the LPA would result in a Section 4(f) direct use impact.

Medium Bridge Design Option. In the meeting on October 14, 2004, the SHPO requested that alternatives considered to avoid the demolition of the Ballona Creek Bridge be documented. As a result, Metro was able to modify the LPA Medium Bridge Design Option so that the Ballona Creek Bridge could be left in place and an elevated structure span over it without physically damaging it. The avoidance design modification was discussed with SHPO in a telephone conversation on November 9, 2004. In that conversation, SHPO said a Section 106 finding of no adverse effect may be considered if the bridge were left in place and an aerial structure built above it, if it could be demonstrated that the historic setting lacked integrity. On November 11, 2004, photos were sent to SHPO, clearly illustrating how the integrity of setting of the railroad bridge was substantially diminished in 1967 when roadway bridges were constructed along either side of it and in close proximity. On November 24th, following further discussions with the SHPO, computer-enhanced photos of the Medium Bridge Design Option, showing the presence of an elevated structure over the bridge were sent to assist in their determination of a finding. These photos are presented in **Figures 4.13-3** through **4.13-5**.



Views of Ballona Creek bridges at National Boulevard, facing east, before and after the Medium Bridge Design Option. These figures were presented to SHPO on November 15, 2004.

Metro

Note all simulations are conceptual, and roadways and landscaping may change. SOURCE: Metro

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FIGURE 4.13-3

SETTING OF BALLONA CREEK
SP/PE BRIDGE 1

View of Ballona Creek bridges at Jefferson Boulevard, facing southwest, before & after the Medium. Bridge Design Option. These figures were presented to SHPO on November 15, 2004.

Metro

Note all simulations are conceptual, and roadways and landscaping may change. SOURCE: Metro

FIGURE 4.13-4

SETTING OF BALLONA CREEK SP/PE BRIDGE 2

View of Ballona Creek bridges at Jefferson Boulevard, facing west, before and after Option C.
These figures were presented to SHPO on November 15, 2004.

Metro

Note all simulations are conceptual, and roadways and landscaping may change. SOURCE: Metro

FIGURE 4.13-5

SETTING OF BALLONA CREEK
SP/PE BRIDGE 3

Finding of Effect. As a result of consultation with SHPO through December 2004, a formal determination of effect was reached between FTA and SHPO and the following findings are being proposed:

1. The LPA that includes demolition of the Ballona Creek Bridge would be considered by SHPO to be an adverse effect on the SP/PE Santa Monica Air Line;

2. Jefferson Boulevard Design Medium Bridge Design Option could be constructed without the destruction of the Ballona Creek Bridge. If this option is selected, there would be no adverse effect on the Ballona Creek Bridge or any other known historic property.

In addition, this design would not result in Section 4(f) direct use impacts.

Venice/Robertson Design Options. There are no historical resources in the location of the proposed Venice/Robertson Design Options. No historical impacts would be associated with the station options.

Phased Implementation. Impacts related to implementation of the Vermont Segment and Crenshaw and La Cienega Segments would be the same as those discussed for the LPA. The addition of the LRT catenary system in the Vermont Segment would alter the visual context of the historic properties in Exposition Park and on the USC campus. Mitigation would address this impact. There would be no impacts to historic resources in the Crenshaw Segment. The La Cienega Segment would also terminate east of Ballona Creek, therefore leaving the bridge unaltered. The Ballona Creek Bridge would not be affected as the alignment would not extend west of Crenshaw Boulevard. There would be no Section 4(f) direct use, temporary use, or constructive use of any historic properties.

4.13.2.4 SHPO Coordination and Memorandum of Agreement

No Action. The No Action Alternative would not result in any impacts on SHPO coordination and Memorandum of Agreement.

LPA. Construction of the LRT would result in the removal of the Southern Pacific Railroad/Pacific Electric Railway tracks along the proposed route, but no changes would be made to its horizontal alignment. It is the "alignment" and not the railroad tracks, ties and equipment which the State Historic Preservation Office (SHPO) has determined to be eligible for the NHRP under Criterion A as defined in 36 CFR 60.4, in a letter dated April 18, 2000. Removal of the tracks and associated railway features would not result in a significant impact. Destruction of the Ballona Creek Bridge may result in adverse effect on this historic property, however, and it is discussed below under the subsection entitled Jefferson Boulevard Design Options.

Downtown Los Angeles Connection Options. As discussed with SHPO in a meeting on October 14, 2004, there would be no effect on known historic properties, therefore no mitigation would be required.

La Cienega Station Parking Options. No known historic properties occur on or adjacent to the proposed parking locations. There would be no impact to known historic properties.

Jefferson Boulevard Design Options. A formal determination of effect was reached between FTA and SHPO in December 2004 and is being documented in a letter from the FTA to the SHPO as follows:

- The LPA that includes demolition of the Ballona Creek Bridge would be considered by SHPO to be an adverse effect on the SP/PE Santa Monica Air Line.

- A modified Jefferson Boulevard Medium Bridge Design Option, that preserves the Ballona Creek Bridge would be considered by SHPO not to be an adverse visual effect since the existing setting of the bridge has already lost integrity because of the proximity of adjacent roadways.

If the LPA is selected a Finding of Adverse Effect will need to be evaluated by the SHPO. This would necessitate a notification to the Advisory Council on Historic Preservation (ACHP) and the negotiation of a Memorandum of Understanding with the SHPO.

The Jefferson Boulevard Medium Bridge Design Option could be constructed without the destruction of the Ballona Creek Bridge. If this is selected, there would be no adverse effect on the Ballona Creek Bridge or any other known historic property.

Venice/Robertson Design Options. No known historic properties occur on or adjacent to the proposed station design options. There would be no impact to known historic properties.

Phased Implementation. As discussed with SHPO in a meeting on October 14, 2004, implementation of the Vermont Segment would not result in an impact on known historic properties on Hill Street, north of Exposition. However, the addition of the LRT catenary system in the Vermont Segment would alter the visual context of the historic properties in Exposition Park and on the USC campus. The Crenshaw Segment would not result in any impacts to historic resources.

4.13.3 MITIGATION MEASURES

4.13.3.1 Paleontological Resources

HAP1 **Monitoring of Paleontological Resources**. Prior to any earth moving at the Project site, a qualified vertebrate paleontologist approved by the Los Angeles County Museum of Natural History – Vertebrate Paleontology Section (LACMVP) will be retained by Metro or its designated contractor to advise Metro about mitigation alternatives and planning. The paleontologist will assist Metro to develop a mitigation plan and a discovery clause/treatment plan to be implemented during earth-moving activities along the corridor. The clause/plan will allow for the management, monitoring, recovery and subsequent treatment of any fossil remains uncovered by these activities, and for the archiving and documentation of associated specimen and site data. The mitigation plan shall include procedures and lines of communication to be implemented if fossil remains are uncovered by earth-moving activities.

HAP2 **Scientific Recovery of Paleontological Resources**. If fossil remains are found, any earth-moving activity will be diverted temporarily around the fossil site until the remains have been removed. The mitigation plan will address the treatment of recovered fossil remains including identification, curating, cataloging and reporting of specimens.

4.13.3.2 Archaeological and Historic Resources

HAP3 **Memorandum of Agreement Under Jefferson Boulevard Design Option.** Prior to the start of the Project earth disturbing activities, Metro shall prepare a Memorandum of Agreement (MOA) with the State Historic Preservation Officer (SHPO) per 36 CFR 800.6 (c), if necessary. The MOA shall be prepared in consultation with SHPO, and it shall include stipulations for the preparation of a Cultural Resource Monitoring and Mitigation Plan (CRMMP) to be reviewed and approved by SHPO. The CRMMP shall establish protocol for data recovery, site monitoring and identifying, curating, and cataloging of discovered archaeologic or historic resources. A Draft Memorandum of Agreement was submitted to SHPO in a meeting on October 14, 2004.

HAP4 Historic American Engineering Record Documentation. Historic American Engineering Record (HAER) documentation shall be prepared for the SP/PE Santa Monica Air Line that historically occupied the Exposition Corridor. This report shall document the significance of the resource and its physical conditions, both historic and current, through site plans, historic maps, photographs, written data, text, and video. This material will be published and made available to the public. A report documenting the contextual history of Pacific Electric and its significant role in American history, as well as its history in southern California, shall be prepared as part of the HAER documentation required above.

HAP5 Historic Reference. Historic reference and/or context of the ROW shall be included in the Project. The work shall convey information to the public regarding the historic context of the ROW and may also reference specific physical components of the SP/PE Santa Monica Airline. The development and oversight of the Project's historical reference shall be done by Metro Art who shall use the Metro Dorothy Peyton Gray Library as a reference.

HAP6 Discovery of Human Remains. If any human remains are encountered during construction, work in the immediate area of the find shall be halted and the Los Angeles County Coroner shall be contacted. This mitigation measure will ensure proper legal identification and/or documentation, if necessary.

HAP7 Alternative Design of Catenary System. The nominal design of the overhead catenary system shall be a low-profile configuration to reduce visual intrusion. In addition, modifications to this configuration, including span wire, shall be used in particularly sensitive areas if deemed appropriate during design development. Catenary poles shall be selected to be consistent with the character of the neighborhood. All catenary pole alternative designs shall be consistent with basic standardized guideway components and shall not radically alter the proposed basic design.

4.13.4 CEQA DETERMINATION

According to the CEQA Guidelines, the proposed Project would have a significant impact on Historic, Archaeological, Paleontological resources if it would:

- Cause a substantial change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines;
- Cause a substantial change in the significance of an archeological resource pursuant to Section 15064.5 of the CEQA Guidelines; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or disturb any human remains, including those interred outside of formal cemeteries.

No Action Alternative. The No Action Alternative would not result in any impacts to historic, archaeological, or paleontological resources.

LPA. Though the discovery of paleontological or archaeological artifacts is not anticipated during the construction of the proposed Project, the possibility for accidental discovery exists and represents a potentially significant impact.

As discussed in "4.13.2.3 Historic Resources," SHPO determined that the changes within the historic railroad right-of-way (i.e., removal of existing tracks, ties and railroad equipment) proposed for the Mid-City/Exposition LRT are not anticipated to have a significant effect on the "alignment" or the property's eligibility under NRHP Criterion A.

Also discussed in "4.13.2.3 Historic Resources," was the existence of a historic district between the USC Campus and Exposition Park. While the historic structures within this area would not be physically altered, the visual context of these historic properties would be affected by the addition of the LRT catenary system, which represents a significant impact.

Downtown Los Angeles Connection Options. Though the discovery of paleontological or archaeological artifacts is not anticipated during the construction of the proposed Project, the possibility for accidental discovery exists and represents a potentially significant impact.

"4.13.2.3 Historic Resources" above, includes a detailed description of the historic properties by which each design option would pass. It was determined that the proximity of an LRT alignment would not result in an impact to the historic value of these properties. No impact is anticipated.

La Cienega Station Parking Options. Though the discovery of paleontological or archaeological artifacts is not anticipated during the construction of the parking options, the possibility for accidental discovery exists and represents a potentially significant impact. No known historic resources occur where the parking options are proposed. No impact to historical resources related to the parking options is anticipated.

Jefferson Boulevard Design Options. The potential for discovery of paleontological or archaeological artifacts would be slightly greater during construction of the La Cienega Boulevard grade separation because of the required depth of excavation. The possibility for accidental discovery exists and represents a potentially significant impact.

A final agreement between FTA and SHPO regarding the preservation of the Ballona Creek Bridge, dating from 1938, has been reached. As proposed in "4.13.2.3 Historic Resources," options that include demolition of the Ballona Creek Bridge would be considered by SHPO to result in a significant impact on the SP/PE Santa Monica Air Line. An option that would preserve in place the Ballona Creek Bridge is considered by SHPO not to be an adverse effect, if it can be demonstrated that the existing setting of the bridge has already lost integrity because of the proximity of adjacent roadways, and therefore, the visual effect caused by construction of an elevated structure would not be significant.

The Medium Bridge Design Option could be constructed without the destruction of the Ballona Creek Bridge. If this is selected, there would be no significant impact on the Ballona Creek Bridge or any other known historic property.

Venice/Robertson Design Options. Though the discovery of paleontological or archaeological artifacts is not anticipated during the construction of the Southwest Corner Option, the possibility for accidental discovery exists and represents a potentially significant impact. No known historic resources occur where the station design options are proposed. No impact to historical resources related to the parking options is anticipated. No historic, archaeological and paleontological impacts would result from the No Parking Option.

Phased Implementation. As discussed with SHPO in a meeting on October 14, 2004, implementation of the Vermont Segment would not result in an impact on known historic properties on Hill Street, north of Exposition. However, the addition of the LRT catenary system in the Vermont Segment would alter the visual context of the historic properties in Exposition Park and on the USC campus. Mitigation would address this significant impact. The Crenshaw and La Cienega Segments would not result in any impacts to historic resources.

Significant Impacts Remaining after Mitigation. Implementation and enforcement of mitigation measures **HAP1** through **HAP7** would reduce all potential impacts to cultural resources to less-than-significant levels if the Jefferson Boulevard Medium Bridge Design Option is selected. If the Locally Preferred Alternative is selected, then a significant impact would remain as a result of the Ballona Creek Bridge removal.

4.14 PARKLAND AND COMMUNITY FACILITIES

Within the Mid-City/Exposition LRT Project area is a concentration of activity centers known throughout the Los Angeles region. On the broad scale, transit improvements often enhance accessibility to these centers and other community facilities, particularly for the transit dependent. The specific alignment and physical features of fixed guideway improvements can also have adverse effects on some of these same facilities through the acquisition of physical property or through the disruption of vehicular or pedestrian access to these facilities. The discussion below addresses these issues in detail.

4.14.1 AFFECTED ENVIRONMENT

Parkland

Section 4(f) of the U.S. Department of Transportation Act of 1966 affords special protection to public recreational lands and facilities (including local parks), as well as schools (to the extent that school facilities are open and available to the general public for recreational purposes), significant cultural resources, and natural wildlife refuges. The following land use types include potential Section 4(f) lands:

- Beach Parks
- Local Park and Recreation Lands (Undeveloped)
- Local Park and Recreation Lands (Developed)
- Regional Park and Recreation Lands (Undeveloped)
- Regional Park and Recreation Lands (Developed)
- Colleges and Universities
- Elementary Schools
- Junior or Intermediate High Schools
- Pre-Schools or Day Care Centers
- Senior High Schools
- Trade Schools
- Lands of Historic Significance

Parks and recreational sites within or adjacent to the Exposition Corridor and protected under Section 4(f) are presented in **Table 4.14-1**. A discussion of Section 4(f) as it relates to Historical Resources is included in Section 4.13 Historical, Archaeological, and Paleontological Resources.

Direct use (i.e., encroachment) of Section 4(f) lands by federally funded transportation projects is prohibited unless it can be demonstrated that there are no prudent alternatives. If no prudent alternatives exist, design and mitigation measures must be implemented to reduce adverse effects. Indirect effects to Section 4(f) lands may involve impeding or altering access, introducing noise or vibration, casting shadows, or other substantive changes to the visual setting.

TABLE 4.14-1: PARKLANDS AND RECREATIONAL SITES		
Type	Facility Name	Location/Address
Downtown Los Angeles Connection		
School	Los Angeles Trade Technical College	400 E. Washington Boulevard
School	Central LA Middle School #4 (2006)	3500 S. Hill Street
School	Adams Middle School	151 W. 30th Street
School	Amgen Science Center School (2004)	Exposition Boulevard & Figueroa Street
Park	Exposition Park	Exposition Boulevard & Figueroa Street
School	University of Southern California	Exposition Boulevard & Vermont Avenue
Stadium	Los Angeles Coliseum	Exposition Boulevard & Figueroa Street
Park	Jesse Brewer Park	Exposition Boulevard & Vermont Avenue
Mid-Corridor		
School	Weemes Elementary School	1260 W. 36th Place
Park	38th & Normandie Park	Rolland Curtis Place & Normandie Avenue
School	Foshay Middle School	3751 S. Harvard Boulevard
Park	Open Space	Rodeo Road & Cimarron Street
School	Al-Madinah School	3510 W. Exposition Boulevard
School	Dorsey High School	3537 Farmdale Avenue
Park	Rancho Cienega Sports Park	5001 Rodeo Road
Park	Westside Park	Jefferson Boulevard & Clyde Avenue
Park	Baldwin Hills Recreation Center	5401 Highlight Place
Park	Westside Park	3085 S. Fairfax Avenue
West End		
Park	Syd Kronenthal Park	3459 McManus Avenue
Park	Washington/National Parkette	Washington & National Boulevard
School	Turning Point School	8780 National Boulevard
SOURCE: Terry A. Hayes Associates LLC, 2004		

Community Facilities

Figure 4.14-1 identifies the primary community facilities within one-quarter mile of the Exposition right-of-way (ROW). It includes the parks and recreational facilities listed in **Table 4.14-1**, as well as other types of facilities listed below. A summary of these facilities is listed below. **Table 4.14-2** provides more details about these facilities.

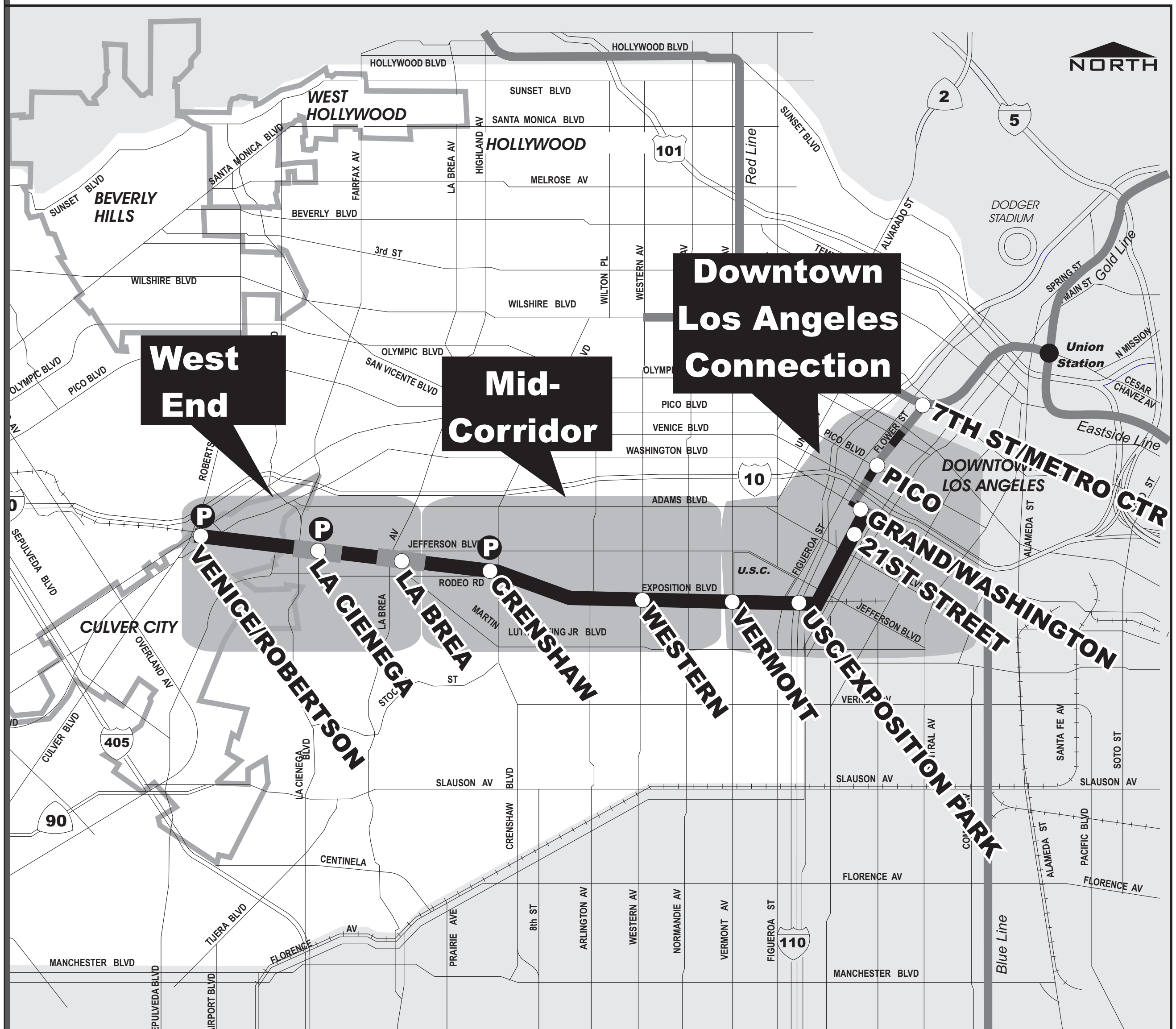
- Parks and Open Space (9)
- Public Elementary Schools (3—including one new in 2004)
- Public Middle Schools (3—including one new in 2006)
- Public High Schools (1)
- Colleges, Universities and Trade Schools (2)
- Private Schools (4)
- Hospitals and Health Centers (5)
- Museums (4)
- Fire Stations (3)
- Law Enforcement (0)
- Cemeteries (0)
- Places of Worship (5)
- Libraries (1)
- Stadium (1)

LEGEND:

DOWNTOWN LOS ANGELES CONNECTION
- Los Angeles Station
- Los Angeles Trade Tech College
- Los Angeles Station
- California Hospital Medical Center
- Orthopaedic Hospital
- Southern California Medical Group
- Cesar Chavez Multi Cultural Wellness Ctr
- Central LA Middle School #4
- Adams Middle School
- Science Center School
- Exposition Park Regional Library
- Museums at Exposition Park
  - a) Aerospace Museum
  - b) Natural History Museum
  - c) Museum of Science and Industry
  - d) Afro-American Museum
- Elementary School (Private)
- Exposition Park
- Jesse Brewer Park
- St John's Church
- St Vincent's Church

MID-CORRIDOR
- University of Southern California
- Dawa Center of Masjid Umar
- Jesse Brewer Park
- Weemes Elementary School
- West Angeles Church of God in Christ
- 38th & Normandie Park
- Foshay Middle School
- Open Space
- Unity Fellowship Church
- Al-Madinah School
- Dorsey High School
- Rancho Cienega Sports Park
- Westside Park
- Baldwin Hills Recreation Center
- Westside Park

WEST END
- Syd Kronenthal Park
- Culver City Station
- Brotman Medical Center
- Laurel & Hardy Park
- Turning Point School
- Echo Horrzon School
- Willows School



SOURCE: Terry A. Hayes Associates LLC, 2004

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FIGURE 4.14-1

COMMUNITY FACILITIES

Table 4.14-2 summarizes the community facilities located along the Mid-City/Exposition LRT Corridor.

TABLE 4.14-2: MID-CITY/EXPOSITION LRT COMMUNITY FACILITIES		
Type	Facility Name	Location/Address
DOWNTOWN LOS ANGELES CONNECTION		
1. Fire Station	Los Angeles Station	1335 S. Olive Street
2. School	Los Angeles Trade Technical College	400 E. Washington Boulevard
3. Fire Station	Los Angeles Station	3661 7th Avenue
4. Hospital	California Foundation Hospital Medical Center	1414 Grand Avenue
5. Hospital	Orthopedic Hospital	2400 S. Flower Street
6. Health Center	Southern California Medical Group	3320 Hill Street
7. Health Center	Cesar Chavez Multi-cultural Wellness Center	2501 S. Hill Street
8. Place of Worship	St. Vincent's Catholic Church	621 W. Adams Boulevard
9. Place of Worship	St. John's Episcopal Church	514 W. Adams Boulevard
10. School	Central LA Middle School #4 (2006)	3500 S. Hill Street
11. School	Adams Middle School	151 W. 30th Street
12. School	Amgen Science Center School (2004)	Exposition Boulevard & Figueroa Street
13. Library	Exposition Park Regional Library	3665 S. Vermont Avenue
14. Stadium	Los Angeles Coliseum	Exposition Boulevard & Figueroa Street
15. Museum	Aerospace Museum	Exposition Boulevard & Kinsey Drive
16. Museum	Natural History Museum	Exposition Boulevard & Kinsey Drive
17. Museum	Museum of Science and Industry	Museum Drive & State Drive
18. Museum	African-American Museum	600 State Drive
19. School	St. Vincent's School	2333 S. Figueroa Street
20. Park	Exposition Park	Exposition Boulevard & Figueroa Street
21. Park	Jesse Brewer Park	Exposition Boulevard & Vermont Avenue
22. School	University of Southern California	Exposition Boulevard & Vermont Avenue
MID-CORRIDOR		
23. Place Of Worship	Dawa Center of Masjid Umar	1025 Exposition Boulevard
24. School	Weemes Elementary School	1260 W. 36th Place
25. Place Of Worship	West Angeles Church of God in Christ	3600 Crenshaw Boulevard
26. Park	38th & Normandie Park	Rolland Curtis Place & Normandie Avenue
27. School	Foshay Middle School	3751 S. Harvard Boulevard
28. Park	Open Space	Rodeo Road & Cimarron Street
29. Place Of Worship	Unity Fellowship Church	5148 West Jefferson Boulevard
30. School	Al-Madinah School	3510 W. Exposition Boulevard
31. School	Dorsey High School	3537 Farmdale Avenue
32. Park	Rancho Cienega Sports Park	5001 Rodeo Road
33. Park	Baldwin Hills Recreation Center	5401 Highlight Place
34. Park	Westside Park	3085 S. Fairfax Avenue

TABLE 4.14-2: MID-CITY/EXPOSITION LRT COMMUNITY FACILITIES		
Type	Facility Name	Location/Address
WEST END		
35. Park	Syd Kronenthal Park and Pre-K School	3459 McManus Avenue
36. Fire Station	Culver City Station	9600 Culver Boulevard
37. Hospital	Brotman Medical Center	3828 Delmas Terrace
38. Park	Laurel & Hardy Park	Washington & National Boulevards
39. School	Turning Point School	8780 National Boulevard
40. School	Echo Horizon School	3430 McManus Avenue
41. School	Willows School	8509 Higuerra Street
SOURCE: Terry A. Hayes Associates LLC, 2004		

4.14.2 IMPACT ASSESSMENT

Methodology

Potential impacts to parkland and community facilities were determined by identifying and examining their location within the Study Area. Parkland or a community facility can either be directly affected (a physical acquisition as described in the Section 4.2 Land Acquisition, Displacement and Relocation of this EIS/EIR) or indirectly affected by the proposed transit improvements and facilities because of proposed changes to pedestrian or vehicular access. For discussions related to pedestrian safety, see Section 4.12 Safety and Security.

4.14.2.1 Parkland

No Action. The No Action Alternative would not result in any impacts on parkland.

LPA. Since the proposed Project would operate within public ROWs, there is no potential for direct use of parklands. There may be indirect effects, however, to significant cultural resources, which are also covered by Section 4(f), as described previously under Section 4.13 Historic, Archaeological and Paleontological Resources.

Indirect or Direct impacts on Section 4(f) Lands. The proposed transit alignment would involve construction and operation within public road ROWs or ROWs owned by Metro, and would not result in any direct or indirect physical disruption of public lands, including Section 4(f) lands.

Downtown Los Angeles Connection Options. None of the design options would affect parkland. No impact is anticipated.

La Cienega Station Parking Options. The parking options would not affect parkland. No impact is anticipated.

Jefferson Boulevard Design Options. None of the design options would affect parkland. No impact is anticipated.

Venice/Robertson Design Options. The design options would not affect parkland. No impact is anticipated.

Phased Implementation Options. Implementation of the Vermont Segment of the route would not result in impacts to parkland. Implementation of the Crenshaw Segment would not result in impacts to parkland.

4.14.2.2 Access to Community Facilities

No Action. The No Action Alternative would not result in any impacts on access to community facilities.

LPA. Table 4.14-3 summarizes the impacts to community facilities within one-quarter mile of the Mid-City/Exposition LRT Project.

TABLE 4.14-3: MID-CITY/EXPOSITION LRT IMPACT TO COMMUNITY FACILITIES

Type	Facility Name	Location/ Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
DOWNTOWN LOS ANGELES CONNECTION							
1. Fire Station	Los Angeles Station	1335 S. Olive St.	No	No	No	No	No
2. School	Los Angeles Trade Tech College	400 E. Washington Blvd.	No	No	No	No	No
3. Fire Station	Los Angeles Station	3661 7th Ave.	No	No	No	No	No
4. Hospital	California Hospital Medical Center	1414 Grand Ave.	Yes	No	No	No	No
5. Hospital	Orthopedic Hospital	2400 S. Flower St.	Yes	No	No	No	No
6. Health Center	Southern California Medical Group	3320 Hill Street	No	No	No	No	No
7. Health Center	Cesar Chavez Multi-cultural Wellness Center	2501 South Hill Street	Yes	No	Yes /a/	No	No
8. Place of Worship	St. Vincent's Catholic Church	621 W. Adams Blvd.	Yes	No	No	No	No
9. Place of worship	St. John's Episcopal Church	514 W. Adams Blvd.	Yes	No	No	No	No
10. School	Central LA Middle School #4 (2006)	3500 S. Hill Street	Yes	No	No	No	No
11. School	Adams Middle School	151 W. 30th Street	No	No	Yes /a/	No	No
12. Stadium	Los Angeles Memorial Coliseum	3911 South Figueroa Street	Yes	No	Yes /a/	No	No
13. School	Amgen Science Center School (2004)	Exposition & Figueroa St.	Yes	No	No	No	No
14. Library	Exposition Park Regional Library	3665 S. Vermont	No	No	No	No	No
15. Museum	Aerospace Museum	Exposition Blvd. & Kinsey Dr.	Yes	No	No	No	No
16. Museum	Natural History Museum of LA County	Exposition Blvd. & Kinsey Dr.	Yes	No	No	No	No

TABLE 4.14-3: MID-CITY/EXPOSITION LRT IMPACT TO COMMUNITY FACILITIES							
Type	Facility Name	Location/ Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
17. Museum	Museum of Science and Industry	Museum Dr. & State Dr.	Yes	No	No	No	No
18. Museum	African-American Museum	600 State Dr.	Yes	No	No	No	No
19. School	Elementary School (Private)	Adams Blvd. & Figueroa St.	Yes	No	No	No	No
20. Park	Exposition Park	Exposition Blvd. & Figueroa St.	Yes	No	No	No	No
21. Park	Jesse Brewer Park	Exposition Blvd. & Vermont Ave.	Yes	No	No	No	No
22. School	University of Southern California	Exposition Blvd. & Vermont Ave	Yes	No	Yes /b/	No	No
MID-CORRIDOR							
23. Place Of Worship	Dawa Center of Masjid Umar	1025 Exposition Boulevard	Yes	No	Yes /c/	No	No
24. School	Weemes Elementary School	1260 W. 36th Place	No	No	No	No	No
25. Place Of Worship	West Angeles Church of God	3600 Crenshaw Boulevard	Yes	No	No	No	No
26. Park	38th & Normandie Park	Rolland Curtis Pl. & Normandie Ave.	No	No	No	No	No
27. School	Foshay Middle School	3751 S. Harvard Blvd	Yes	No	Yes /b/	Yes /d/	No
28. Park	Open Space	Rodeo Road & Cimarron St.	No	No	No	No	No
29. Place Of Worship	Unity Fellowship Church	5148 West Jefferson Boulevard	Yes	No	Yes /b/	No	No
30. School	Al-Madinah School	3510 W. Exposition Blvd.	Yes	No	No	No	No
31. School	Dorsey High School	3537 Farmdale Ave	No	No	No	No	No
32. Park	Rancho Cienega Sports Park	5001 Rodeo Rd.	No	No	No	Yes /e/	No
33. Park	Baldwin Hills Recreation Center	5401 Highlight Pl.	No	No	No	No	No
34. Park	Westside Park	3085 S. Fairfax	Yes	No	No	No	No

TABLE 4.14-3: MID-CITY/EXPOSITION LRT IMPACT TO COMMUNITY FACILITIES							
Type	Facility Name	Location/ Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
WEST END							
35. Park	Syd Kronenthal Park	3459 McManus	Yes	No	No	No	Yes /f/
36. Fire Station	Culver City Station	9600 Culver Blvd.	No	No	No	No	No
37. Hospital	Brotman Medical Center	3828 Delmas Terr.	Yes	No	No	No	No
38. Park	Washington/ National Parkette	Washington Blvd. & National Blvd.	Yes	No	No	No	No
39. School	Turning Point School	8780 National Boulevard	No	No	Yes /g/	No	No
40. School	Echo Horizon School	3430 McManus Avenue	No	No	No	No	No
41. School	Willows School	8509 Higuerra Street	No	No	No	No	No
		TOTAL "YES"	25	0	8	2	1

/a/ This loss of parking cannot be mitigated. See Section 3.3 for a full discussion of impacts.
/b/ Loss of on-street parking is not considered an adverse effect due to the availability of off-street parking or on-street parking on surrounding streets. SeeSection 3.3 for a full discussion of parking impacts and mitigation measures.
/c/ Loss of on-street parking at the northwest corner of Vermont Avenue and Exposition Boulevard is not considered an adverse effect because sufficient on-street parking remains both west and north of the affected corner.
/d/ The proposed Project will eliminate east bound left hand turn access into Foshay Middle School. This will not result in an adverse effect because an additional left hand turn pocket will be provided at Western Avenue.
/e/ Vehicle access to the Rancho Cienega Sports Park will be relocated within the same vicinity.
/f/ The elimination of pedestrian access at Hayden Avenue would result in an adverse effect on pedestrian access to Syd Kronenthal Park. Implementation of mitigation measure **CF1** would address this impact.
/g/ Loss of parking at Turning Point Elementary is not considered an adverse effect because the parking lot land is being leased to the school by Metro. The lease will be terminated under the terms of the agreement.
SOURCE: Terry A. Hayes Associates LLC, 2004

As indicated in the table above, 25 of the 41 community facilities, including hospitals, health centers, public and private schools, museums, places of worship, and parks, along the Mid-City/Exposition LRT route are located within one-quarter mile of proposed station locations and would benefit from this improved transit access.

The proposed Project will eliminate eastbound left hand turn access into Foshay Middle School. This will not result in an adverse effect because an additional left hand turn pocket will be provided at Western Avenue. Vehicle access to the Rancho Cienega Sports Park will be relocated to maintain access to the park from Exposition Boulevard.

Downtown Los Angeles Connection Options. Pedestrian and vehicular access to community facilities under the Hill Street Couplet Design Option would be the same as described in **Table 4.14-3** for the LPA. Under this option, fifteen community facilities including two hospitals, one health center, two places of worship, three schools, four museums, two parks including Exposition Park, and the University of Southern California (USC) would be within one-quarter mile of the proposed station locations and would benefit from this improved transit access. With implementation of the Flower Street Design Option, nearly all of the same facilities would remain within one-quarter mile of a station (except Central Los Angeles Middle School). The Flower Street alignment would provide direct station access to Orthopaedic Hospital and more convenient transit access to Los Angeles Trade Technical College and to the new USC Galen Center. Direct station access to both the USC campus and Exposition Park would be provided if the USC/Exposition Park Station is included. Accessibility to USC and Exposition Park would be reduced if only the Vermont Station is included between the campus and Exposition Park.

Street widening would be necessary under both design options to add the median-running LRT. Widening the streets would reduce sidewalk width. Under the Hill Street Couplet, access to community facilities would not be affected by the widening. Street widening for the Flower Street Design Option may affect pedestrian access to community facilities. Currently, along Flower Street between Washington Boulevard and the I-110 freeway, tall palm trees line the street. By widening the street, the sidewalks would be narrowed by five feet from their existing width of 15 feet to 10 feet. To replace the palm trees on Flower Street (which would have to be removed during construction) would further reduce the actual walking space of the sidewalk to five feet. To address sidewalk narrowing in this portion of the route and its affect on pedestrian access, Metro will conduct an urban design study with the City of Los Angeles and affected stakeholders before Final Design to develop sidewalk design guidelines.

La Cienega Station Parking Options. Neither parking option would affect access to community facilities.

Jefferson Boulevard Design Options. The Jefferson Boulevard Design Options would not result in any impacts on community facility accessibility.

Venice/Robertson Design Options. The Venice/Robertson Design Options would not affect access to community facilities.

Phased Implementation. Implementation of the Vermont Segment of the Mid-City/Exposition LRT would result in the same beneficial impacts to community facilities as described for the LPA. Eleven community facilities including two hospitals, one health center, three schools, four museums, and the University of Southern California would be within one-quarter mile of the proposed station locations and would benefit from this improved transit access.

Operation of the Crenshaw Segment would increase access to all of the community facilities listed in **Table 4.14-3** up to Crenshaw Boulevard. Five of those facilities, including three places of worship and two schools, would be within one-quarter mile of a station and would benefit from this improved access to transit.

4.14.2.3 Parking for Community Facilities

No Action. The No Action Alternative would not result in any impacts on parking for community facilities.

LPA. As shown in **Table 4.14-3**, there would be a loss of street parking surrounding 14 community facilities. **Table 4.14-3** explains the level of impact, if mitigation is needed, and where to find the necessary mitigation measures. Additionally, Section 3.3 Parking describes where the parking loss would occur and provides mitigation measures that would address impacts where feasible.

Downtown Los Angeles Connection Options. Under the Hill Street Couplet Design Option, Adams Middle School and the Cesar Chavez Multi-Cultural Wellness Center on Hill Street would have less available on-street parking access. The Flower Street Design Option would not utilize Hill Street, thus, all of the on-street parking on Hill Street would remain. Parking on Flower Street would be limited to the west side of the street during off-peak hours. This limitation would effect Los Angeles Trade Technical College students, faculty, or visitors. However, the college does have off-street parking, and the parking restrictions would only be in effect during peak traffic hours.

La Cienega Station Parking Options. The La Cienega Parking options would not affect parking for community facilities.

Jefferson Boulevard Design Options. No community facilities are located directly adjacent to the intersection of La Cienega and Jefferson Boulevards where the grade separation would be. Neither the Medium nor the Short Bridge 2 Design Options would affect parking for community facilities. No impact is anticipated.

Venice/Robertson Design Options. The Venice/Robertson Design Options would not affect parking for community facilities.

Phased Implementation. Implementation of the Vermont Segment of the route would result in a loss of street parking surrounding nine community facilities. On Hill Street, Adams Middle School and the Cesar Chavez Multi-cultural Wellness Center would have less available on-street parking access. The elimination of on-street parking spaces between Figueroa Street and Vermont Avenue, that serve Exposition Park and USC, is not considered significant given the surplus supply of off-street parking spaces in Exposition Park and the USC campus.

In addition to the Vermont Segment, implementation of the Crenshaw Segment of the route would result in a loss of street parking surrounding two community facilities. In some cases, the loss is not considered significant due to the large reservoir of available parking. Mitigation measures are provided in the Section 3.3 Parking to address the loss of on-street parking in the Mid-Corridor.

4.14.3 MITIGATION MEASURES

CF1 To fully mitigate the loss of the pedestrian access at Hayden Avenue, Metro shall be required to provide a second pedestrian access point that crosses the Exposition ROW at Wesley Street.

CF2 A vehicle access road shall be relocated and maintained from Exposition Boulevard north of the right-of-way crossing to connect to the existing entrance at Rancho Cienega Sports Park at Exposition Place. The relocated access road shall provide two-way access close to the existing Exposition Boulevard park entrance and shall be compatible with the station site, bridge structure, and guideway as part of the Project.

CF3 Prior to Final Design, Metro shall conduct an urban design study with the City of Los Angeles and affected stakeholders to provide design guidelines for improvement of pedestrian station access at the 23rd Street Station and Jefferson Station.

4.14.4 CEQA DETERMINATION

Parkland. According to CEQA, the proposed Project would result in a significant impact to parks if it required the expansion or construction of a new park or park facilities, the construction of which could cause significant environmental impacts.

Community Facilities. According to CEQA, a significant impact to community facilities would result if any of the following conditions are met:

- The proposed Project would acquire or displace a facility and/or create barriers or cause substantial disruption to pedestrian and vehicular access to a facility, constituting a significant impact.
- The proposed Project would disrupt community facilities and services through a reduction in access to facilities and a significant alteration of service areas.

4.14.4.1 Parkland

No Action. The No Action alternative would not result in any impacts on parkland.

LPA. The proposed Project would have the beneficial impact of situating public transit adjacent to parks, and thereby, increasing the public's ability to visit them. Nine parks are within one-quarter mile of the proposed alignment. Although the proposed Project would make these parks more accessible, this accessibility would not create such a demand on the parks that they would need to be expanded or have new facilities constructed. No significant impact to parks is anticipated.

Downtown Los Angeles Connection Options. The choice of the Downtown Los Angeles Connection Design Option would not result in any impacts on parkland.

La Cienega Station Parking Option. The parking options would not affect parkland. No impact is anticipated.

Jefferson Boulevard Design Options. The choice of the La Cienega Bridge design would not have an impact on parkland.

Venice/Robertson Design Options. The design options would not affect parkland. No impact is anticipated.

Phased Implementation. Phased Implementation would not result in any impacts on parklands.

4.14.4.2 Community Facilities

No Action. The No Action alternative would not result in any impacts on community facilities.

LPA. As shown in **Table 4.16-3**, pedestrian access at Hayden Avenue would be eliminated as a result of the proposed Project. This action would be a significant impact unless mitigation is incorporated. Implementation of mitigation measure **CF1** would reduce impacts to a less-than-significant level. The proposed Project would affect vehicle access to two community facilities. It will eliminate east bound left hand turn access into Foshay Middle School. This would not result in a significant impact because an additional left-hand-turn pocket would be provided at Western Avenue. Additionally, vehicle access to the Rancho Cienega Sports Park would be relocated. This is not considered a significant impact because vehicle access crossing the Exposition ROW to the parking entrance of the park would be relocated, not eliminated. Although vehicle access to community facilities along Exposition Boulevard may be periodically interrupted by train passage, it would not be frequent enough or of long enough duration to result in a significant impact. Furthermore, by extending public transportation service to this area, the proposed Project would increase accessibility to these community facilities. Twenty-five of the 41 community facilities are located within one-quarter mile of a proposed station location, which would be a beneficial impact.

As shown in **Table 4.14-3**, there would be a loss of street parking surrounding 14 community facilities. **Table 4.14-3** explains the level of impact, if mitigation is needed, and where to find the necessary mitigation measures. Additionally, Section 3.3 Parking summarizes the community facilities that would lose parking, and provides mitigation measures that would reduce impacts to a less-than-significant level.

The proposed Project would not affect emergency response times of police and fire stations or access to their stations. As described in Section 3.2 Traffic, the Mid-City/Exposition LRT would not result in any significant traffic impacts. Therefore, response times of emergency services would remain unaffected.

Downtown Los Angeles Connection Options. Under the Hill Street Couplet Design Option, fifteen community facilities including two hospitals, one health center, two places of worship, three schools, four museums, two parks including Exposition Park, and the University of Southern California (USC) would be within one-quarter mile of the proposed station locations and would benefit from this improved transit access. With implementation of the Flower Street Design Option, nearly all of the same facilities would remain within one-quarter mile of a station (except Central Los Angeles Middle School). The Flower Street alignment would provide direct station access to Orthopaedic Hospital and more convenient transit access to Los Angeles Trade Technical College and to the new USC Galen Center. Direct station access to both the USC campus and Exposition Park would be provided if the USC/Exposition Park Station is included. Accessibility to USC and Exposition Park would be reduced if only the Vermont Station is included between the campus and Exposition Park.

Street widening would be necessary under both design options to add the median-running LRT. Widening the streets would reduce sidewalk width. Under the Hill Street Couplet, access to community facilities would not be affected by the widening. Street widening for the Flower Street Design Option may affect pedestrian access to community facilities. Currently, along Flower Street between Washington Boulevard and the I-110 freeway, tall palm trees line the street. By widening the street, the sidewalks would be narrowed by five feet from their existing width of 15 feet to 10 feet. To replace the palm trees on Flower Street (which would have to be removed during construction) would further reduce the actual walking space of the sidewalk to five feet. To address sidewalk narrowing in this portion of the route and its affect on pedestrian access, Metro will conduct an urban design study with the City of Los Angeles and affected stakeholders before Final Design to develop sidewalk design guidelines. Under the Hill Street Couplet Design Option, Adams Middle School and the Cesar Chavez Multi-cultural Wellness Center on Hill Street would have less available on-street parking. This represents a significant impact. Due to space constraints in the Downtown Los Angeles Connection, feasible replacement parking does not exist.

La Cienega Station Parking Options. Neither parking option would affect access to community facilities.

Jefferson Boulevard Design Options. No community facilities are located directly adjacent to the intersection of La Cienega and Jefferson Boulevards where the grade separation would be. Neither the Medium nor the Short Bridge 2 Design Options would affect parking for community facilities. The Jefferson Boulevard Design Options would not have an impact on community facility accessibility or parking.

Venice/Robertson Design Options. The design options would not affect access to community facilities.

Phased Implementation. Phased Implementation of the Mid-City/Exposition LRT would result in the same beneficial impacts to community facilities as described for the LPA. With operation of the Vermont Segment, eleven community facilities including two hospitals, one health center, three schools, four museums, and the University of Southern California would be within one-quarter mile of the proposed station locations and would benefit from this improved transit access.

Operation of the Crenshaw Segment would increase access to all of the community facilities listed in Downtown and Mid-Corridor areas in **Table 4.14-3**. Five of those facilities, including three places of worship and two schools, would be within one-quarter mile of a station and would benefit from this improved access to transit.

Implementation of the Vermont Segment of the route would result in a loss of street parking surrounding nine community facilities. On Hill Street, Adams Middle School and the Cesar Chavez Multi-cultural Wellness Center would have less available on-street parking access. This represents a significant impact on these community facilities. The elimination of on-street parking spaces between

Figueroa Street and Vermont Avenue that serve Exposition Park and USC is not considered significant given the surplus supply of off-street parking spaces in Exposition Park and the USC campus.

In addition to the Vermont Segment, implementation of the Crenshaw Segment of the route would result in a loss of street parking surrounding two community facilities. In this case, the loss is not considered significant due to the large reservoir of available parking. Mitigation measures are provided in the Section 3.3 Parking to address the loss of on-street parking in the Mid-Corridor.

Significant Impacts Remaining after Mitigation. Implementation of mitigation measure **CF1** and **CF2** would reduce impacts to the access of community facilities to a less-than-significant level. An unavoidable impact would remain for community facilities close to Hill Street where on-street parking would be eliminated.

4.15 CONSTRUCTION IMPACTS

The impacts associated with construction of the Mid-City/Exposition LRT Project are described in this section. The impacts described in this section would only occur during construction, and would be temporary and short-term (since construction activities are anticipated to last for approximately three years), as opposed to on-going during the operational life of the Project. Mitigation is proposed that would reduce the construction-related impacts. There are two construction scenarios: the no operation construction option and the partial operation construction option. The development for the proposed Project will employ conventional construction methods, techniques, and equipment. All work for development of a transit system will conform to accepted industry specifications and standards. Major elements of the Project include the construction of guideways and trackwork for the Mid-City/Exposition LRT, at-grade station platforms, and aerial and below-grade separations. The analyses in this section evaluate how construction of the Project will affect traffic; parking; equity and environmental justice considerations; land use/neighborhoods; land acquisition/displacement and relocation; visual quality; air quality; noise and vibration; geology, soils, and seismicity; water resources; biological resources; energy resources; safety and security; community facilities; hazards; and cultural resources.

4.15.1 AFFECTED ENVIRONMENT

4.15.1.1 Construction Methods

Construction of the proposed Project will employ conventional construction techniques and equipment used in the Southern California region. Major Project elements include construction of guideway and trackwork, at-grade station platforms, elevated guideways and stations, installation of specialty system work such as traction power, communications, and signaling and may include underground guideway. All work would conform to industry specifications and standards. The equipment that would be used in construction will include rail-mounted equipment, graders, dozers, cranes, cement-mixers, flat bed trucks, and dump trucks to haul dirt and spoil materials. These construction vehicles would be used along the LPA, and would possibly impede traffic mobility in areas of construction. Traffic detours and truck routes would be required during construction. In order to minimize any disruptions to traffic, mitigation of potential traffic impacts, and traffic management and traffic control measures would be implemented with the coordination and involvement of the cities along the Project route.

Construction of the proposed Project can be accomplished in approximately 36 months. The various work activities to be performed over the estimated 36-month construction period would include the following facility and system items:

- Construction of bridge and elevated approach sections from Rimpau Boulevard to Sycamore Avenue and from Clyde Avenue to Fay Avenue (including foundations, support columns, girders, and deck slabs). The construction will be either cast-in-place, partially precast, steel or a combination of these depending on the final design and the preferred approach of the construction contractor;
- Demolition of roadways along alignment;
- Demolition of existing buildings that encroach on the existing railroad right-of way from Washington to Venice;
- Construction of retaining walls for approaches to the bridge;
- Relocation, modification, or protection in place of utilities in conflict or impacted by excavations for street-level trackwork, tunnels, bridge, and station construction;
- Construction of station platforms on street-level locations using typical construction methods;
- Construction of underground duct banks for electrical power feeds and for signaling/communications systems;

- Construction of surface drainage systems and subdrainage;
- Construction of traction power substations with electrical power feeds;
- Construction of overhead catenary pole foundations or alternative power distribution support systems, and street lighting where required;
- Construction of parking facilities at the Crenshaw, La Cienega, and Venice/Robertson Stations;
- Installation of traffic signal and train control improvements;
- Installation of overhead catenary wires, support brackets, feeder cables, and other components or alternative power distribution systems;
- Installation of trackwork, including preparation of track bed and slab, rail, fasteners, and infill concrete for street sections in Hill Street in Downtown Los Angeles (Hill Street option, see Section 5.2 Comparative Analysis of Alternatives);
- Construction of noise walls generally four feet high (but up to eight feet high at locations where wall is some distance from the track) in sensitive areas along the Exposition ROW;
- Construction of station finishes, such as canopies, fare vending equipment, station furniture, ramps, landscaping, public art, and all other amenities necessary for a functional station;
- Conduction of subsystem and system testing;
- Conduction of simulated operation test runs and final commissioning of the system;
- Removal of all equipment, landscaping and structures along the alignment; and
- Relocation any items from the Right-of-Way as required by the Agency.

4.15.1.2 Phased Implementation

No Operation Construction Option. The No Operation Construction Option would not begin LRT operations until construction of the LPA is complete. Construction of the proposed Project would be divided into a number of linear segments to allow additional flexibility and simultaneous construction phasing. The objective of the phased, sequenced construction schedule would be to provide the shortest practical construction duration, both overall and as experienced by individual neighborhoods and stakeholders along the proposed LRT alignment. By taking advantage of simultaneous scheduling and construction of the Project's major structures and segments, it is anticipated that the total duration of construction would be approximately 36 months. The anticipated year of completion is 2010.

Construction would occur simultaneously at several locations along the proposed alignment to accommodate areas requiring lengthy construction times. The objective of this approach would be to bring the various segments to completion at approximately the same time.

Many contractors specializing in various methods of construction would be working on the Project selected for the overall length of the construction period. The physical construction would involve the method that is most suitable for each segment of the Project.

Construction of the Project would follow all applicable local, state, and federal laws for building and safety. Working hours would vary to meet special circumstances. Standard construction methods would be used for traffic control and noise, vibration, and dust control, consistent with all applicable laws.

Haul routes to disposal sites would be predetermined by agreement with local authorities before construction. They would follow streets and highways forming the safest or shortest route with the least adverse effect on traffic, residences, and businesses. **Table 4.15-1** shows potential disposal sites for various classifications of excess materials.

TABLE 4.15-1: POTENTIAL DISPOSAL SITES		
Material	**Class of Site**	**Location**
Unusable Material (Organic Mixed)	Class II	Monterey Park, Puente Hills
Asphalt, Concrete	Recycle	Irwindale
Usable Backfill	Class III	Nearby landfill sites or ongoing construction projects
SOURCE: Korve Engineering.		

Partial Operation Construction Option. The Partial Operation Construction Option would phase-in LRT operations in three segments as construction milestones are met. LRT operations from the 7th Street/Metro Center to the Vermont Station would begin upon completion of this portion of the Mid-City/Exposition route in approximately 2009; while LRT operations to the Crenshaw Station would begin upon completion of this segment in approximately 2009. The final segment, from Crenshaw Boulevard to the Venice/Robertson Station, would be scheduled for completion in 2010.

This construction scenario is almost identical to the No Operation Construction Option, except that the simultaneous construction phasing would be focused on a goal to complete the Project in three consecutive operable segments.

The construction impacts and associated mitigation measures described for the No Operation Construction Option would be nearly identical. Potential impacts to natural resources, such as cultural resources, geology and soils, biological resources, etc., would not be altered by the order of construction phases. However, it would be anticipated that the Partial Operation Construction Option would have short-term parking impacts, at Vermont Avenue and then at Crenshaw Boulevard, during the approximately two-year period when they would each be a temporary terminus station. As a temporary terminus station, there would be higher parking demand at these locations than was calculated for the Project upon completion. The higher temporary parking demand could also translate into localized air quality and noise impacts. These impacts are temporary and would not require the implementation of additional mitigation measures.

4.15.1.3 Construction Elements

4.15.1.3.1 Demolition of Existing Roadways and Buildings

Roadway removal would be required along the existing railroad right-of-way to accommodate widened roadway cross sections. Existing buildings that encroach on the existing railroad right-of-way (from Washington Boulevard to Venice Boulevard) would be demolished. Demolition would comply with the applicable regulations, and disposal and/or recycling of material would be performed in accordance with standard construction practices (see Section 4.2 Land Acquisition, Displacement and Relocation for detailed discussion of land acquisition). Removal and relocation of existing equipment, landscaping and structures from the Right-of-Way may be required by the Agency.

4.15.1.3.2 Utility Relocation

Prior to beginning certain construction activities, it would be necessary to relocate, modify, or protect in place all utilities and underground structures, which would conflict with excavations for street-level trackwork, bridge, and station structures. Shallow utilities, such as maintenance holes or pull boxes, which would interfere with guideway excavation work, would require relocation. The utilities would be modified and moved away from the proposed facilities. 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. Temporary interruptions in services (several hours) could be experienced during re-location or re-routing of utilities.

4.15.1.3.3 Rail Guideway

Trackwork

Multiple types of trackwork construction will be used in this Project: embedded trackwork for in-street segments, ballasted track dedicated right-of-way, and direct fixation on bridges and underground guiedways. Embedded trackwork construction would involve demolishing the roadway section being used for the track(s), preparing the track bed, constructing the rail-encapsulating track slab, and installing rails embedded in rubber boots. Ballasted trackwork construction will involve excavation, and grading, drainage, installation of conduits, coorrete ties and rail. Foundations for overhead wire poles may be installed with the track installation. Rails would be brought to the construction site by truck.

Neighbohood access will be assured through development of Work Site Traffic Control Plans in accordance with Los Angeles Department of Transportation and Culver City Public Works regulations as described in "4.15.3.1 Traffic."

Minor cross streets and alleyways may be temporarily closed, but access to adjacent properties will be maintained. Construction across larger cross streets would require full or partial closure, half of the street at a time, while relocating utilities and constructing the light rail trackbed. Depending on allowable working hours, full blocks may require closures during excavation, preparation of subgrade, and track foundations placement. Closures would be in a staggered sequence to facilitate traffic control. Where streets are not fully closed, two-way traffic would be allowed on half of the street. After the trackbed is constructed across a local street and the roadway is restored to its permanent condition, vehicles can resume original traffic patterns. Equipment used for construction of the surface tracks would be similar to what is required for relocation of the utilities with the addition of track-laying equipment, paving machines, concrete mixers, and concrete finishers.

4.15.1.3.4 Street Widening and Street Reconstruction

Along a significant portion of the alignment, the street section would be widened to accommodate a wider median, maintain traffic lanes, and include a Class II bikeway. Street segments from Cochran Avenue to La Cienega Boulevard and from Ballona Creek to Washington Boulevard will be widened to maintain the required number of through lanes and turning lanes. All work would be initially done at the curb line to construct new curb and gutter, sidewalks, and outside traffic lanes. National Boulevard, from Hayden Avenue to Ballona Creek, would be vacated and reconstructed so that both the east-traveling lanes and the west-traveling lanes would be placed on the south side of the right-of-way.

During this stage of work, property owners and businesses located immediately adjacent to the work areas would also be affected. This work would be phases with construction of the actual rail components to allow the maximum room for detouring traffic during construction.

4.15.1.3.5 Operating System and Installation

The operating systems would include communications, train control, and traction power supplied through an overhead contact system. The overhead contact system would consist of poles connected to shaft foundations with overhead wires to supply power to the trains (see also Traction Power Substations, described below). Traction power would include up to eight substations to provide power for the trains. These include grounding systems and pre-fabricated units which are placed on foundation slabs by crane and connected to the system. Where existing structures must be demolished to accommodate the substation, demolition work would be completed prior to construction of the substation. Construction equipment would include highrail vehicles for installation of the wires from the guideway area. While wires are strung at cross streets, temporary street closures of a few hours during nighttime are anticipated. In addition, communications and control systems would be installed along the alignment. The installation of the operating systems could occur simultaneously with other construction. The systems installation work is considered to be significantly less disruptive to communities as compared to the line segment construction work.

4.15.1.3.6 Bridge Construction

Typical construction methods for the bridges at La Brea Avenue and La Cienega Boulevard (see Chapter 2.0 Alternatives Considered for details) would involve several phases of work: foundation construction, installation of columns, and setting in place of concrete, steel girders, or steel trusses.

Construction of the column foundations could begin at the same time the utilities are relocated, providing the utilities do not directly impact the foundation locations. Once the foundations are in place, the columns would be constructed. It may be possible to conduct most of the column construction and girder placement during late night hours to minimize disruptions on the freeway and local streets. Traffic would not be allowed to pass under the structure during form and concrete placement, and temporary lane closures would be necessary during these periods.

Equipment used for construction of aerial guideway would include drill rigs/augers, cranes, pile drivers, jackhammers, compressors, concrete trucks and pumping equipment, dump trucks, front-end loaders, paving machines, and large tractor-trailer rigs to carry girders and miscellaneous tools.

4.15.1.3.7 Other Street Improvements

As a final stage in the construction, streets would at least be restored to their pre-construction condition. In some cases, street improvements would be made, such as new site modifications, landscaping, traffic control modifications, signage, and lighting. Some of these improvements would be accomplished simultaneously with other construction.

4.15.1.3.8 Stations

Street-Level Stations. Stations could be constructed simultaneously with the various segments of the Alignment. However, the contractor may elect to construct them sequentially. Station construction would involve forming and constructing a slightly elevated platform and then installing the station furnishings, such as the canopy, railings, lighting, signage, and ticket vending machines. These stations would be constructed from standard building materials, such as brick, concrete, steel, aluminum, and heavy plastic, which are durable and resistant to vandalism. Project designers would take special consideration of graffiti prevention during Project design, reducing as much as possible any large, flat surfaces accessible to and viewable by the public. Where these surfaces cannot be eliminated, special graffiti resistant surfaces such as highly textured surfaces and sealants would be incorporated into the Project design.

4.15.1.3.9 Parking Facilities

Parking facilities would be provided at the Venice/Robertson, La Cienega, and Crenshaw Stations. Construction of the parking facilities would involve subgrade preparation of the parking area, paving, and striping. Concrete curbs, lighting, driveways, and sidewalks would be re-constructed as necessary, as well as planting the appropriate landscaping. Equipment used for construction of the parking facility would include diamond saws, pavement breakers, jackhammers, compressors, concrete pumping equipment, paving machines, dump trucks, front-end loaders, etc.

4.15.1.3.10 Bikeway and Bikeway Facilities

Off-street portions of the bikeway would be constructed within the Metro ROW and would be coordinated with construction of the trackway. Construction of the off-street bikeway segments would require minimal earthwork, installation of fencing, where required, paving, landscaping, and signage. On-street bikeway segments would require removal of on-street parking in some locations, resurfacing, striping, and signage. Other bikeway facilities, such as bicycle lockers, would be installed at LRT stations as construction of those stations nears completion.

4.15.1.3.11 Landscaping and Art for Transit

Landscaping

With the exception of installation of large trees, landscape installations would not involve heavy construction equipment. Plantings would generally occur after other major construction components have been completed.

Public Art

All artwork concept design through installation would be reviewed by Metro Art in order to ensure maintainability and to address all operational issues. It is highly recommended that Metro Art be contacted early in the process of establishing an art program to provide input and expertise on transit related issues. Metro Art would be available as an expert resources or consultant to the Project.

4.15.1.3.12 Systems Facilities

Traction Power Substations

Construction of traction power substations (TPSS) would be relatively simple. Each site would be cleared and graded and a concrete slab would be constructed with the appropriate underground utility connections. A grounding mat would be installed around the perimeter of the site. TPSS itself would be a prefabricated structure approximately 15 feet wide by 43 feet long by 16 feet high. It would be delivered, connected to the slab, and connected to the utilities. Fencing and walls would be installed around the perimeter of the site and architectural and landscaping treatments would be installed, as necessary.

4.15.1.3.13 Air Quality Assessment for Local Schools

A 1994 letter agreement between Metro and the Los Angeles Unified School District (LAUSD) on the suspended Metro Red Line Project indicated that Metro would go beyond the preparation of the usual air quality analysis presented in the EIS/EIR level of study required by NEPA and CEQA. Additional air quality analysis was conducted for schools within 700 feet of the alignment to project PM_{10} concentrations around the schools close to the alignment. **Table 4.15-2** shows the schools that occur within 700 feet of the Mid-City/Exposition LRT alignment.

TABLE 4.15-2: SCHOOLS WITHIN 700 FEET OF THE LPA ALIGNMENT

School	Address	Distance from Alignment (feet)
Central LA Middle School #4 (2006)	3500 S. Hill Street	200
Adams Middle School	151 W. 30th Street	35
Amgen Science Center School (2004)	Exposition Blvd. & Figueroa Street	55
St. Vincent's School	2333 S. Figueroa Street	460
Foshay Middle School	3751 S. Harvard Boulevard	55
Al-Madinah School	3510 W. Exposition Boulevard	65
Dorsey High School	3537 Farmdale Avenue	20
Turning Point School	8780 National Boulevard	95
Echo Horizon School	3430 McManus Avenue	650

SOURCE: Terry A. Hayes Associates LLC, 2004.

The State standard for PM_{10} levels is 50 micrograms/cubic meter/day. Using Industrial Source Complex, PM_{10} emissions were modeled to estimate PM_{10} concentrations at multiple distances from the alignment. The modeling results show that PM_{10} concentrations at schools over 400 feet away from the alignment would not exceed the standard. However, when construction activity would occur adjacent to a schools within 400 feet of the alignment, PM_{10} concentrations would exceed the standard. Seven of the nine schools are within 400 feet of the proposed LPA alignment. PM_{10} concentrations above the State standard would result in a short-term, significant impact. To address this issue, Metro would provide a liaison to the schools to discuss specific air quality concerns as they may arise. Metro would make an effort to minimized effects to air quality at school sites to the greatest extent feasible.

4.15.2 IMPACT ASSESSMENT

Methodology

The following section addresses the construction-related impacts of the LPA and alternatives based on the implementation of the construction scenario described in the preceding section. The first part of the impact discussion addresses the general short term effects of the associated with the construction of the LPA and its alternatives for purposes of NEPA. Construction activities within public rights-of-way are not typically considered to be adverse due to their short term nature, particularly with implementation of construction management and abatement measures described in "4.15.3 Mitigation Measures," below. The effects, however, are discussed in detail later in this section in "4.15.4 CEQA Determination" because of the physical change, health and safety effects related to construction that would be considered significant under state law regardless of the time of duration. Topics addressed in this section include:

- Traffic
- Parking
- Equity & Environmental Justice Considerations
- Land Use/Neighborhoods
- Land Acquisition/Displacement
- Visual Quality
- Air Quality
- Noise and Vibration
- Geology, Soils, and Seismicity
- Exposure to Hazardous Substances
- Water Resources
- Biological Resources
- Energy Resources
- Safety and Security
- Historic, Archaeological and Paleontological Resources
- Parklands and Community Facilities

No Action Alternative. The No Action Alternative would not involve the building of a light rail line or related facilities and as a result no construction-related impacts are anticipated.

LPA. The LPA is forecast to be completed by 2012. It is expected that the total duration of the construction process described above would be approximately three years. Also noted above, the Project would be completed in a geographic sequence starting from the 7th Street/Metro Center in the east and moving westward to Culver City. Construction impacts to the twelve topics areas listed would be temporary. With implementation of mitigation measures itemized below, no substantial adverse construction impacts are anticipated. Topic-specific construction effects are discussed in detail in "4.15.4 CEQA Determination" addressing effects per the California Environmental Quality Act.

Downtown Los Angeles Connection Options. The design options under consideration, Hill Street Couplet and Flower Street, would have effects similar to the LPA in the area extending from Downtown to Vermont Avenue. Mitigation measures discussed later in "4.15.3 Mitigation Measures" would substantially reduce adverse effects in this area. Compared to the LPA, the Flower Street Design Option would have a greater intensity of activity due to the excavation and construction of an undercrossing along the southern portion of Flower Street and along Exposition Boulevard between Flower Street and the area immediately west of Figueroa Street. Mitigation measures described in "4.15.3 Mitigation Measures" would also be implemented to substantially reduce and/or eliminate the effects of this activity.

La Cienega Station Parking Options. The Southwest Corner Option would have localized construction impacts adjacent to the intersection of La Cienega and Jefferson Boulevards. Mitigation measures described in "4.15.3 Mitigation Measures" would reduce these short-term effects. The No Parking option would not result in any construction impacts as it would not construct a structure, but redirect parking demand to Crenshaw station.

Jefferson Bridge Design Options. The options under consideration would have construction effects similar to the LPA. These design options would, however, extend bridge-related construction further to the west into Culver City in proximity to Syd Kronenthal Park and to nearby residences. Mitigation measures described in "4.15.3 Mitigation Measures" would reduce these short-term adverse effects.

Venice/Robertson Design Options. The North of ROW Station Options and ROW Station Design Options would occur adjacent to the intersection of Washington/ National Boulevards. The Aerial Station option would also be adjacent to this intersection as well as Venice/Robertson. Construction impacts would be similar to the LPA. Mitigation measures described in "4.15.3 Mitigation Measures" would reduce these short-term effects.

Phased Implementation. The Phased Implementation options would have short term construction effects similar to the LPA. For the Vermont Segment, construction effects would be limited to the area from Washington Boulevard and Hill Street intersection to Exposition Boulevard and Vermont Avenue intersection. The Crenshaw Segment would extend construction effects to the intersection of Exposition and Crenshaw Boulevards while the La Cienega Segment would extend construction effects to the intersection of La Cienega and Jefferson Boulevards. Mitigation measures described in "4.15.3 Mitigation Measures" would eliminate adverse effects. Because of the geographic limits of these phases, there would be no construction impacts to areas west of Crenshaw Boulevard, including no impacts to the City of Culver City.

4.15.3 MITIGATION MEASURES

Metro is working closely with the City of Los Angeles and Culver City in developing construction mitigation plans. Metro's Public Affairs Officers would be administering a construction impact program to minimize the effects of Project construction on the community. While keeping the community informed of all construction activities, especially for those that affect the public, the program also includes a hotline number for a direct connection to Metro Public Affairs staff familiar with the community and the Project. The same Public Affairs staff would provide individual consultation for residents, facilities, and businesses for remedies appropriate to the impacts. The Public Affairs staff would identify community/business needs prior to and during the construction period through the use of surveys and community meetings. In addition, field offices will be available at particular locations and will contain information regarding recent construction activities.

4.15.3.1 Traffic

C1 Metro shall coordinate with the Los Angeles Department of Transportation (LADOT) and Culver City Public Works Department to designate and identify haul routes for trucks and establish hours of operation during final design. These routes shall be situated to minimize noise, vibration, and other possible impacts.

C2 Metro shall prepare a traffic management plan to facilitate the flow of traffic during construction. The plan shall include the following:

- Implement diversions/detours to facilitate traffic flow throughout the construction zone;
- Temporarily restripe traffic lanes at significantly impacted locations, to the extent that this can increase the number of travel lanes provided during construction activities;

- Temporarily eliminate on-street parking in the vicinity of significantly impacted locations, to the extent that this can increase the number of travel lanes provided during construction activities;
- Implement a public outreach/education program to inform the public about the planned construction process and encourage motorists to consider alternate travel routes.

C3 Metro shall develop Worksite Traffic Control plans in cooperation with the Los Angeles Department of Transportation (LADOT) and the Culver City Public Works department to accommodate required pedestrian and traffic movements. LAUSD shall be invited to participate as part of Metro's Third Party Coordination Group to develop the plans prior to approval by LADOT and the Culver City Public Works department, as required by City regulations.

C4 Metro shall notify LAUSD of impending impacts on existing school bus routes.

4.15.3.2 Parking

C5 Contractors shall be required to have all employees park off-street or on-street at Metro approved locations to minimize the loss of commercial parking.

C6 Prior to construction, Metro public affairs and construction staff shall contact and interview individual businesses, allowing for knowledge and understanding of how these businesses carry out their work. Metro shall use this information to develop worksite traffic control plans, identify alternative access routes, and make efforts during construction to maintain business activities.

C7 Unless required by worksite traffic control plans, construction activities shall be sequenced to minimize the temporary removal of multiple blocks of on-street parking at one time, which would make various on-street parking spaces available in an area under construction for a period of time.

4.15.3.3 Equity & Environmental Justice Considerations

C8 Metro shall provide affected communities and businesses with the telephone number of the Public Affairs Officers, who will be responsible for responding to questions about construction activities.

C9 Metro shall notify property owners, residences, and businesses of major construction activities (e.g., utility relocation/disruption and re-routing of delivery trucks).

C10 Metro shall coordinate with local businesses and residents to provide advanced notification of traffic detours and delays, and potential utility disruptions associated with construction.

C11 Temporary special signage shall be used to inform customers that merchants and other businesses directly affected by construction are open. The signage shall include special and closure information in advance of any future temporary closure. Signage shall also provide special access directions, if warranted.

4.15.3.4 Land Use/Neighborhoods

With the exception of traffic congestion and air pollution, construction of the proposed Project would not result in impacts to land use or neighborhoods. Thus, no mitigation measures would be required. Mitigation measures for traffic and air pollution are listed elsewhere in this section.

4.15.3.5 Land Acquisition, Displacement and Relocation

Mitigation measures **C5** through **C11**, above, would also apply to land acquisition, displacement and relocation.

4.15.3.6 Visual Quality

C12 Construction staging areas outside of the Metro ROW shall be located adjacent to non-residential land uses wherever possible. If complete avoidance of adjacent residential properties is not possible, then construction staging shall be screened with materials and techniques approved by Metro. If located adjacent to single-story residential land uses, views from adjacent residences shall be screened with black-out fencing, temporary landscaping, or other means.

C13 All construction lighting shall be hooded and shielded to minimize spillover and glare. Alternately, screening can be used to shield construction lighting.

C14 Lighting shall be directed toward the interior of the construction staging area and shielded so as to avoid or minimize spill over into adjacent residential areas. Lighting techniques are to be approved by Metro.

4.15.3.7 Air Quality

C15 The following is a list of feasible control measures that SCAQMD recommends to reduce PM_{10} emissions during construction. These mitigation measures shall be implemented for all areas where construction for the proposed Project would occur.

- **Diesel Equipment Usage**. The LACMTA shall require contractors as part of their contract to minimize use of on-site diesel construction equipment, particularly unnecessary idling.
- **Electric Powered Equipment**. The LACMTA shall require contractors to replace diesel-powered machinery with electrically powered machinery, where feasible.
- **Equipment Emissions**. Construction equipment will be shut off to reduce idling when not in direct use. Diesel engines, motors, or equipment shall be located as far away as possible from existing residential areas. Low sulfur fuel shall be used for construction equipment.
- **Location of Staging Areas**. If required, haul truck staging areas shall be approved by the Los Angeles Department of Transportation. When feasible, haul trucks shall be staged in non-residential areas away from school buildings and playgrounds.
- **Fugitive Dust Control**. Maintain fugitive dust control program consistent with the provisions of SCAQMD Rules 403 and 1186 for any grading or earthwork activity that may be required.
- **Site Watering**. Site wetting shall occur often enough to maintain a twelve percent (12 percent) surface soil moisture content throughout any site grading or excavation activity. All unpaved parking or staging areas shall be watered at least two times daily, and all on-site stockpiles of debris, dirt, or dusty material shall be covered or watered in accordance with SCAQMD Rule 403.
- **Truck Covering**. Require all trucks hauling dirt, sand, soil or other loose substances and building materials to be covered.
- **Street Sweeping**. Utilize efficient 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.

- **Phasing**. To the extent feasible, phase construction activities to minimize concurrent dust generating activities within 2,500-square-foot radius of shaft site locations.
- **Wheel Washing Equipment**. Metro shall require the contractor to install wheel/undercarriage-washing equipment or a functional equivalent at tunnel excavations as the first method by which to ensure that haul trucks have clean wheels and undercarriages before entering public roadways. The installation of wheel washers alone shall not relieve the contractor of their responsibility to eliminate (remove) all track-out from public roadways. Should use of the wheel/undercarriage washing equipment not be effective, the contractor shall be responsible for providing alternative solutions in addition to, or instead of, the use of the equipment to ensure elimination (removal) of all track-out from public roadways. This could require the contractor to have a street-sweeper in use any time muck is being removed from the construction site and as often as is required throughout each workday to ensure that public roadways are kept clear of all track-out.
- **Suspend Operations**. Suspend grading operations during second stage smog alerts, and during high winds, i.e., greater than 35 miles per hour.
- **Sidewalk and Window Cleaning.** Metro shall implement a sidewalk and window cleaning program, if needed, to reduce construction-related dust impacts to local businesses and residences.
- **Metro Section 01566 Pollution Control Mandates**. All contractors as part of their contract shall meet Metro Section 01566 pollution control mandates, which require that all equipment engines be properly tuned at all times.
- **Coordinate Construction Activities**. Metro shall coordinate construction activities with school, daycare, and convalescent centers within the area that may be affected by the proposed Project to minimize air quality impacts to these sensitive receptor locations. In addition, the MTA's Public Affairs Officers shall be administer a construction impact program for the benefit of the community.
- **Signage Requirement**. Signs shall be posted throughout the proposed alignment area that will include anticipated dates of construction activity, and the telephone number of the construction information desk that can log complaints, or offer additional information regarding the construction process.
- **VMT (Vehicle Miles Traveled) Reduction Strategy**. With regard to Project construction, Metro shall require (through the construction contract administration process) that all contractors implement car/van pool programs throughout the construction process to minimize worker travel related VTM.
- **Dust Suppression**. Dust suppression shall be applied in sufficient quantity and frequency to maintain a stabilized surface at all disturbed surface areas.
- **Vehicular Speed**. Vehicle speed shall be limited to 15 miles per hour on unpaved roads.

4.15.3.8 Noise and Vibration

C16 The construction management firm shall monitor noise during construction activities. Regular noise monitoring shall be performed in areas where it is expected that the contractor would have difficulty meeting the property line noise limits. The monitoring includes weekly spot checks supplemented by monitoring in response to complaints.

C17 Noise control shall be a construction contract requirement to ensure that contractors consider community noise when designing construction sites, selecting construction procedures and equipment, and determining work schedules. The noise control requirements may include the following:

- Limit noisy construction activities, particularly during nighttime hours. Sample restrictions include: requiring pre-drilled piles and restricting the use of jackhammers and other pneumatic and impact devices.

C18 In noise sensitive areas, Metro may require contractors to select construction processes and techniques that create the lowest noise levels. Examples are the mixing of concrete off-site instead of on-site and using hydraulic tools instead of pneumatic tools.

C19 All equipment shall be required to have effective commercially available mufflers installed, consist with best urban construction practice.

C20 The use of backup alarms shall be minimized. Approaches to be considered for reducing noise intrusion caused by backup alarms include the following: lay out construction sites to minimize the need for backup alarms; use strobe lights in place of backup alarms at night; use flagmen to keep the area behind maneuvering vehicles clear; and use self-adjusting backup alarms that adjust the alarm loudness up and down depending on ambient noise. The safety implications of any procedures for reducing backup alarm noise shall be carefully reviewed before the procedure is implemented.

C21 Construction sites shall be laid out in a manner that the noisiest activities are as far as possible from noise sensitive receptors.

C22 Pile installation shall be by drilling not driving per existing Metro guidelines.

C23 Vibration monitoring shall be required for any construction process that could cause intrusive or damaging vibration.

C24 During final design, a detailed analysis of construction noise impacts shall be carried out and pre-construction surveys shall be conducted at properties where the potential for significant vibration impact has been identified. In addition, measures to mitigate significant vibration impacts shall be developed for inclusion in construction contracts.

C25 If temporary sound barriers are required to meet City noise regulations, Metro shall review sound barrier designs prior to implementation.

C26 The Public Affairs Officer shall be responsible for responding to any local complaints about construction noise. The Officer would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would be required to implement reasonable measures to address the issue. All signs posted at the construction site shall list the telephone number for the Officer.

4.15.3.9 Geology, Soils, and Seismicity

No significant impacts are anticipated. Thus, no mitigation measures would be required.

4.15.3.10 Exposure to Hazardous Substances

Mitigation measures listed in Section 4.8 Exposure to Hazardous Substances shall be implemented prior to construction activities to reduce effects to acceptable levels. Thus, no mitigation measures would be required during construction of the proposed Project.

4.15.3.11 Water Resources

C27 A program of best management practices (BMPs) and "best available technologies" shall be implemented to reduce potential impacts to water quality that may result form construction activities. To reduce and/or eliminate construction-related water quality impacts, before the onset of construction activities, Metro or its contractors shall obtain coverage under the NPDES General Construction Permit. Construction activities shall comply with the conditions in the permit, which include preparation of a stormwater pollution prevention plan, implementation of BMPs, and monitoring to ensure impacts to water quality are minimized. As part of this process, multiple BMPs shall be implemented to provide effective erosion and sediment control. These BMPs shall be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. BMPs to be implemented as part of this mitigation measure may include the following:

- Employ temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) for disturbed areas;
- Use BMPs that shall be acceptable to Metro, local jurisdictions, and the Regional Water Quality Control Board to protect storm drain inlets in the construction area and in downstream off-site areas;
- Sweep dirt and debris from paved streets in the construction zone on a regular basis, particularly before predicted rainfall events; and
- Provide grass or other vegetative cover on the construction site as soon as possible after disturbance.

C28 Water quality control measures shall be implemented to prevent release of sediment to Ballona Creek. Metro shall ensure that water quality control measures, such as silt barriers/curtains, are in place before construction activities begin along Ballona Creek.

4.15.3.12 Biological Resources

Mitigation measures listed in Section 4.10 Biological Resources would be implemented prior to construction activities to reduce impacts to acceptable levels. No additional measures would be required.

4.15.3.13 Energy Resources

C29 Metro shall implement a construction energy conservation plan. Metro shall encourage contractors to adopt construction energy conservation measures that including, but not limited to, the following:

- Use energy-efficient equipment;
- Incorporate energy-saving techniques during construction;
- Avoid unnecessary idling of construction equipment;

- Consolidate material delivery as much as possible to ensure efficient vehicle utilization;
- Schedule delivery of materials during non-rush hours to maximize vehicle fuel efficiency;
- Encourage construction workers to carpool; and
- Maintain equipment and machinery, especially those using gasoline and diesel, in good working condition.

4.15.3.14 Safety and Security

C30 Metro shall coordinate with and notify LAUSD when vehicular and pedestrian routes to school are affected.

C31 LAUSD, as well as LADOT and the Culver City Public Works department, shall be invited to participate as part of Metro's Third Party Coordination Group to ensure safe and convenient pedestrian routes to schools are maintained, and to publish and distribute school pedestrian route maps.

C32 Metro shall provide sufficient notices to forewarn children and parents when school pedestrian routes are affected.

C33 Metro or their designated contractor shall coordinate with and notify LAUSD the schedule for LRT construction. LAUSD shall be notified when construction would occur within a half-mile of a LAUSD school.

C34 Metro shall install appropriate traffic controls (signs and signals) as needed in conformance with LADOT and Culver City Public Works Department standards to ensure pedestrian and vehicular safety during construction.

C35 Metro shall provide, at no charge to LAUSD, an instructional safety program that will cover safety issues relative to construction of the LRT Project.

C36 Construction shall be scheduled and haul routes shall be planned to minimize conflicts during school arrival and dismissal times.

C37 Metro shall provide the funding for crossing guards in the vicinity of all construction sites and haul routes as warranted in accordance with criterion contained in the *California DOT Traffic Manual*, Chapter 10-07.3, Warrants for Adult Crossing Guards. Where the manual criterion does not warrant placement of crossing guards, Metro may provide crossing guards during school hours on a site-specific basis considering the conditions and criterion stated in the manual. Metro shall provide crossing guards during school arrival and departure hours during construction, where related lane closures will divert traffic to residential streets utilized by elementary and middle school students.

C38 The construction contractor shall be responsible for providing flag persons at construction sites and construction staging areas, as needed, where construction activities compromise the safety of pedestrians and/or motorists while traveling to and from school.

C39 The contractors shall be required, in conformance with provisions in the California Vehicle Code, to inform their drivers that they must drive cautiously in areas with concentrations of school children and must stop when they encounter school buses using red flashing lights.

C40 As part of the stipulations of the construction contract, the contractor shall not allow construction vehicles to stage or park along streets bordering school sites. Vehicles used to transport construction workers shall be required to park elsewhere. The adequacy of these provisions shall be reviewed with the LAUSD School Traffic and Safety Department.

C41 The contractor shall be responsible for providing security at construction sites at a level that Metro determines to be appropriate in accordance with *Metro Rail Transit Design Criteria and Standards, Fire/Life Safety Criteria*, Volume IX. Metro shall provide security patrols at construction staging and construction sites by Los Angeles law enforcement agencies under contract to Metro; install temporary fencing around major construction sites and construction staging areas; install screening, to block views of the major construction sites from motorists to avoid distraction; and install appropriate signage and lighting as required by LADOT and Culver City Public Works Department.

C42 Citations with fines shall be issued for trespassing on construction sites, by L.A. law enforcement agencies under contract to Metro.

C43 Newsletters shall be prepared and distributed to keep the public informed about safety issues during construction. In addition, information booths shall be provided at local community events.

C44 Standard lighting levels, as required by the City of Los Angeles and Culver City, for detours and existing roadways through and around construction zones shall be implemented.

4.15.3.15 Historic, Archaeological and Paleontological Resources

Mitigation measures listed in Section 4.13 Historic, Archaeological and Paleontological Resources would be implemented to reduce impacts on historic, archaeological and paleontological resources. No additional measures would be required.

4.15.3.16 Parklands and Community Facilities

Mitigation measures **C2**, **C3**, **C5**, and **C7** would also apply to parklands and community facilities.

4.15.4 CEQA DETERMINATION

The CEQA Guidelines implicitly acknowledge that construction-related changes may be the source of significant impacts to the physical environment even though these effects may be short in duration. The preceding discussion has addressed all topic areas of environmental effects as required by CEQA. Typically significant construction effects are identified in CEQA as changes to the physical environment that are particularly disruptive or that have specific health and safety considerations. The construction effects identified above by in large require the development and implementation of a comprehensive array of construction management and abatement measures as described in "4.15.3 Mitigation Measures." Those environmental changes requiring mitigation would be considered significant for purposes of CEQA and include:

- Traffic
- Parking
- Equity & Environmental Justice Considerations
- Land Use/Neighborhoods
- Land Acquisition/Displacement
- Visual Quality

- Air Quality
- Noise and Vibration
- Geology, Soils, and Seismicity
- Exposure to Hazardous Substances
- Water Resources
- Biological Resources
- Energy Resources
- Safety and Security
- Historic, Archaeological and Paleontological Resources
- Parkland and Community Facilities

4.15.4.1 Traffic

No Action. The No Action Alternative would not result in any traffic impacts.

LPA. Construction of the proposed Project would interfere with normal flow of traffic, causing some lanes to be closed to vehicles for various durations. Reconstruction of traffic lanes, as well as construction vehicle and worker traffic, would reduce the capacity of certain street segments, resulting in reduced daytime travel speeds and traffic delays. The disruption of traffic could impact motorists, as well as school buses and Emergency Service Response time. To minimize any disruptions to traffic, mitigation of potential traffic impacts, traffic management, and traffic control measures would be implemented with the coordination and involvement of the City of Los Angeles, Culver City, and the Los Angeles School District (LAUSD). Although the impacts would be temporary, they would be considered significant.

Downtown Los Angeles Connection Options. Similar to the LPA, the construction of the Downtown Los Angeles Connection options would interfere with the normal flow of traffic causing some lanes to be closed to vehicles for various durations. For the Hill Street Couplet Design Option, these disruptions would be concentrated along 17th and 18th Streets between Flower Street and Hill Street, and along Hill Street between 17th Street and Washington Boulevard. Construction along 17th and 18th Streets would also affect on- and off-ramps to I-10 (Santa Monica Freeway). For the Flower Street Eastside and the Flower Street Westside Design Options, traffic disruptions would extend from just north of Washington Boulevard to the Exposition ROW.

Construction of the undercrossing associated with the Flower Street option would likely require the closure of Flower Street between Jefferson Boulevard and the Exposition ROW. Exposition Boulevard between Flower Street and just west of Figueroa Street would also be closed for longer periods of time. These closures would also likely entail the temporary closure of the I-110 Freeway southbound off-ramp at Exposition Boulevard. As a result, there would likely be a substantial re-routing of traffic in USC and Exposition Park that would require the development and implementation of a Construction Traffic Management Plan to minimize adverse impacts to circulation and access in this area.

La Cienega Station Parking Options. Similar to the LPA, construction of the parking structure would require the temporary closure of travel lanes either on Jefferson Boulevard or La Cienega Boulevard. This would result in traffic disruptions and would require the implementation of a Construction Traffic Management Plan.

Jefferson Boulevard Design Options. Similar to the LPA, the construction of the grade separation structure at Jefferson Boulevard would entail the temporary closure of one or more north-south travel lanes as the structure is extended above the surface street. Unlike the LPA, however, the Medium Bridge option would not require the construction of an at-grade intersection at National and Jefferson Boulevards where temporary lane closures would also be required. The Medium Bridge would be extended above the existing intersection to a point near Fay Avenue in Culver City. The construction of the extended bridge structure, however, would also likely require the temporary closure of lanes along Jefferson Boulevard near National Boulevard. This closure would likely result in traffic delays and possible diversion of traffic to Rodeo Road or Washington Boulevard. A Construction Traffic Management Plan would be required to phase construction to maintain access and reduce potential traffic delays in the area.

It should be noted that under LPA, as well as the other options/alternatives, that the westbound lanes of National Boulevard from a point just west of Ballona Creek to Hayden Avenue would be vacated and relocated southward into a single National Boulevard facility. This relocation process will likely require the conversion of National Boulevard to one lane in each direction for a temporary period until the roadway is widened. This would result in traffic delays and likely traffic diversion to Jefferson and Washington Boulevards during peak travel periods. Although temporary, these effects would be adverse and would require the implementation of traffic and circulation management plans to reduce impacts.

Venice/Robertson Design Options. Construction of the proposed design options would result in varying degrees of disruption to traffic. The North of ROW and ROW station options would result in little disruption to traffic. One traffic lane on National Boulevard would potentially need to be closed to allow for enough room for construction machinery. Construction of the Aerial station option would result in more severe traffic impacts as a bridge would be constructed over all lanes of Washington Boulevard. Street closure would likely be necessary. A Construction Traffic Management Plan would be required to phase construction to maintain access and reduce potential traffic delays in the area.

Phased Implementation. The construction of a segment between Metro Center and Vermont would have traffic effects similar to the LPA and to the Downtown Los Angeles Connection Options. The construction of a segment that extended from Metro Center to Crenshaw Boulevard would have traffic effects similar to the LPA. Lane closures along Exposition Boulevard between Flower Street and Gramercy Place would create some traffic delays. Closure of median openings along Exposition Boulevard between Figueroa Street and Gramercy Place during construction would also affect local circulation patterns. Other than the placement of tracks at Crenshaw Boulevard, it is not anticipated that construction in this segment would result in traffic delays or traffic disruptions. Construction at Crenshaw Boulevard, similar to other major arterial crossings, would require the implementation of a Construction Traffic Management Plan to maintain north-south access and to minimize traffic delays. Construction of the La Cienega Segment would introduce the same type of concerns as the Crenshaw Segment. A Congestion Traffic Management Plan would also be necessary in this segment to maintain traffic flow in neighborhoods and at major arterial crossing such as La Brea Avenue.

4.15.4.2 Parking

No Action. The No Action Alternative would not have any parking impacts.

LPA. Curb parking may be prohibited when traffic lanes are closed due to construction activities. The loss of parking could affect business accessibility. Prior to construction, public affairs and construction staff would contact and interview individual businesses, allowing for knowledge and understanding of how these businesses carry out their work. This information would be used by Metro to develop Work Site Traffic Control Plans, identify alternative access routes, and make efforts during construction to maintain critical business activities. This process would mitigate impacts to less-than-significant levels.

Downtown Los Angeles Connection Options. Similar to the LPA, the construction of the Downtown Los Angeles Connection options would displace curb parking. The Hill Street Couplet Mitigation option would entail the removal of a small number of existing curb spaces along 17th and 18th Streets, as well as along Hill Street (between 17th Street and Washington Boulevard). It should be noted along these streets there are currently less than 25 curb parking spaces. For the Flower Street option, 53 curb spaces along the east side of Flower Street would be removed during construction and the removal would remain permanent (Section 3.3 Parking).

La Cienega Station Parking Options. There is no curbside parking adjacent to the existing storage facility at La Cienega and Jefferson Boulevards. Construction of the proposed structure would not have any parking impacts.

Jefferson Boulevard Design Options. Similar to the LPA, the construction of the grade separation structure would entail the removal of parking along Jefferson Boulevard between La Cienega Boulevard and Ballona Creek. Approximately five spaces would be affected. This removal would be permanent. This amount of removal is not considered adverse. It should be noted that under LPA as well as the other alternatives, that the westbound lanes of National Boulevard from a point just west of Ballona Creek to Hayden Avenue will be vacated and relocated southward into a single National Boulevard facility. This relocation process would likely require the conversion of National Boulevard to one lane in each direction for a temporary period until the roadway is widened. Curb parking spaces between Hayden Avenue and Eastham Drive would be temporarily removed during construction. Off-street parking spaces in the Metro-owned ROW between Hayden Avenue and Eastham Drive would be permanently removed.

Venice/Robertson Design Options. There is little on-street parking near the intersections of Washington and National Boulevards and Venice and Robertson Boulevards. The ROW station option would be constructed just north of National Boulevard and just south of the Wesley Street cul-de-sac where no on-street parking exists. The ROW and Aerial Station Options would temporarily remove curb parking spaces.

Phased Implementation. The construction of a segment between Metro Center and Vermont would have parking effects similar to the LPA and to the Downtown Los Angeles Connection Options. The construction of a segment that extends from Metro Center to Crenshaw Boulevard would also have temporary curb parking impacts similar to the LPA.

4.15.4.3 Land Use/Neighborhoods

No Action. The No Action Alternative would not result in any land use/neighborhoods impacts.

LPA. Construction for the proposed Project would occur within street and railroad rights-of-way, where it would be compatible with existing use (transportation). Construction of parking and TPSS would occur outside of existing street rights-of-way. Construction staging areas would also be located outside of the rights-of-way. However, these activities would not physically divide existing communities or require a change in land use designation.

Land and street closures during construction could disrupt access to a neighborhood or community temporarily. With the exception of access disruption, these temporary impacts would affect individuals or individual property owners, but they would not divide a neighborhood, remove important amenities, or affect the integrity of the neighborhood as a whole. Access to some neighborhoods may be detoured for short periods of time during construction, but access would continue to be available to neighborhoods for both residents and emergency response.

Along some portions of the alignment (i.e., between Vermont Avenue and Crenshaw Boulevard, near La Brea Avenue, between Fay Avenue and Westley Street, and near the intersection of Venice and Robertson Boulevards), construction would occur near residential neighborhoods. Although construction activities would be located within existing street and railroad rights-of-way, construction activities would be incompatible with these residential uses due to increased traffic congestion, air pollution, noise and vibration, and decreased visual quality and safety. These issues are discussed in other portions of this section. With the exception of traffic congestion and air pollution, construction of the proposed Project would result in less-than-significant impacts on land use and neighborhoods.

Downtown Los Angeles Connection Options. The Downtown Los Angeles Connection option would pass through commercial and industrial areas. The construction along these option routes would not create barriers nor adversely affect residential neighborhoods.

La Cienega Station Parking Options. Construction of the Southwest Corner Option would not occur adjacent to a residential area. The construction of this option would not create barriers nor adversely affect residential neighborhoods.

Jefferson Boulevard Design Options. The construction of the grade separation structure for the design options would entail construction activities in an area extending from a point just of east of Fay Avenue in Culver City to several hundred feet east of La Cienega Boulevard. The construction work east of La Cienega Boulevard would affect residences and apartments on the north side of Jefferson Boulevard for the LPA, as well as for each design option. Construction activities would also occur near several residences on the north side of National Boulevard near Fay Avenue. Construction would likely temporarily close access from Fay Avenue to the Metro ROW from the adjacent neighborhood. The temporary closure would also affect access to Syd Kronenthal Park from neighborhoods on the south side of National Boulevard.

Venice/Robertson Design Options. Construction for the ROW station option and North of ROW options B and C would occur within a few hundred feet of residences located just north of the ROW on south Helms Avenue. North of ROW option A would be several hundred feet further west of these residences, and the Aerial Station option would be farther removed from these residences on the west side of the Washington and National Boulevards intersections. Land use impacts related to construction of the Venice/Robertson station would be similar to those discussed for the LPA. Adverse construction effects in this area would include traffic access, air emissions and noise. A construction mitigation plan shall include, but not be limited, a Traffic Management Plan, as well as the continued monitoring of air emissions and noise during construction, to reduce and/or eliminate adverse impacts.

Phased Implementation. The construction of a segment between Metro Center and Vermont Avenue would not pass through nor directly affect residential neighborhoods. The segments between Vermont Avenue and Crenshaw Boulevard and Crenshaw Boulevard and La Cienega Boulevard would pass through predominantly residential areas. Adverse construction effects in this area would include traffic access, air emissions and noise. A construction mitigation plan would be necessary in these areas to reduce and/or eliminate adverse impacts.

4.15.4.4 Land Acquisition, Displacement and Relocation

No Action. The No Action Alternative would not result in any land acquisition, displacement or relocation impacts.

LPA. Land acquisition and the termination of Metro ROW leases would occur prior to construction. These effects are discussed in Section 4.2 Land Acquisition, Displacement and Relocation of this report.

Construction of the proposed Project could disrupt businesses due to loss of parking or business access. These impacts are discussed above under "Parking" and "Equity and Environmental Justice Considerations." As discussed, implementation of mitigation measures would reduce impacts to less-than-significant levels.

Downtown Los Angeles Connection Options. Land acquisition and the termination of Metro ROW leases associated with the Downtown Connection Options would occur prior to construction. These effects are discussed in Section 4.2 Land Acquisition, Displacement and Relocation of this report.

La Cienega Station Parking Options. Land acquisition and the termination of Metro ROW leases associated with the Downtown Connection Options would occur prior to construction. These effects are discussed in Section 4.2 Land Acquisition, Displacement and Relocation of this report.

Jefferson Boulevard Design Options. Land acquisition and the termination of Metro ROW leases associated with Jefferson Boulevard Design Options would occur prior to construction. These effects are discussed in Section 4.2 Land Acquisition, Displacement and Relocation of this report.

Venice/Robertson Design Options. Land acquisition and the termination of Metro ROW leases associated with the Downtown Connection Options would occur prior to construction. These effects are discussed in Section 4.2 Land Acquisition, Displacement and Relocation of this report.

Phased Implementation. Land acquisition and the termination of Metro ROW leases associated with Phased Implementation options would occur prior to construction. These effects are discussed in Section 4.2 Land Acquisition, Displacement and Relocation of this report.

4.15.4.5 Equity and Environmental Justice Considerations

No Action. The No Action Alternative would not result in any equity and environmental justice considerations or impacts.

LPA. Potential access changes to community facilities are discussed in Section 4.14 Parklands and Community Facilities of this report. During construction, access to local facilities, services and residences could be obstructed. Additionally the loss of curb parking could result in decrease patronage at adjacent local businesses. Businesses most affected, would be those that heavily depend on curb parking and convenient access from the major street. An access maintenance plan would be necessary to ensure that adverse effects are minimized.

Downtown Los Angeles Connection Options. Similar to the LPA, the construction of the Downtown Los Angeles Connection options could affect access to community facilities, businesses and residences. The Hills Couplet Mitigation Option would change the accessibility of businesses along 17th and 18th Streets, as well as Hill Street, between 18th Street and Washington Boulevard. In these areas the primary effects would include loss of some curb parking and disrupted access to driveways and loading areas. A construction mitigation plan would need to be implemented to ensure that adverse effects on the accessibility of adjacent businesses would be maintained.

Construction of the Flower Street options would could affect the accessibility of local facilities and businesses during construction. Construction could affect access to Los Angeles Trade Technical Community College, Orthopedic Hospital and to the USC Galen Center –currently under construction. An access maintenance plan would be necessary to ensure that adverse effects are minimized.

La Cienega Station Parking Options. Construction of the proposed parking structure would not affect any residences as the area is commercial and semi-industrial. No disproportionate effects to low-income or minority populations would result.

Jefferson Boulevard Design Options. Similar to the LPA, the construction of the Bridge Design Options would affect business accessibility along Jefferson Boulevard between La Cienega Boulevard and Ballona Creek. An access maintenance plan would be necessary to ensure that adverse effects are minimized.

Venice/Robertson Design Options. Similar to the LPA, construction of the Venice/Robertson station would affect business accessibility along Jefferson Boulevard between La Cienega Boulevard and Ballona Creek. An access maintenance plan would be necessary to ensure that adverse effects are minimized.

Phased Implementation. The construction of a segment between Metro Center and Vermont Avenue would have effects on local facilities, services, and businesses similar to the LPA and to the Downtown Connection Options. The primary effects of the Vermont segment construction would be local businesses on Hill Street and to the accessibility of the USC campus and to Exposition Park. The construction of a segment that extends from Metro Center to Crenshaw Boulevard would have the added impact on the accessibility of residences between Vermont Avenue and Gramercy Place, as well as on the pedestrian and bus accessibility of the Foshay Learning Center.

4.15.4.6 Visual Quality

No Action. The No Action Alternative would not result in any visual quality impacts.

LPA. Along some portions of the Alignment, construction would be visible at nearby residential neighborhoods, which would result in a temporary nuisance to residents in the vicinity, but would constitute a less-than-significant impact. Construction lighting could alter lighting and create glare at nearby residential neighborhoods which would result in a significant impact. This impact could be reduced by constructing a temporary wall and diverting the light away from residential uses. Implementation of mitigation measures would reduce visual impacts.

Downtown Los Angeles Connection Options. The Downtown Los Angeles Connection option would pass primarily through commercial and industrial areas. Similar to the LPA, construction would also take place in the portion of the Metro ROW between Figueroa Street and Vermont Avenue that separates the USC campus from Exposition Park. Construction equipment and construction staging areas in this specific segment would be visually intrusive during the construction period.

La Cienega Station Parking Options. There are no residential neighborhoods adjacent to the intersection of La Cienega and Jefferson Boulevards where the parking structure is proposed. Construction of this option would be visually intrusive only to drivers and those coming in and out of local businesses.

Jefferson Boulevard Design Options. Due to the length of the bridge structure, construction of the design options would be partially visible to some residences in Culver City and from Syd Kronenthal Park. This temporary effect is not expected to constitute an adverse effect as no scenic vistas would be affected nor would spillover lighting be cast on residences.

Venice/Robertson Design Options. Construction staging for the ROW station option and North of ROW option B and C would be partially visible to residences at the south end of Helms Avenue and would have the potential to cast spillover lighting if nighttime construction is conducted. A construction mitigation plan including the use of a temporary wall and directional lighting would be necessary to ensure that the most intrusive aspects of construction on adjacent residences are substantially reduced. Construction of the North of ROW option A and Aerial Station option would occur further west, not directly adjacent to residential neighborhoods. Construction for these options would be visually intrusive only to drivers and those coming in and out of local businesses.

Phased Implementation. The construction of a segment between Metro Center and Vermont Avenue would have construction-related visual effects similar to the Downtown Los Angeles Connection option in the USC/Exposition Park area. Similar to the LPA, the segment between Vermont Avenue and Crenshaw and La Cienega Boulevards would pass through numerous residential areas. Adverse construction-related visual effects would entail equipment, staging areas, and spillover lighting from nighttime construction if required. A construction mitigation plan would be necessary to ensure that the most intrusive aspects of construction on adjacent residences would be substantially reduced.

4.15.4.7 Air Quality

No Action. The No Action Alternative would not entail construction and thus would not result in construction-related air quality impacts.

LPA. The Project would generate pollutant emissions from the following construction activities: 1) demolition of existing structures, 2) grading and excavation, 3) welding related to continuously welded rail (CWR) operations, 4) mobile emissions related to construction workers traveling to and from construction areas, 5) mobile emissions related to the delivery and hauling of construction supplies and debris to and from construction sites, and 6) stationary emissions related to fuel consumption by on-site construction equipment.

An estimate of worst case daily construction emissions indicates the generation of approximately 32 pounds of carbon monoxide(CO),two pounds of reactive organic gas (ROG), 23 pounds of nitrogen dioxide (NO_X), less than one pound of sulfur oxides (SO_X) and 412 pounds of particulates (PM_{10}). Application of the daily construction emissions criteria established by the South Coast Air Quality Management District (SCAQMD) as part of the Air Quality Management Plan (AQMP) indicates that PM_{10} emissions from grading and excavation would substantially exceed the criteria, and an adverse construction impact for PM_{10} is expected. The effects of lane closures and intersection improvements during construction would also reduce traffic speeds and result in increased emissions, particularly CO hot spots at major points of delay.

Although the total construction period is expected to last approximately three years, it should be noted that air quality impacts will highly localized and short term as the construction process moves linearly along the corridor. Impacts at an individual receptor would be short term and substantial adverse effects at an individual location are not anticipated.

Downtown Los Angeles Connection Options. The Downtown Los Angeles Connection options would have an incremental affect on daily construction emissions. Worst case PM_{10} emissions from the Hill Street Mitigation Option would add seven pounds per day, increasing the total daily emissions of PM_{10} to 419 pounds per day (a 1.6 percent increase over LPA PM_{10} emissions). For all other criteria pollutants emissions would remain below SCAQMD criteria levels.

PM_{10} emissions for the Flower Street Design Option~~s~~ would result from the following incremental effects compared to the LPA. Track-bed grading would produce 45 pounds per day and construction of an open trench would result in 99 pounds per day for the USC Exposition Park Undercrossing, the USC Exposition Park Modified Undercrossing, and the USC Exposition Park Undercrossing Extended options. Excavation for the undercrossing would result in a 24 percent increase in emissions above the LPA PM_{10} daily emissions level. Although daily emissions for the three options would be the same, total emissions for the USC Exposition Park Undercrossing Option would result in greater overall emissions as excavation for this option would occur over a greater distance than the other two undercrossing options. Adverse impacts for all the Flower Street options would thus be substantially more severe than the LPA. For all other criteria pollutants, Flower Street Design Option would result in worst case daily construction emissions exceeding SCAQMD criteria levels.

La Cienega Station Parking Options. Under the LPA, a parking structure would be constructed at La Cienega Boulevard. The Southwest Corner option would relocate the parking structure to the opposite corner of the Jefferson and La Cienega Boulevards intersection; however, the change location would not significantly alter air quality impacts expected for the LPA.

Jefferson Boulevard Design Options. It is not expected the either bridge design option would have construction air emissions substantially different from the LPA, largely because the same amount of surface area would be disturbed and graded under each option. No incremental adverse impacts would be anticipated from these bridge options.

Venice/Robertson Design Options. Construction of the ROW and North of ROW station options would involve construction activities similar to those described for the LPA. Construction of either of these options would result in similar emissions to the other LPA at-grade stations. The Aerial Station option would result in greater emissions than the other station options. Greater excavation to construct the station's support structure would result in worse daily emissions than the at-grade stations.

Phased Implementation. Daily construction emissions for the Vermont, Crenshaw, and La Cienega Segments would be the same as the LPA since daily construction activities would be the same. However, overall emissions for the three segments would be proportionally less than the LPA as the length of these segments are shorter than the LPA. PM_{10} levels would continue to exceed the SCAQMD daily emissions criteria levels and adverse impacts are anticipated. For all other criteria pollutant SCAQMD daily construction emissions levels would not be exceeded, and no adverse impacts are anticipated.

4.15.4.8 Noise and Vibration

No Action. The No Action Alternative would not result in any noise and vibration impacts.

LPA. Impacts from construction noise would be likely whenever construction would be located within about 300 feet of residences, schools, or places of worship. The impact distances increases substantially for any construction that must be performed during nighttime hours.

Construction of the proposed Project would need to comply with the requirements of Section 112.03 and 41.40 of the City of Los Angeles Municipal Code, Section 9.07.035 of the Culver City Municipal Code, and any variances to the Code issued by the two cities. The City of Los Angeles regulations prohibit construction between 9:00 p.m. and 7:00 a.m. without a variance. Culver City prohibits construction between 8:00 p.m. and 8:00 a.m. on Mondays through Fridays, between 7:00 p.m. and 9:00 a.m. on Saturdays, and between 7:00 p.m. and 10:00 a.m. on Sundays.

If nighttime construction would occur, Metro would be required to obtain a variance from the City of Los Angeles and/or Culver City. As an example, the City of Los Angeles previously issued a noise variance for Metro Red Line construction that allowed construction between 9:00 p.m. and 7:00 a.m. as long as: 1) construction noise did not exceed ambient noise level plus five decibels, and 2) construction noise did not result in substantial community complaints being registered with the City.

Typical methods to control construction noise would include requiring the contractor to construct sound walls, placing restrictions on construction during nighttime hours, limiting the use of particularly noisy activities such as impact driving and jackhammering, and requiring construction to be performed in compliance with specific equipment and property line noise limits.

It is expected that ground-borne vibration from construction activities would cause only intermittent localized intrusion along the route alignment. Construction activities most likely to cause vibration impacts are as follows:

- **Heavy construction equipment**. Although all heavy, mobile construction equipment has the potential of causing at least some perceptible vibration when operating close to buildings, the vibration is usually short term and is not of sufficient magnitude to cause building damage. It is not expected that heavy equipment such as bulldozers, front-end loaders, or cranes would operate close enough to any residences to cause vibration impact.

- **Jackhammers and Vibratory Compaction equipment.** This type of equipment would be used for relatively short periods of time during the demolition phase, preparation of the subgrade, and during final site restoration. If residents complain about intrusive vibration, the contractor would be required to modify the procedure or arrange to complete the task in a manner that will cause the minimum amount of nuisance for the affected residents.

- **Grinding equipment.** Grinding equipment would be necessary to remove painted lines from street, per LADOT requirement. If residents complain about intrusive vibration, the contractor would be required to monitor vibration levels at the residence and modify the procedures if the vibration exceeds a safe threshold.

- **Impact pile driving.** Impact pile driving should be avoided at distances less than 250 feet from any residence. If no other approach is acceptable, the contractor would be required to monitor vibration levels at the residence and modify the procedures if the vibration exceeds a safe threshold.

- **Trucks.** Trucks hauling excavated materials from construction sites could be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes would reduce the likelihood of vibration from trucks.

Implementation of mitigation measures would reduce noise and vibration impacts to less-than-significant levels.

Downtown Los Angeles Connection Options. The Downtown Los Angeles Connection options would have noise and vibration impacts similar to the LPA. The key difference between these options and the LPA would be the number of type of noise-sensitive receptors affected. New construction along the LPA in the Downtown area would begin near the intersection of Washington Boulevard and Hill Streets and extend southward along Hill Street to the Exposition ROW. Once along the east-west portion of the ROW construction would extend to Vermont Avenue. Within the areas of new construction, sensitive land uses would include John Adams Middle School, uses along the southern perimeter of the USC campus and school and the Rose Garden open space in Exposition Park.

For the Downtown Los Angeles Connection options construction noise-affected receptors along the east-west ROW segment would be the same as the LPA. The Hill Street Couplet Design Option would affect additional residences located near the intersection of 17th Street and Hope Street. For the Flower Street Design Option, shifting the LRT route from Hill Street to Flower Street would eliminate potential construction effects on the Adams Middle School but add potential construction noise effects to classrooms at Los Angeles Trade Technical Community College, Orthopedic Hospital and an apartment southwest of the Flower and 23rd Streets intersection. Each of these locations would require the implementation of a construction noise abatement plan to eliminate adverse impacts.

The construction of the undercrossing associated with the Flower Street option would likely entail the most intensive construction activity and use of heavy equipment. However, there are no noise-sensitive land uses along Flower Street between Jefferson Boulevard and the Exposition ROW where these activities would be concentrated. Thus, no adverse impacts are anticipated.

La Cienega Station Parking Options. There are no residences adjacent to the intersection of Jefferson/ La Cienega Boulevards where the proposed parking structure would be constructed. Noise and vibration from construction could affect local businesses in the surrounding area such as the nearby radio station. A construction noise abatement plan would be implemented to eliminate adverse impacts.

Jefferson Boulevard Design Options. The bridge options under consideration would have noise and vibration impacts similar to the LPA. The key difference between these options and the LPA would be the number of type of noise-sensitive receptors affected. The bridge construction associated with the LPA at La Cienega Boulevard would potentially affect residences on the north side of Jefferson Boulevard. The portion of the bridge that extends westward across La Cienega Boulevard would be within industrial areas and would not affect noise-sensitive land uses. Both of the bridge design options would extend the structure further west into Culver City near Fay Avenue. It is near Fay Avenue that bridge construction activities would affect adjacent residences on the north side of the Metro-owned ROW. A construction noise abatement plan would be needed to eliminate adverse impacts at this location.

Venice/Robertson Design Options. Construction for the ROW station option and the North of ROW option B and C would occur within a few hundred feet of residences at the south end of Helms Avenue. The North of ROW and Aerial Station options would occur further west, farther from these residences, however, construction for these options could affect surrounding businesses. In all cases, a construction noise abatement plan would be implemented to eliminate adverse impacts at this location.

Phased Implementation. The construction of the segment between Metro Center and Vermont Avenue would have construction noise effects similar to the LPA and to the Downtown Connection Options, particularly at John Adams Middle School, USC, and Exposition Park. The construction of a segment that extended from Metro Center to Crenshaw Boulevard would have construction noise effects similar to the LPA. In the segment between Vermont and 4th Avenues, the proximity of adjacent residences would require the implementation of construction noise abatement plans to reduce and/or eliminate adverse impacts. In the La Cienega Segment, the proximity of residences to the ROW, including the residential area between Cloverdale Avenue and La Brea Avenue, would also require a noise abatement plan.

4.15.4.9 Geology, Soils, and Seismicity

No Action. The No Action Alternative would not result in any geology, soils and seismicity construction impacts.

LPA. Construction of the proposed Project would require earthwork for street-level segments. This would include modification of existing grades; removal and recompaction of the subgrade to provide a suitable base for trackwork, parking lot and street construction; foundation excavations for stations and parking structures and other transit improvements; and trench excavation and backfill for utilities and drainage pipes.

As discussed in Section 4.7 Geology, Soils and Seismicity, the route alignment would traverse an Alquist-Priolo Fault Hazard Zone along several portions of the alignment. As in all of Southern California, there are also potentially significant impacts associated with regional faults. Although potential significant impacts exist, the proposed Project would be a mass transportation corridor to be built in an existing developed area. As construction for the proposed Project would occur at street-level, construction workers would not be exposed to adverse effects associated with rupture of known earthquake faults, strong seismic groundshaking, landslides, or liquefaction.

The Project area is approximately two miles away from the nearest known methane deposit and approximately 1.75 miles from the nearest known hydrogen sulfide deposit. This is too far to cause an impact to the Project. Thus, adverse effects associated with subsurface toxic or explosive gases are not anticipated, and no impacts are anticipated.

Downtown Los Angeles Connection Options. The Downtown Los Angeles Connection options would have geology, soils and seismicity effects similar to the LPA. The Flower Street Design Option would require the construction of an undercrossing. This structure would be designed to satisfy building code mandated structural and foundation specifications to ensure the integrity of the undercrossing during a seismic event. No adverse impacts are anticipated.

La Cienega Station Parking Options. The proposed parking structure would have geology, soils, and seismicity effects similar to the LPA. In addition to adherence to the geological, soils, and seismic mitigation recommendations, as defined by the responsible geotechnical, soils, and civil/structural engineers, this structure would be designed to satisfy building code mandated structural and foundation specifications to ensure the integrity of the parking structure during a seismic event. No adverse impacts are anticipated.

Jefferson Boulevard Design Options. The bridge design options would have geology, soils and seismic effects similar to the LPA. Both of the bridge design options would place an aerial structure within an Alquist-Priolo Fault Hazard Zone. This bridge structure, as well as all other structures along the route, would be designed to satisfy building code mandated structural and foundation specifications to ensure the integrity of the bridge structure during a seismic event. No adverse impacts are anticipated.

Venice/Robertson Design Options. The ROW and North of ROW station options would have geology, soils, and seismicity effects similar to other at-grade stations proposed under the LPA. The Aerial Station Option would require similar geology, soils, and seismicity considerations as those given to the La Cienega and La Brea stations proposed under the LPA. In addition to adherence to the geological, soils, and seismic mitigation recommendations, as defined by the responsible geotechnical, soils, and civil/structural engineers, this structure would be designed to satisfy building code mandated structural and foundation specifications to ensure the integrity of the parking structure during a seismic event. No adverse impacts are anticipated.

Phased Implementation. The construction of the segment between Metro Center and Vermont Avenue would have geotechnical effects similar to the LPA and to the 7th Street/Downtown Los Angeles Connection Options. The construction of a segment that extends from Metro Center to Crenshaw Boulevard would also have geotechnical effects similar to the LPA. No major aerial or undercrossing structures would be included in phased implementation. In addition to adherence to the geological, soils, and seismic mitigation recommendations, as defined by the responsible geotechnical, soils, and civil/structural engineers, this structure would be designed to satisfy building code mandated structural and foundation specifications to ensure the integrity of the parking structure during a seismic event. No adverse impacts are anticipated.

4.15.4.10 Exposure to Hazardous Substances

No Action. The No Action Alternative would not result in any exposure to hazardous substances impacts.

LPA. Hazardous materials could be encountered during grading and excavation within the ROW. The construction work for the proposed Project would generally be contained to the upper five feet of soil, thereby limiting the possibility of unearthing contaminated soil. The Preliminary Environmental Initial Site Assessment, prepared by Diaz Yourman & Associates in November 2003, indicated that in or adjacent to the ROW there are instances of potentially leaking USTs, stained soil, and small soil stockpiles. These occurrences create the potential for an encounter with a hazardous material which would constitute a significant impact. However, mitigation measures listed in Section 4.8 Exposure to Hazardous Substances would be implemented prior to construction of the proposed Project. Thus, no adverse impacts are anticipated.

Downtown Los Angeles Connection Options. It is expected that the exposure to hazardous substances and materials would be somewhat less for the Downtown Los Angeles Connection Options compared to the LPA. The reduced effect is anticipated because most of the construction work would occur either within an existing street ROW or within the Exposition ROW between Hill Street and Vermont Avenue where few (if any) hazardous conditions have been identified through records searches and field observations.

La Cienega Station Parking Options. The construction of the proposed parking structure would require excavation to a depth of approximately 25 feet for the lower parking levels. Preliminary testing at La Cienega Boulevard did not show contaminated soil. However, additional testing in this location may be necessary upon direction from Metro, to confirm the absence of contaminated materials. Mitigation measures listed in Section 4.8 Exposure to Hazardous Substances would be implemented prior to construction of the proposed Project and would address this concern. No adverse impacts are anticipated.

Jefferson Boulevard Design Options. The construction of the bridge design options would result in exposure to hazardous materials similar to the LPA because the ground surface area disturbed by these options would be the same as the bridge structure proposed under the LPA.

Venice/Robertson Design Options. Construction of the ROW Station Option would occur in the ROW north of National Boulevard at Wesley Street. This ground would be disturbed under the LPA and potential exposure to hazardous substances would be the same as the LPA. The North of ROW Options would disturb soil on plots of land currently occupied by businesses. The Aerial Station Option would excavate the same area for the LPA proposed Venice/Robertson station, but at significantly deeper depths to construct the caissons. For the North of ROW and Aerial Station options, additional soil testing would be required to verify the absence of hazardous materials. Mitigation in Section 4.8 Exposure to Hazardous Substances addresses this issue. Mitigation would be implemented prior to construction of the proposed Project, thus, no adverse impacts are anticipated.

Phased Implementation. The construction of the segment between 7th Street/Metro Center and Vermont Avenue would create exposure to hazardous materials less than the LPA because the area traversed is either existing street ROW or the portion of the Exposition ROW where few, if any, hazardous materials have been identified. The construction of the Crenshaw and La Cienega Segments would result in exposure to hazards similar to the LPA because most of the identified hazardous conditions for the LPA would be located in this segment. Implementation of abatement and remediation measures would be needed in this segment to reduce adverse impacts.

4.15.4.11 Water Resources

No Action. The No Action Alternative would not result in any water resources impacts.

LPA. During site grading and construction activities, large areas of bare soil would be exposed to erosive forces for long periods of time. Bare soils would be much more likely to erode than vegetated areas due to the lack of dispersion, infiltration, and retention created by covering vegetation. Construction activities involve soil disturbance, excavation, cutting/filling, stockpiling, and grading activities that could result in increased erosion and sedimentation to surface waters. If precautions are not taken to contain contaminants, construction could produce contaminated stormwater runoff (non-point source pollution), a major contributor to the degradation of water quality. Water quality impacts from construction activities may violate water quality standards, provide substantial additional sources of polluted runoff, or otherwise substantially degrade water quality.

Exposed soil during construction could affect existing drainage patterns and could lead to erosion or siltation. Best management practices would be employed throughout the construction process to limit runoff from the construction site. Further, implementation of mitigation measures would reduce impacts to less-than-significant levels.

No underground construction activities are anticipated for the LPA. Construction activities, such as excavation, are not anticipated to affect groundwater since construction activities would be limited to the street level. The depth of excavation would be limited to approximately five feet below the street level. Thus, no impacts associated to groundwater, such as subsidence, are anticipated.

Downtown Los Angeles Connection Options. Because of the similarity of the areas to be traversed by the LRT, the Downtown alignment options would have water resource impacts similar to the LPA, and there would be no adverse impacts. The Flower Street Design Option would entail excavation associated with the construction of an undercrossing, groundwater depth in this area is estimated to range from 15 to 50 feet. Dewatering and runoff management would be necessary to ensure there would be no adverse impacts from construction.

La Cienega Station Parking Options. Construction of the proposed parking structure would have water resource impacts similar to the LPA. Excavation to a depth of approximately 25 feet would be required to construct the lower parking levels. Due to the potential of encountering groundwater, dewatering and runoff management would be necessary to ensure no adverse water impacts. Best management practices would be employed throughout the construction process to limit runoff from the construction site. Implementation of mitigation measures would reduce impacts to less-than-significant levels.

Jefferson Boulevard Design Options. The construction of the bridge design option would not affect water resources. Although both bridge options would extend over the Ballona Creek flood control channel, there would be no construction within the channel that would adversely affect the potential for flooding. Thus, there would be no adverse water resource impacts.

Venice/Robertson Design Options. Construction of the Venice/Robertson design options would have impacts similar to the LPA. For the Aerial Station option, excavation to a significant depth would be required to construct the caissons. Due to the potential of encountering groundwater during excavation, dewatering and runoff management would be necessary to ensure no adverse water impacts. Best management practices would be employed throughout the construction process to limit runoff from the construction site. Implementation of mitigation measures would reduce impacts to less-than-significant levels.

Phased Implementation. The Phased Implementation Options would have minimal water resource impacts similar to the LPA. No major excavation affecting groundwater would be associated with the Vermont or Crenshaw Segment and neither option would traverse a 100-year flood plain. Thus, there would be no adverse impacts associated with the phasing options. In the La Cienega Segment, excavation to a significant depth would be required to construct the caissons. Due to the potential of encountering groundwater during excavation, dewatering and runoff management would be necessary to ensure no adverse water impacts.

4.15.4.12 Biological Resources

No Action. The No Action Alternative would not result in any biological resources impacts.

LPA. The area surrounding the Exposition ROW is highly urbanized and is devoid of native habitat, except within the area around Ballona Creek and Baldwin Hills Recreation Park. As discussed previously in Section 4.10 Biological Resources, eight species listed federally or by the state of California as Species of Concern, Threatened, or Endangered were found along the Study Area. Although these species may have been observed in the Study Area, the ROW and surrounding area does not have habitat suitable for these species. Within the segment extending from Figueroa Street to Farmdale Avenue, a distance of approximately four miles, the route would require the removal of existing landscaping. This landscaping has more aesthetic than natural habitat value because of its isolated location within a street median or former railroad ROW, but may house nesting raptors during breeding season. Mitigation measure **BR1** in Section 4.10 Biological Resources would be implemented prior to construction of the proposed Project. Thus, impacts associated with federally, state, or locally designated sensitive species are anticipated to be less-than-significant during construction of the proposed Project.

Construction of the proposed Project would occur at Ballona Creek, which is located in Culver City. A new bridge structure would be constructed at a point along Ballona Creek where the creek is in a concrete-lined flood control channel. Columns or piers will not be placed within the creek. The bridge structure would not affect the ecological value of the creek in any way. Mitigation measures listed in Section 4.10 Biological Resources would be implemented prior to construction of the proposed Project to ensure that impacts would be reduced to less than significant levels. Thus, during construction, significant impacts associated with biological resources are not anticipated.

Downtown Los Angeles Connection Options. Similar to the LPA, the Downtown Los Angeles Connections options traverse a highly developed urbanized area and would not pass through or adjacent to natural open space or habitat areas for listed or endangered plant or animal species. No biological resource impacts would result from the options under consideration

La Cienega Station Parking Options. The proposed parking structure would be in a semi-industrial, commercial area. There are no biological resources present on-site or adjacent to the site. Construction would not result in any impacts to biological resources.

Jefferson Boulevard Design Options. The construction of the Option D Short Bridge 2 and Option C Medium Bridge Design Options would not affect biological resources. Although the Option C Medium Bridge Design Option would extend over the Ballona Creek flood control channel, there would be no construction within the channel that would adversely affect listed or endangered plant or animal species.

Venice/Robertson Design Options. The proposed station design options would be in a semi-industrial, commercial area. There are no biological resources present on-site or adjacent to the site. Construction would not result in any impacts to biological resources. Any landscaping adjacent to the ROW removed during construction would be replaced.

Phased Implementation. The Phased Implementation Options would have no impact on biological resources. Similar to the LPA, these options would not pass through or be adjacent to sensitive natural or ecological areas.

4.15.4.13 Energy Resources

No Action. The No Action Alternative would not result in any energy resources impacts.

LPA. The highest indirect energy consumption would occur during demolition and then construction of on-site facilities, such as trackwork, guideways, structures, stations, and support facilities. Construction-related energy consumption would result in the one-time, non-recoverable energy costs associated with the construction and manufacturing of light-rail vehicles.

Unplanned and inefficient delivery of materials to the work sites would increase the number of truck trips required, resulting in the wasteful use of energy. In addition, wasteful consumption of energy would result if construction equipment and machinery are not kept in good condition. Equipment and vehicles left idling would also result in the unnecessary use of energy. Insofar as the proposed Project has only been designed to a preliminary level, specific details regarding construction practices and methods have not been identified. Impacts on non-renewable energy resources would be considered potentially significant. However, implementation of mitigation measures would reduce adverse impacts.

Downtown Los Angeles Connection Options. Construction-related energy consumption associated with the Downtown connection options would be similar to the LPA because the similar amount of new construction and construction techniques. Although the Flower Street Design Option would employ energy resources for the excavation of an undercrossing, the net increase in construction-related energy consumption compared to the LPA would be negligible because the construction of this option would require construction over a shorter distance within the Downtown Los Angeles area.

La Cienega Station Parking Options. Energy demands for the proposed La Cienega structure would be the same as those for the La Cienega parking structure considered under the LPA. No significant impacts are anticipated.

Jefferson Boulevard Design Options. The Bridge Design Options would require slightly more energy than the bridge contemplated under the LPA. Elements not included in the LPA, widening Jefferson Boulevard and constructing a longer bridge, would create a larger energy demand than the LPA-bridge. In both cases, these increases would be considered incremental and would not result in adverse impacts.

Venice/Robertson Design Options. The at-grade station design options would have similar energy demands to the Venice/Robertson Station proposed under the LPA. The Aerial Station Option would also require more energy than the LPA-proposed Venice/Robertson Station as excavation at greater depths and the construction of caissons would have to occur. This increase would be considered incremental and would not result in adverse impacts.

Phased Implementation. The Phased Implementation Options would result in less construction energy consumption than the LPA due to the proportionally shorter length of these options. There would be no aspect of either phasing option that would entail increased construction energy consumption compared to the LPA.

4.15.4.14 Safety and Security

No Action. The No Action Alternative would not result in any safety and security impacts.

LPA. Contractors employed with Metro in construction of the proposed Project would be required to comply with the Federal Occupational Health and Safety Administration (OSHA) and the California Division of Occupational Safety and Health (CAL/OSHA). Title 8 of the California Code of Regulations sets minimum standards for workplace safety and health for all employers and employees in California. For the construction industry, specific standards are found in the General Industry safety Orders, Construction Safety Orders, Electrical Safety Orders, and Compressed Air Safety Orders in Title 8. With this compliance, worker safety impacts would be less than significant.

Construction of the proposed Project would require a number of activities that would affect pedestrian and motorist's safety, such as construction activities along existing streets, excavation, construction traffic (including transport of debris), detours, and traffic lane and street closures. These construction activities could potentially affect safety of school children as they are walking to school. Implementation of mitigation measures would reduce impacts to less-than-significant levels.

Crime associated with construction sites includes trespassing, vandalism, and theft. Contractors would be aware of these issues and be protective of their equipment and materials. In addition, their liability if someone is injured on the site would make them vigilant against trespassing. Common construction security practices - such as fencing of staging areas, securing equipment, and using security guards - would prevent significant impacts related to crime during the construction period.

Downtown Los Angeles Connection Options. Construction techniques and methods for the Downtown Connection Options would be same as the LPA, and as a result, safety and security consideration for the Downtown Connection Options would be similar to the LPA. Neither the alternate alignment of LRT along 17th Street/18th Street for the Hill Street Couplet Design Option nor the alignment shift to Flower Street would create construction areas that raise unique or unusual safety and security concerns.

La Cienega Station Parking Options. Construction of the proposed parking structure would have safety and security requirements similar to the LPA. The proposed site would not be adjacent to any residences, and no unique safety and security concerns would exist for the parking options.

Jefferson Boulevard Design Options. The construction of the Option D Short Bridge 2 Design Option or the construction of the Option C Medium Bridge Design Option would have safety and security requirements similar to the LPA because the same general land surface would be affected. This would be particularly true for the construction area west of Ballona Creek adjacent to Syd Kronenthal Park where under any of the options considered the Metro ROW construction area would need barriers and personnel in place to ensure that users accessing the park from National Boulevard would not be adversely affected.

Venice/Robertson Design Options. Construction of the proposed station options would have safety and security requirements similar to the LPA. For the ROW Station Option that would be within a few hundred feet of residences at the south end of Helms Avenue, security fencing would prevent any unauthorized access to the site.

Phased Implementation. The construction-related safety and security considerations of the phasing options would be the same as the LPA, as these options would either pass adjacent to schools or residential areas. Safety and security measures would be implemented to eliminate adverse impacts.

4.15.4.15 Historic, Archaeological and Paleontological Resources

No Action. The No Action Alternative would not result in any impacts on historic, archaeological and paleontological resources.

LPA. Two archaeological sites (CA-LAN-69 and CA-LAN-70) are located 200 to 300 feet from the Exposition corridor. Due to this distance the two sites would not be affected by earthwork for construction of the proposed Project. However, it would be possible that archaeological remains associated with these sites may extend into the construction area and be subject to direct effect. One archaeological site lies within the Exposition corridor (CA-LAN-74). Excavation for construction of caissons for aerial structure supports for the proposed Project may result in alteration, removal, and destruction of the archaeological sites or of paleontological resources that could be present in the soils that underlie the Exposition ROW. Appropriate procedures for the potential encounter of paleontological and archeological resources provided in the mitigation measures of Section 4.13 Historic, Archaeological and Paleontological Resources would ensure that the integrity of any discovered resource would not be compromised.

As discussed in Section 4.13 Historic, Archaeological and Paleontological Resources, the Los Angeles and Independent Railway and the Pacific Electric's Santa Monica Air Line, an electric railcar with a catenary system, historically provided passenger service from Downtown Los Angeles to Santa Monica. The lines traveled down the full length of the Project's route alignment, the site the proposed Project would occupy. While the alignment is historically significant, the actual tracks and railroad related equipment are not. Construction of the light rail line would not require destruction, alteration, or displacement of historic buildings or artifacts within the construction area. The Ballona Creek bridge does have historic significance (see Jefferson Boulevard Bridge Options below for related impacts).

Downtown Los Angeles Connection Options. In addition to the construction impacts identified for the LPA, the Hill Street Couplet Design Option would require construction adjacent to the Olympic Auditorium on the southwest corner of 18th Street and Grand Avenue. The auditorium is listed on the National Register of Historic Places. Construction activities would not affect the building nor would the site of the building be affected and as a result there would be no adverse construction impact to this historic resource. The Flower Street Design Option would pass near the Saint Johns Church on the southwest corner of Adams Boulevard and Flower Street. Saint Johns is listed on the National Register of Historic Places. Construction in this area would be on the east side of Flower Street –furthest away from the resource property and there would be no direct or indirect adverse physical impacts to this resource.

Excavation associated with the Flower Street Design Option would require implementation of archaeological and paleontological accidental discovery measures to eliminate adverse impacts.

La Cienega Station Parking Options. The proposed parking structure would not be located adjacent to any historic structures. Archaeological and paleontological accidental discovery measures would be employed during the parking structure excavation period. These measures would ensure proper handling of any discovered resources and reduce potential impacts to a less-than-significant level.

Jefferson Boulevard Design Options. The construction of the bridge design options would not affect any known historic resource. An adverse impact would result from its demolition.

The construction of footings for the bridge structures –particularly in the vicinity of Ballona Creek– would require the implementation of accidental discovery and disposition procedures for archaeological and paleontological resources to eliminate adverse impacts.

Venice/Robertson Design Options. The proposed station options would not be located adjacent to any historic structures. Archaeological and paleontological accidental discovery measures would be employed during the grading and excavation of the station area. These measures would ensure proper handling of any discovered resource which is of particular concern for the Aerial Station option where excavation would occur to a more significant depth than the other options. No significant impacts are anticipated.

Phased Implementation. The construction-related historic resource considerations of the phasing options would be the same as the LPA, as the vast majority of all identified historic resources for the Project are located in the segment between Downtown Los Angeles and Vermont Avenue. No impact to Ballona Creek bridge would result.

4.15.4.16 Parklands and Community Facilities

No Action. The No Action Alternative would not result in any parklands and community facilities impacts.

LPA. Construction of the proposed Project would not displace any community facilities. However, vehicular access may be limited during construction activities due to temporary street or lane closures. Additionally, loss of on-street parking during construction could potentially reduce access to nearby community facilities. Implementation of mitigation measures would reduce impacts to less-than-significant levels.

Downtown Los Angeles Connection Options. Similar to the LPA, construction of the Downtown connection options would not directly take any property from a community facility or remove parkland. It should be noted that the Flower Street Design Option~~s~~ would create construction zones adjacent to Los Angeles Trade Tech Community College and Orthopaedic Hospital which, without access maintenance measures, would adversely affect these facilities.

La Cienega Station Parking Options. There would be no community facilities adjacent to the proposed parking structure site at La Cienega and Jefferson Boulevards. Construction of the parking structure would not disrupt access to any community facilities.

Jefferson Boulevard Design Options. The construction of the bridge design options would not affect community facilities or parkland. Thus, there would be no adverse impacts from these options.

Venice/Robertson Design Options. Construction of the Venice/Robertson design options would affect access to Turning Point School. Vehicular access may be limited during construction activities due to temporary lane closures. No other community facilities would be affected by any of the station design options. Implementation of mitigation measures would reduce impacts to a less-than-significant level.

Phased Implementation. The phased implementation options would have construction impacts to community facilities similar to the LPA. These impacts would require construction management and mitigation plans to reduce adverse effects, particularly to maintain pedestrian and vehicular accessibility.

Significant Impacts Remaining after Mitigation

Listed by topic below is the potential significance of construction-related impacts after mitigation.

Traffic. Mitigation measures **C1** through **C4** would reduce temporary transportation impacts. However, impacts would remain significant.

Parking. Mitigation measures **C5** through **C7** would reduce temporary parking impacts to less-than-significant levels.

Equity and Environmental Justice Considerations. Implementation of parking mitigation measures (**C5** through **C7**), as well as mitigation measures for equity and environmental justice considerations (**C8** through **C11**), would reduce equity and environmental justice considerations impacts to less-than-significant levels.

Land Use/Neighborhoods. Construction of the proposed Project would not divide an existing neighborhood, remove important amenities, or affect the integrity of the neighborhood as a whole. Thus, less-than-significant impacts are anticipated.

Land Acquisition, Displacement and Relocation. Implementation of mitigation measures **C5** through **C11** would reduce impacts associated with the disruption of business operations to less-than-significant impacts.

Visual Quality. Implementation of mitigation measures **C12** through **C14** would reduce impacts to less-than-significant levels.

Air Quality. Implementation of mitigation measure **C15** would reduce PM_{10} emissions by approximately 69 percent during the site preparation/demolition phase, by approximately 55 percent during the grading phase, and by approximately 50 percent during the construction phase. However, PM_{10} emissions would still exceed the SCAQMD threshold for PM_{10}. Thus, an unavoidable significant impact is anticipated.

Noise and Vibration. Implementation of mitigation measures **C1** and **C16** through **C26** would reduce noise and vibration impacts to less-than-significant levels.

Geology, Soils, and Seismicity. As construction of the proposed Project would occur at street-level, construction workers would not be exposed to adverse effects associated with rupture of known earthquake faults, strong seismic groundshaking, landslides, or liquefaction. Thus, less-than-significant impacts are anticipated for geology, soils, and seismicity.

Exposure to Hazardous Substances. Impacts associated with exposure to hazardous substances would be mitigated prior to the start of construction. Thus, a less-than-significant impact is anticipated during construction of the proposed Project.

Water Resources. Implementation of mitigation measures **C27** through **C28** would reduce impacts associated with water resources to less-than-significant levels.

Biological Resources. Impacts associated with biological resources would be mitigated prior to the start of construction. Thus, a less-than-significant impact is anticipated during construction of the proposed Project.

Energy Resources. Implementation of mitigation measure **C29** would reduce energy resources impacts to less-than-significant levels.

Safety and Security. Implementation of mitigation measures **C30** through **C44** would reduce impacts on safety and security to less-than-significant levels.

Historic, Archaeological, and Paleontological Resources. Implementation of mitigation measures in Section 4.13 Historic, Archaeological and Paleontological Resources would reduce impacts to Historic, Archaeological and Paleontological Resources to less-than-significant impacts.

Parklands and Community Facilities. Implementation of mitigation measures **C2**, **C3**, **C5**, and **C7** would reduce impacts on parklands and community facilities to less-than-significant levels.

4.16 DIVISION #11 OPERATIONS & MAINTENANCE FACILITY EXPANSION

This section discusses the impacts associated with the proposed improvements and expansion of the Metro Division 11 facility located in Carson, California.

4.16.1 AFFECTED ENVIRONMENT

The facility is located approximately 16.5 miles from the Mid-City Corridor. The Division 11 facility will be expanded by approximately 8.5 acres to accommodate facilities for an eventual fleet of at least 31 Mid-City/Exposition LRT vehicles. The Mid-City/Exposition LRT vehicles would be in addition to the existing fleet serviced at this facility. The additional space is needed not only for vehicle storage and repair, but also for administrative and functional uses including offices, materials, tools, parts storage, and communications equipment rooms among others. The large size of this site is conducive to the efficient conduct of all maintenance activities. Figure 2.4-39 in Section 2.0 Alternatives Considered shows the Division 11 site layout with expansion area.

4.16.2 IMPACT ASSESSMENT

The following discussions analyze the potential environmental impacts associated with the expansion and improvements to the Division 11 facility.

4.16.2.1 Traffic

No Action. The No Action Alternative would not result in any traffic impacts.

LPA. The proposed expansion and improvements would employ 56 new employees. The facility is expected to operate 24 hours a day, seven days a week with multiple shift changes. Assuming worst-case conditions where each employee drives separately, the proposed Project would generate 112 new daily vehicle trips, most of which would occur during off-peak conditions. The increase in vehicular traffic is not anticipated to significantly affect nearby roadway networks. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.2 Parking

No Action. The No Action Alternative would not result in any parking impacts.

LPA. The existing facility provides employee, visitor and guest parking within the Project site. The expansion would provide sufficient parking within the premises and off-site parking would not be required. Any parking lot would include minor landscaping improvements to partially mitigate the small increase in impervious surface. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.3 Equity and Environmental Justice Considerations

No Action. The No Action Alternative would not result in any impacts on equity and environmental justice considerations.

LPA. The proposed expansion and improvements would occur in an urbanized area primarily consisting of warehouse and distribution facilities. The nearest residences would be approximately one-half mile to the east and west and are separated from the site by the Los Angeles River and I-710 freeway, respectively. The proposed expansion and improvements would not have a substantial and disproportionate adverse impact on these communities. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.4 Land Use/Neighborhoods

No Action. The No Action Alternative would not result in any land use/neighborhoods impacts.

LPA. The proposed expansion and improvements would occur in an urbanized area primarily consisting of warehouse and distribution facilities. The nearest residences would be located west of the I-710 freeway, approximately one-half mile west of the Project site, and east of the Los Angeles River, approximately one-half mile east of the Project site. The proposed expansion would occur within a utility right-of-way on land leased from Southern California Edison (SCE). The expansion would not physically divide existing communities or require a change in land use designation. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.5 Land Acquisition, Displacement and Relocation

No Action. The No Action Alternative would not result in any land acquisition, displacement or relocation impacts.

LPA. The proposed expansion and improvements would occur within a utility ROW, on land leased from SCE. The acquisition of three parcels of land totaling approximately 8.5 acres would be required. This property is currently being leased by a private party and used as a horse stable. SCE contractors also operate on this site. Implementation of the proposed Project would require relocation of these uses. It is possible that use of the property would be acquired through a long-term ground lease with SCE rather than acquiring the actual property. Mitigation is required for the relocation of this business.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.6 Visual Quality

No Action. The No Action Alternative would not result in any visual quality impacts.

LPA. The existing visual environment includes the I-710 freeway and similar industrial uses as the proposed Project. The proposed expansion and improvements would not affect the visual quality of the area, as similar uses currently occupy the surrounding areas of the site. New structures associated with the expansion and improvements, which would be of similar scale to existing uses, would not block or obstruct scenic vistas or views. Landscaping would also be incorporated into the facility design. Trees and landscaping would add interest to the facility while also providing screening where needed. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.7 Air Quality

No Action. The No Action Alternative would not result in any air quality impacts.

LPA. On the basis of regional monitoring data, the Los Angeles County portion of the South Coast Air Basin has been designated as a non-attainment area for ozone, carbon monoxide, and suspended particulates (PM_{10}). The air basin is designated as an attainment area for nitrogen oxide, sulfur dioxide, sulfates, and lead. The proposed Project would expand the existing Division 11 facility to accommodate at least 25 additional LRT vehicles that will be used in the Mid-City/Exposition LRT Project. The expansion of this facility would be a minor source of air pollutants from maintenance activities of LRT vehicles, employee vehicle trips, and LRT vehicles traveling to and from the maintenance yard.

LRT vehicle maintenance activities that would occur at the facility would involve various operations that emit air pollutants. These operations include motor and vehicle repair, degreasing, equipment cleaning, and occasional painting. Chemicals used in these activities consist of paint, lubricants, degreasers, cleaning solvents and refrigerants. These chemicals contain volatile organic compounds (VOCs) and hazardous air pollutants (HAPs), such as asbestos and trichlorethylene. The proposed site currently is a LRT vehicle storage and maintenance facility. LRT vehicle maintenance activities already exist on the Project site and it is not likely that expansion of the maintenance facility would introduce new sources of air pollutants.

Additionally, 112 additional daily vehicle trips generated by proposed expansion and improvements would not be large enough to generate detectable increases in air emissions. The small level of added air pollutants at the maintenance site would be offset by the reduction in auto emissions due to electric transit use.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.8 Noise and Vibration

No Action. The No Action Alternative would not result in any noise or vibration impacts.

LPA. The noise environment around the Project site is characterized primarily by the nearby I-710 freeway and surrounding industrial uses, which create a high ambient noise level. The nearest sensitive receptors would be located approximately 1.5 mile east and west of the site. Because of the distance and high existing ambient noise level it is anticipated that noise generated at the Project site would be inaudible at the sensitive receptors. Additionally, 112 additional daily vehicle trips generated by the proposed expansion and improvements would not be large enough to generate detectable increases in vehicular noise levels.

It is not anticipated that LRT vehicle maintenance would generate high vibration levels. Any vibration created at the Project site would not be noticeable at the nearest sensitive receptors at that distance. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.9 Geology, Soils and Seismicity

No Action. The No Action Alternative would not result in any impacts on geology, soils or seismicity.

LPA. According to California Department of Water Resources Bulletin No. 104, the site area overlies approximately 1,000 feet of Quaternary sedimentary deposits that form a series of sandy aquifer layers separated by low permeability confining layers. The uppermost 100 feet of sediments are characterized as recent (past 10,000 years) unconsolidated silt, sand, clay and gravel associated with the Los Angeles River sediment deposition.

The Project site is within the Los Angeles Coastal Plain geographic region. The geology of the site and surrounding area is mapped by California Division of Mines and Geology as Quaternary alluvium. The northwest-trending Cherry Hill Fault segment of the Newport Inglewood Fault Zone crosses near or beneath the site. The site is also located adjacent to an Alquist-Priolo Earthquake Hazard Zone.[1] Mitigation is required because of the proximity to an Earthquake Hazard Zone.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.10 Exposure to Hazardous Substances

No Action. The No Action Alternative would not result in any exposure to hazardous substances impacts.

LPA. A Phase 1 Hazardous Materials and Geotechnical Report has been prepared for the proposed expansion and improvements. The report reveals one closed State Solid Waste Facility, two incidents of underground storage tank (UST) leaks involving releases at 1000 West Carson Street from the tank and/or pipeline delivery system, and one Federal Environmental Protection Agency (U.S. EPA) No Further Remedial Action Planned (NFRAP) database listing at 1012 West Carson Street. The risk of exposure to hazardous materials exists on these sites. Mitigation is required.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

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[1] Environmental Screening for the Mid-City/Exposition LRT Project Division 11 Yard Improvements, Myra L. Frank Jones & Stokes, March 2004.

4.16.2.11 Water Resources

No Action. The No Action Alternative would not result in any impacts on water resources.

LPA. The Project site lies on the boundary of the West Coast Groundwater Basin and Central Groundwater Basin portions of the Los Angeles Coastal Plain, divided by the Newport Inglewood Fault Zone. Deeper aquifers beneath the site are used for municipal water supplies for cities in the area. The depth to shallow groundwater and direction of groundwater flow are difficult to estimate due to the complicating effects of the groundwater recharge basin adjacent to the site, the groundwater fault barrier (fault) beneath the site, and pumping depressions within the basins due to groundwater extraction (based upon Water Replenishment District of California, Groundwater Elevation Contour Map, Spring 2000).

The Project site is not located within a 100-year floodplain.[2] The Los Angeles River is located approximately 800 feet east of the Project site. A levee separates the river from the Project site. Under these circumstance, it is not anticipated that operation of the proposed Project would affect the river. The expansion property located south of the existing site is currently not paved. The construction of the proposed expansion would cover the majority of the site with ballasted track, a permeable surface. However, the expansion would convert some of the site to impervious surface, altering runoff volumes, flows, and velocities. Mitigation would ensure that no impact would occur to drainage patterns.

Additionally, State Water Resources Control Board (SWRCB) requires that discharges of storm water from construction activities (e.g., clearing, grading, or excavation of land) on five acres or more must be regulated as an industrial activity and must be covered by an NPDES permit.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.12 Biological Resources

No Action. The No Action Alternative would not result in any impacts on biological resources.

LPA. The Project site contains no candidate, sensitive or special status species within a half-mile of the proposed Project site. The site is comprised of mainly non-native ornamental trees (e.g., Eucalyptus, pepper trees, etc.), shrubs, and groundcover around existing structures and ruderal growth in undeveloped areas of the Project site and around the banks of the Los Angeles River. A portion of the Los Angeles River is soft bottomed and contains wetland indicator species as cattails and the emergence of giant reed. However, the area of the river closest to the Project site does not resemble a typical natural riparian community. Proposed improvements would not affect riparian habitat.[3]

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[2] ESRI/FEMA Q3 Digital Flood Data, 2004.

[3] Environmental Screening for the Mid-City/Exposition LRT Project Division 11 Yard Improvements, Myra L. Frank Jones & Stokes, March 2004.

The Project site itself contains no unique or unusual biological resources. The vicinity is completely urbanized and is void of natural areas. The proposed Project would not conflict with any local, regional, or state conservation plan or result in the loss of any candidate, sensitive or special species or habitat. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.13 Energy Resources

No Action. The No Action Alternative would not result in any impacts on energy resources.

LPA. The infrastructure needed to provide electrical and natural gas service to the Project area is in place and is not anticipated to require expansion or rehabilitation beyond that planned by existing utility providers. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.14 Safety and Security

No Action. The No Action Alternative would not result in any impacts on safety and security.

LPA. The existing facility is closed to the public. All site access is controlled by an on-site guard and security team. The existing facility also includes adequate lighting throughout the body of the yard. The proposed expansion and improvements of the facility would maintain similar level of safety and security. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.15 Historic, Archaeological, and Paleontological Resources

No Action. The No Action Alternative would not result in any historic, archaeological or paleontological resources impacts.

LPA. *Historic Resources*. The California Historic Resources Inventory listed 14 properties within a one-and one-half-mile radius of the Project site. None of the properties are included in the list of California Points of Historic Interest, California Historical Landmarks, California Register of Historic Places, or the National Register of Historic Places. None of the 14 listed sites would be affected by the proposed Project.[4] No impact is anticipated.

Archaeological Resources. A record search revealed that no archaeological sites have been identified within a half-mile radius of the Project site. No impact is anticipated.

Paleontological Resources. Surficial deposits in the Project are composed of terrestrial Quarternary alluvium derived from the Los Angeles River floodplain. Because of surface disturbances, shallow excavations would be unlikely to produce significant fossil vertebrate remains. Deeper excavations may encounter significant vertebrate fossils of the Late Pleistocene age. Mitigation is required for excavation at depths with the potential to encounter vertebrate fossils.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.2.16 Community Facilities and Parklands

No Action. The No Action Alternative would not result in any impacts on community facilities or parkland.

LPA. The proposed expansion and improvements would occur within a utility ROW on land leased from SCE. The land is currently leased by a private party and used as a horse stable. There are no public community facilities in the immediate area and, as an industrial use, implementation of the proposed expansion and improvements would not create the need for additional facilities. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

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[4] Ibid.

Phased Implementation. Not applicable.

4.16.2.17 Construction Impacts

No Action. The No Action Alternative would not result in any construction impacts.

LPA. *Construction-Period Traffic*. Construction of the proposed expansion and improvements would not require the closure of nearby streets. Construction-generated traffic would be required to use pre-approved haul routes to transport goods and materials. No impact is anticipated.

Construction-Period Air Quality. Construction would require light grading of the expansion property, as well as other construction processes that would result in air emissions. Best Management Practices (BMPs) including compliance with SCAQMD Rule 403 would be implemented to reduce temporary impacts to acceptable levels.

Construction-Period Noise. The nearest sensitive receptors are located approximately ½-mile east and west of the site. The high ambient noise levels associated with the nearby I-710 freeway and adjacent industrial uses would make construction-generated noise inaudible at that distance. No impact is anticipated.

Downtown Los Angeles Connection Options. Not applicable.

La Cienega Station Parking Options. Not applicable.

Jefferson Boulevard Design Options. Not applicable.

Venice/Robertson Design Options. Not applicable.

Phased Implementation. Not applicable.

4.16.3 MITIGATION MEASURES

OM1 The potential effects of property acquisition and the displacement of persons and business shall be substantially alleviated through compliance with applicable federal and state laws governing relocation assistance and property acquisition procedures.

OM2 Design and construction shall comply with State seismic safety engineering requirements for structures located within a Earthquake Hazard Zone.

OM3 A drainage plan shall be developed and implemented which shall ensure that the Division 11 facility is engineered to direct water runoff into appropriate drainage culverts and channels.

OM4 All sites identified in the Phase I Environmental Assessment shall be further investigated in a Phase II. Environmental Assessment remediation (if required) shall be implemented

OM5 Where excavation is expected to extend below a depth of five feet, a paleontological field monitor shall be initiated full time, with the provision that monitoring may be reduced to part-time or spot checking upon the determination that the likelihood of significant fossil discovery has decreased.

4.16.4 CEQA DETERMINATION

Table 4.16-1 summarizes the environmental impacts of the expansion and improvements of the Division 11 facility according to CEQA. As shown in the table, mitigation measures described in "4.16.3 Mitigation Measures" are required for Land Acquisition/Displacement and Relocation, Geology, Soils and Seismicity, Water Resources, Hazards, and Cultural Resources to reduce potential impacts.

TABLE 4.16-1: SUMMARY OF ENVIRONMENTAL IMPACTS

Environmental Topic	No Impact	Less-than-significant Impact	Mitigation Required
Traffic	X		
Parking	X		
Equity and Environmental Justice Considerations	X		
Land Use/Neighborhood	X		
Land Acquisition/ Displacement & Relocation			X
Visual Quality	X		
Air Quality		X	
Noise and Vibration		X	
Geology, Soils, and Seismicity			X
Exposure to Hazardous Substances			X
Water Resources			X
Biological Resources	X		
Energy Resources	X		
Safety and Security	X		
Cultural Resources			X
Archaeological	X		
Paleontological			X
Historic	X		
Community Facilities & Parkland	X		
Construction Impacts		X	
Traffic	X		
Air Quality		X	
Noise	X		
SOURCE: Terry A. Hayes Associates LLC, 2004			

Significant Impacts Remaining after Mitigation. Implementation of mitigation measures **O&M1** through **O&M5** would reduce impacts associated with the proposed expansion and improvements to less-than-significant levels.

4.17 OTHER CEQA DETERMINATIONS

This section describes the cumulative and growth-inducing impacts associated with implementation of the proposed Project. In addition, this section discusses the selection of the environmentally superior alternative.

4.17.1 IMPACT ASSESSMENT

Methodology

"Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects, whereas the cumulative impact is the change in the environment from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time.[1]

California Environmental Quality Act (CEQA) requires that the discussion of cumulative impacts reflects the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the Project alone. Further, the discussion is intended to be guided by the standards of practicality and reasonableness.

CEQA also requires an EIR to explore the long-term effects of a project, those impacts which may not be tangible in the near term, but may ultimately evolve into significant adverse environmental impacts in the long term. Issues to be addressed in the EIR include the growth-inducing impacts of the Project and significant irreversible effects. The CEQA Guidelines state that the discussion of growth-inducing impacts should focus on the ways in which the proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.

An adequate discussion of significant cumulative impacts involves analyzing either (1) "a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency", or (2) "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact."[2]

This cumulative impact analysis relies on method (2) described above. The analysis is based upon a summary of projections contained in an adopted planning document, namely, the Southern California Association of Government's (SCAG) 2004 Regional Transportation Plan (RTP), entitled "Destination 2030," SCAG states that lead agencies, such as Metro, may use the region-wide impact analysis contained in the Regional Transportation Plan Final Program EIR as the basis of their cumulative impact analysis. Therefore, the 2004 Regional Transportation Plan Final Program EIR (SCH No. 2003061075, April 2004), is used as the basis of this cumulative impact analysis and is hereby incorporated by reference per Section 15150 of the CEQA Guidelines. The document may be viewed on SCAG's internet site (www.scag.ca.gov), or by contacting the agency directly.

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[1]CEQA Guidelines, Section 15130.

[2]CEQA Guidelines, Section 15130(b)(1).

The RTP is a regional planning document that establishes the goals, objectives, and policies for the region's transportation system and establishes an implementation plan for transportation investments through the year 2030. SCAG refers to the RTP as a "blueprint" for a coordinated and balanced transportation system that links job centers to residential communities, and encourages compact growth patterns that reduce harmful environmental effects.

One of the key elements of the Proposed Plan is $25 billion in funding for proposed, committed, and programmed transit projects. The goal of the "Public Transportation System" element of the RTP is to "ensure mobility for people without access to automobiles and to provide attractive alternatives for drive-alone motorists or discretionary riders." To achieve this objective, the RTP specifically calls for an expanded system of bus service and rail transit, where the bus system is structured to feed into existing and proposed rail stations.

The RTP Program EIR contains a thorough analysis of environmental impacts resulting from implementation of various transportation projects throughout SCAG's six county region that encompasses approximately 38,000 square miles. The Mid-City/Exposition LRT alignment extends through two of the 13 Subregions in SCAG's planning area, including the City of Los Angeles and the Westside Cities Subregions. The RTP reflects transportation, population, employment, and land use data for the six-county SCAG area through the year 2030, and is, thus, an appropriate basis for the analysis of cumulative impacts.

Cumulative impacts are evaluated in each of the technical issue sections (Sections 3.1 through 4.16) of this document. The analyses consider the cumulative effects of implementation of the proposed Project within the framework of the cumulative regional transportation analysis contained in SCAG's 2004 RTP Program EIR.

4.17.1.1 Cumulative Impacts

Traffic. Traffic impact analyses conducted for this Project, as documented throughout this report, including countywide, study area, corridor-level, screenline, or detailed intersection forecasts, are based on traffic projections developed by the LACMTA Regional Travel Demand Model. These future traffic forecasts, which represent a horizon year of 2020, are developed with consideration for population, employment and land use growth for the entire southern California area, as projected by the designated Regional Metropolitan Planning Organization (MPO), Southern California Association of Governments (SCAG). Therefore, all traffic forecasts and the corresponding impact analyses account for impacts of not only the Project alternatives and the but also the overall projected cumulative growth in the study area and as well as the region in general.

SCAG's 2004 RTP Final Program EIR concludes that cumulative traffic impacts will be significant as a result of regional increases in vehicle miles traveled (VMT). As detailed in Section 3.2 Traffic, the proposed Project would result in a slight reduction in total VMT, due to increased transit use and decreased reliance on automobiles. The proposed Project would therefore result in a beneficial cumulative effect.

Parking. The reduction in the amount of on-street parking or the use of on-street parking by transit users in station areas would have the cumulative impact of making it increasingly more difficult to find available on-street parking. This would result in significant adverse effects in areas where the current supply of off-street parking is not adequate to fully meet the needs of the land uses generating the parking demand. This is a cumulative effect of developments being built with inadequate parking and the reliance on the automobile for mobility in the Study Area and throughout Los Angeles County.

Over the years, many of the local jurisdictions along the Exposition corridor did not require adequate off-street parking and in some instances did not require any off-street parking. This has caused many of the land uses in older buildings along these corridors to depend on the use of on-street parking to meet their employee and customer parking needs. The local jurisdictions all have parking programs designed to address this cumulative parking impact either through the provision of off-street public parking or the regulation of the use of on-street parking. In addition, the Project would include construction of three parking structures to accommodate the anticipated demand generated by the Project. Wherever feasible, replacement parking would be provided to off-set the loss of on-street parking.

Land Use/Neighborhoods. Projects contained within the RTP would contribute to the overall intensity of development within the SCAG region. The RTP contains growth management goals to attain mobility and to develop urban forms that enhance quality of life, accommodate a diversity of life styles, preserve open space and natural resources, are aesthetically pleasing and preserve the character of communities, and enhance the regional strategic goal of maintaining the regional quality of life. Given that the Exposition transit corridor area is a planned and desired land use as reflected in local and regional plans (see Section 4.1 Land Use/Neighborhoods), it would not be incompatible with the study area's general land use character and would serve to link activity centers within the area. As such, implementation of the proposed Project would not be expected to contribute to cumulatively considerable land use impacts.

Land Acquisition, Displacement and Relocation. The development of transit improvements along this alignment would entail the termination or non-renewal of current leases along the ROW. These changes may have a direct adverse affect on some businesses that are entirely located within the ROW or those that rely substantially on land in the ROW for their operations. SCAG states that the RTP would require the acquisition of rights-of-way that displaces a substantial number of existing homes and businesses. As detailed in this report, the proposed Project would contribute to a cumulative displacement effect, although all acquisitions would be mitigated through applicable relocation assistance programs.

Equity & Environmental Justice Considerations. SCAG anticipates that urbanization in its region will increase substantially by 2030. Regional transportation improvements will result in cumulative effects by facilitating population growth in certain areas of the region that are currently vacant natural lands. The Mid-City/Exposition LRT Project would not contribute to this cumulative effect due to the fact that the resulting mobility improvements will occur in an already urbanized area. SCAG also states that the RTP would require the acquisition of rights-of-way that displaced a substantial number of existing homes and businesses. As detailed in this report, the proposed Project would contribute to a cumulative displacement effect, although all acquisitions would be mitigated through applicable relocation assistance programs.

Projects included in the RTP are intended to increase the overall accessibility and mobility of persons within the SCAG region. These improvements could result in an increase in population to the area, making the area more desirable. However, this increase would be expected to be within the normal growth projected by SCAG within the RTP. Furthermore, population growth within the region would be limited to existing housing availability and market factors that are not directly related to the proposed improvements included within the RTP. No cumulative population growth would be expected beyond that projected by SCAG as a result of the proposed projects included within the RTP.

Cumulative socioeconomic impacts could also result from construction activities associated with proposed RTP projects that could impede local business vitality. Projects contemplated in the RTP that do not require the construction of new facilities (e.g., optimization of the existing transportation system) would not have a direct physical effect on business visibility or accessibility. The indirect effects of reducing traffic congestion would be beneficial to local businesses in the region, because reductions in traffic would increase the level of accessibility and parking for patrons. Those projects that would require construction of new or expanded facilities (e.g., additional parking facilities) would potentially have the greatest adverse impacts, because construction activities associated with the infrastructure could damage local business visibility and accessibility during the short-term. This type of access impediment would most be problematic within SCAG urban areas where businesses are highly dependent on on-street metered parking. When evaluated on a cumulative level, the projects contained within the RTP could result in a loss of current available on-street parking, therefore resulting in a possible loss of access to businesses along the routes. Because the loss of parking would be the catalyst for any socioeconomic impact, the assessment of this particular impact is addressed in Section 4.3 Equity and Environmental Justice Considerations of this document, where the direct and indirect effects on any loss in parking associated with the proposed Project are addressed.

Visual Quality. The 2004 RTP Program EIR concludes that RTP projects potentially would obstruct views of scenic resources, thus resulting in a cumulative visual quality impact. As detailed in Section 4.4 Visual Quality of this report, several components of the proposed Project would introduce adverse visual elements to the environment. Elevated structures, catenary wires, noise walls, fencing, and other visual elements of the proposed Project would have potential to result in significant visual impacts. Mitigation measures contained in Section 4.4 would reduce all identified impacts to less-than-significant levels. The impacts described would contribute to a cumulative visual impact, but they are not outside the scope of the cumulative findings of the 2004 RTP Program EIR.

Air Quality. The proposed Project would contribute to an increase in transit ridership, which would reduce criteria pollutant emissions from passenger vehicles, resulting in a beneficial cumulative effect. Projected future emission rates from the California Air Resources Board and future traffic levels based on LADOT and SCAG growth rates were used in the air quality analysis. Consistent with the findings of SCAG's 2004 RTP air quality analysis, the regional air quality analysis in this report demonstrates a net cumulative benefit to the region's ambient air quality resulting from increased public transit use. The anticipated reduction in automobile use due to the increase in transit use would be considered beneficial to ambient air quality. Therefore, the Project would contribute to the expeditious implementation of the adopted Air Quality Management Plan.

Noise and Vibration. SCAG's 2004 RTP analysis concludes that regional cumulative ambient noise levels could increase to exceed normally acceptable noise levels, or have substantial increases in noise as a result of the operation of expanded or new transportation facilities. Resulting noise effects of the proposed Project (described in Section 4.6 Noise and Vibration) would be within the context of the cumulative analysis of the 2004 RTP Program EIR. No additional cumulative impacts beyond those disclosed in the RTP analysis would be anticipated.

Vibration impacts of the proposed Project would not be significant and all vibration effects would be localized in the immediate vicinity of the LRT alignment. Mitigation addresses all vibration impacts. Therefore the proposed Project would not contribute to a cumulative vibration impact.

Geology, Soils, and Seismicity. The 2004 RTP analysis concludes that significant cumulative impacts may result due to hazardous geologic conditions in locations contemplated for transportation infrastructure improvements. SCAG calls for appropriate use of engineering technologies and careful consideration of project siting among the general approaches to mitigate potential impacts to property and public safety. Potential liquefaction hazard areas have been identified within the Exposition corridor, and mitigation measures have been specified to reduce any related impacts to less-than-significant levels (see Section 4.7 Geology, Soils, and Seismicity). These impacts would be within the scope of the cumulative impact analysis contained in the 2004 RTP Program EIR.

Exposure to Hazardous Substances. SCAG states that implementation of the 2004 RTP would create a potential hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment during transportation. As discussed in Section 4.8 Exposure to Hazardous Substances, potential impacts identified for the proposed Project include disturbance of contaminated soil and underground storage tanks, release of contaminants such as PCB's, lead, and asbestos, and exposure of the public to EMFs. All impacts identified would either be reduced to less-than-significant levels with implementation of mitigation measures identified in Section 4.8, or would be less than significant to begin with. Most effects would only be of concern during construction of the Project and therefore would not contribute to a long term cumulative regional impact. EMF levels generated by the LRT catenary system would not exceed applicable human safety standards and would not have a cumulative effect in combination with other catenary systems for other light rail projects.

Water Resources. SCAG's analysis of the 2004 RTP concludes that significant cumulative impacts to water quality would result due to potential for increased transportation pollutants (such as fluid leaks from vehicles) to migrate to surface and groundwater supplies. Because the proposed Project would reduce the overall number of vehicle miles traveled for all transportation sources, fewer pollutants would be generated, resulting in a beneficial cumulative contribution to water quality.

Compliance with all applicable federal, state, and local laws and regulations pertaining to hydrology and water quality would minimize the discharge of pollutants, reduce construction-related erosion and sedimentation, and would ensure that projects do not expose people or structures to flood-related hazards. Applicable laws and regulations include: Section 401 of the Clean Water Act (Water Quality Certification); Section 402 of the Clean Water Act (the National Pollutant Discharge Elimination System Program); Section 404 of the Clean Water Act (Department of the Army Permits); Section 1600 *et seq* of the Fish and Game Code of California; the Coastal Zone Management Act; and the Best Management Practices specified in SCAG's Areawide Waste Treatment Management Plan (208 Plan).

Biological Resources. SCAG's 2004 RTP analysis notes that a cumulative impact to biological resources could result due to construction in undeveloped areas and population growth and development on existing natural lands. The Mid-City/Exposition LRT corridor would be entirely within urbanized portions of the City of Los Angeles and Culver City. Because no unmitigated adverse impacts on the natural environment have been identified in this report, the proposed Project would not contribute to cumulative adverse effects to biological resources.

Energy Resources. SCAG's 2004 RTP analysis indicates a significant cumulative impact due to substantial increases in the consumption of electricity, natural gas, gasoline, diesel, or other non-renewable energy types in the operation of the regional transportation system. As demonstrated in Section 4.11 Energy Resources, the proposed Project would result in a net reduction in energy use by year 2020. Therefore the Project would have a beneficial cumulative effect.

Safety and Security. As demonstrated in Section 4.12 Safety and Security, the proposed Project would not be expected to result in significant unavoidable impacts with regard to security of LRT facilities, crime, and vehicular and pedestrian safety. To the extent that implementation of regional transportation improvements contemplated in SCAG's 2004 RTP could result in increased growth and development, crime may be expected to also incrementally grow at the current ratio of crimes to population. There is nothing inherent in transportation improvements that would be reasonably anticipated to result in significant cumulative safety and security impacts. In fact, implementation of the proposed Project and other RTP projects may have a beneficial cumulative effect in this area, due to safety and security elements (personnel, technology and physical improvements) associated with these projects.

Historic, Archaeological and Paleontological Resources. SCAG's analysis of the 2004 RTP concludes that a significant cumulative impact to cultural resources would result due to a substantial increase in urbanization in the SCAG region by 2030. Certain transportation improvements in the RTP would likely result in significant impacts to very few historic, archaeological, and paleontological resources. Impacts to cultural resources resulting from the proposed Project, although mitigated to less-than-significant levels, would contribute to the cumulative impacts detailed in the 2004 RTP EIR.

Parklands and Community Facilities. Section 4.14 Parklands and Community Facilities concludes that 41 community facilities would benefit from improved access to transit. Loss of on-street parking would pose an adverse effect to only those facilities located in the Downtown Los Angeles Connection. The loss of on-street parking adjacent to community facilities in the Mid-Corridor and West End would be mitigated.

Construction Impacts. Construction impacts described in Section 4.15 Construction Impacts would be temporary and intermittent over an approximately three-year construction period for the proposed Project. Over this time period, other developments in the vicinity may compound construction nuisances for members of the community in isolated areas in and around the Mid-City/Exposition LRT corridor. As other nearby construction projects become known, Metro would work to alleviate any adverse cumulative construction effects. However, over the long-term, construction impacts would not be considered cumulatively significant.

4.17.1.2 Growth Inducement

Generally, growth-inducing projects are located in isolated, undeveloped, or underdeveloped areas, necessitating the extension of major infrastructure (e.g., sewer and water facilities, roadways, etc.) or are those that could encourage "premature" or unplanned growth (i.e., "leap-frog" development). The proposed Project would intended to meet the existing and future transit needs of the Project area. The Mid-City/Exposition LRT Project would located within a densely developed urban setting and would not extent into previously undeveloped areas that could induce changes in such areas. The proposed Project would not result in the need for major infrastructure extension or government services beyond investments already planned.

4.17.1.3 Irreversible and Irretrievable Commitment of Resources

Construction and operation of the proposed Project would rely upon the use of nonrenewable resources. Use of fossil fuel derived energy sources such as gasoline, diesel fuel, electricity, and natural gas would be necessary for transport of workers and materials during construction and provision of electricity, natural gas, and fuel for LRT trains, stations, worker vehicles, and maintenance operations during the life of the Project. Although the fossil fuel consumption associated with the Project would constitute the depletion of a resource which is irretrievable and irreversible, the amount of resources consumed would not be of an extraordinary nature in a regional context. Moreover, as demonstrated in Section 4.11 Energy Resources, implementation of the proposed Project would be expected to result in a slight reduction in energy use in future years, due to increased transit use and correlating reduction in passenger vehicle use. As discussed above, the proposed Project would have a beneficial cumulative long-term effect with respect to use of non-renewable energy resources.

4.17.1.4 Environmentally Superior Alternative

Section 15126.6(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be identified among the selected alternatives, excluding the No Action alternative.

As described in Section 2.0 Alternatives Considered, the Metro Board of Directors adopted a Locally Preferred Alternative which included a Wilshire BRT project and an Exposition LRT project in June 2001 for the Mid-City/Westside Corridor. Therefore, the LPA in this Final EIS/EIR had been previously selected as an environmentally superior alternative for transit improvements in the Exposition corridor.

As part of the Final EIS/EIR preparation process, Metro is considering design options for selected components of the proposed Project. The environmentally superior options are discussed below.

Downtown Los Angeles Connection Options. When comparing the Downtown Los Angeles Connection Options, the Hill Street LPA route and the Hill Street Couplet Design Option both result in adverse LRT and traffic operations and traffic interface at the Washington Boulevard and Hill Street intersection. Both Hill Street options result in significant parking and environmental justice impacts due to the unmitigatable loss of parking by local business on Hill Street. In the comparison, the Flower Street Design Option would not have these adverse effects and is environmentally superior.

Among the Flower Street Design Options there would also be sub-options regarding a partially covered under-crossing, a covered under-crossing , and an extended covered under crossing. In general, the covered under-crossings are less visually intrusive than the uncovered option, particularly in the areas adjacent to Exposition Park and USC. The extended under-crossing would require increased excavation and other temporary construction effects such as traffic, air quality and noise as compared to the shorter under-crossing. Overall, there would be little or no substantial long-term environmental impact distinction between the two covered under-crossing options. The extended under-crossing options is, however, somewhat less disruptive to pedestrian connections between Exposition Park and the USC campus, and may be considered environmentally superior.

La Cienega Parking Options. The environmentally superior approach at this location is for Metro, in coordination with the City of Los Angeles, to utilize the former ECIS portal site for the La Cienega Station parking structure. Since completion of ECIS, the majority of the site has been left vacant. The Southwest Corner Parking Option would require that the privately owned Public Storage site be acquired and the business relocated. The most adverse environmental effects would result from the La Cienega No Parking Option where no parking structure would be constructed at the La Cienega Station and parking demand would be accommodated at the Crenshaw Station several miles to the east. This option would likely result in spillover parking impacts in the La Cienega Station area, as well as increase parking and traffic impacts in the Crenshaw Station area.

Jefferson Boulevard Design Options. The Medium Bridge Design Option of Jefferson Boulevard near National Boulevard is environmentally superior to the LPA. The LPA creates an at-grade LRT crossing at the intersection of Jefferson and National Boulevards. The Medium Bridge Design Option would avoid traffic and LRT conflicts at this location by grade-separating the LRT from the intersection. The widening of Jefferson Boulevard on the south side would be environmentally superior to widening Jefferson Boulevard on the north side as this option would avoid acquisition of three local businesses.

Venice/Robertson Design Options. Currently, the LPA identifies an at-grade terminal station location between Venice and Washington Boulevards along the Metro ROW. This location would require the LRT vehicles to cross within 200 feet of the Washington/National Boulevard intersection. The traffic analysis presented in Section 3.3 Parking of this report suggests that maintaining the at-grade crossing requires a complex traffic signal phasing solution and a widening of National Boulevard from the railroad right-of-way to mid-block between Washington and Venice Boulevards. As part of the local coordination process, Culver City has expressed concern regarding the ablility of any mitigation measures to maintain an acceptable level of service at the intersection. Due to this concern, options have been developed to avoid an at-grade LRT crossing near this intersection. The design options includes two terminal station alternatives located east of National Boulevard and an aerial station option to bridge the LRT over both streets. The east of National Boulevard options include a terminal station within the Metro ROW and one north of the Metro ROW. The ROW option is environmentally superior to the North of ROW option because it would avoid the taking of a local business on the southeast corner of the Washington/National Boulevards intersection. Between the ROW station and the Aerial Station bridging National and Washington Boulevards, the primary distinction would be visual appearance. There would be more convenient access to parking and bus connections with the Aerial Station option. The proximity to parking associated with the aerial station would maximize use of the proposed parking located north of Venice Boulevard. The more eastern station location could result in spillover parking demand east along Washington Boulevard and east along National Boulevard into local neighborhoods and business areas. In this context, the aerial station may be considered environmentally superior to the ROW Option, unless measures would be implemented to eliminate spillover parking impacts in local neighborhoods and increase the convenience of the north of Venice Boulevard surface parking through use of shuttles.

Phased Implementation. The Phased Implementation alternatives would not be environmentally superior to LPA with the exception that these shorter route options avoid alterations to the Ballona Creek Railroad Bridge (a cultural resource). The impacts of the Vermont, Crenshaw and La Cienega Segments would be essentially the same as the LPA with traffic, parking and circulation impacts being redistributed to the new terminal station locations. The greatest station area impacts would result from the La Cienega Segment where the highest LRT ridership and parking demand would be achieved. The least station area traffic and circulation effects would occur at the shortest segment, the Vermont segment, where the LRT ridership would be the lowest. The other key distinction of these shorter segment options is that they reduce the beneficial effects from the full route LPA particularly in the areas of air quality, energy resources, and access to community facilities and transit services. Therefore, only the full-length LPA would be environmentally superior.