

CHAPTER 3
ENVIRONMENTAL SETTING, IMPACTS & MITIGATION

3.0 ENVIRONMENTAL SETTING, IMPACTS & MITIGATION

3.1 TOPOGRAPHY, GEOLOGY AND SOILS

3.1.1 Environmental Setting

The proposed project is located within the northerly end of the Peninsular Ranges geomorphic province. This geomorphic province is characterized by elongated northwest-trending mountain ranges separated by straight-sided sediment-floored valleys (Yerkes et al., 1965). The northwest trend is further reflected in the direction of the dominant geologic structural features of the province, which are northwest-trending faults and folds. These include the Newport-Inglewood fault zone, the Paramount syncline, the Dominguez anticline, the Gardena syncline, the Wilmington anticline, and the Wilmington syncline, all of which cross the corridor. Geologic units of the northern Peninsula Ranges province consist of Jurassic and Cretaceous age basement rocks overlain by as much as 32,000 feet of marine and non-marine sedimentary strata ranging in age from late Cretaceous to Holocene. The corridor will extend across materials deposited during the early Pleistocene through Holocene epochs.

Physiographic Features

The project site is situated in the northern part of the physiographic basin known as the Los Angeles Basin (Yerkes et al., 1965), or the Coastal Plain of Los Angeles (Mendenhall, 1905). There are no prominent landforms near the project site. The project site lies on relatively flat terrain within the Downey Plain.

- Downey Plain

The Downey Plain is a Holocene age plain formed by coalescing alluvial fans of the Los Angeles and San Gabriel-Rio Hondo River systems (California Department of Water Resources, 1961). The Downey Plain ranges in elevation from as high as 275 feet above sea level to sea level; the surface of the plain slopes from 7 to 23 feet per mile but is generally less than 18 feet per mile.

Existing Geology

The City of Norwalk is directly underlain by alluvial and marine terrace deposits ranging in age from the Pleistocene to Holocene epochs (see The Geologic Time Scale shown on Table 3-1). The majority of the project site is underlain by fine to medium-coarse grained alluvial or flood plain deposits of Holocene age. The eastern end of the alignment is underlain by fine to medium grained Pleistocene alluvium or marine terrace deposits (County of Los Angeles Department of Regional Planning, 1990).

Table 3-1: Geologic Time Scale

ERA	PERIOD	EPOCH	AGE IN YEARS
Cenozoic	Quaternary	Historic	0-200
		Holocene	0-11,000
		Pleistocene	11,000-2 million
	Tertiary	Pliocene	2-5 million
		Miocene	5-24 million
		Oligocene	24-38 million
Eocene		38-58 million	
Paleocene	58-66 million		
Mesozoic	Cretaceous		66-141 million
	Jurassic		141-205 million
	Triassic		205-240 million
Paleozoic	Permian		240-290 million
	Pennsylvanian		290-320 million
	Mississippian		320-360 million
	Devonian		360-410 million
	Silurian		410-438 million
	Ordovician		438-500 million
	Cambrian		500-570 million
Pre-Cambrian			Older than 570 million
<p>Notes:</p> <ol style="list-style-type: none"> Age in years is arbitrarily rounded. In the Quaternary Period, times are aligned with usage in California seismicity practices. Data modified from AGI Data Sheet 1.1 and USGS Geologic Names Committee, 1980; Decade of North American Geology Geologic Time Scale, Geologic Society of America, 1983; American Heritage Dictionary, 1982; Fault Rupture Zones in California, Special Publication 42, California Division of Mines and Geology. 			

Source: Law/Crandall and Associates, 1991.

Seismicity

Faults are fractures or lines of weakness in the earth's crust, along which rocks on one side of the fault are offset relative to the same rocks on the other side of the fault. Sudden movement along faults results in an earthquake. Several major faults are present within 50 miles of the project area. Numerous smaller faults are located throughout the Los Angeles Basin.

Some of these faults are considered active and capable of generating large, damaging earthquakes. These faults are shown in Figure 3-1.

Seismic activity of a fault is measured by the frequency and magnitude of past earthquakes associated with that fault. An active fault is a fault that exhibits movement or shows evidence of movement within the last 11,000 years. A potentially active fault is a fault that has exhibited evidence of movement within the last two-million years. Historical records indicate that the faults described below are considered active and capable of generating earthquakes that could affect the project area. Historical records indicate extensive seismic activity in Southern California area, particularly in the Los Angeles area. Table 3-2 presents a listing of active faults in Southern California with the distance in miles between the corridor and the nearest point on the fault, and the maximum credible earthquake for the fault.

An earthquake is classified by the amount of energy released, which is quantified using the Richter scale. This is a logarithmic scale where each whole number increase in Richter magnitude (M) represents a tenfold increase in the wave amplitude generated by an earthquake, which is a representation of an earthquake's size. Also, for each full point increase in Richter magnitude, the corresponding amount of energy released increases 31.6 times. Thus, a M 6.3 earthquake is 10 times larger than a M 5.3 earthquake and releases 31.6 times more energy. In contrast, a M 7.3 event is 100 times larger than a M 5.3, and releases almost 1,000 times more energy. Earthquakes of Richter magnitude 6.0 to 6.9 are classified as "moderate". Earthquakes between M 7.0 and 7.9 are classified as "major", and M 8.0 and larger are classified as "great".

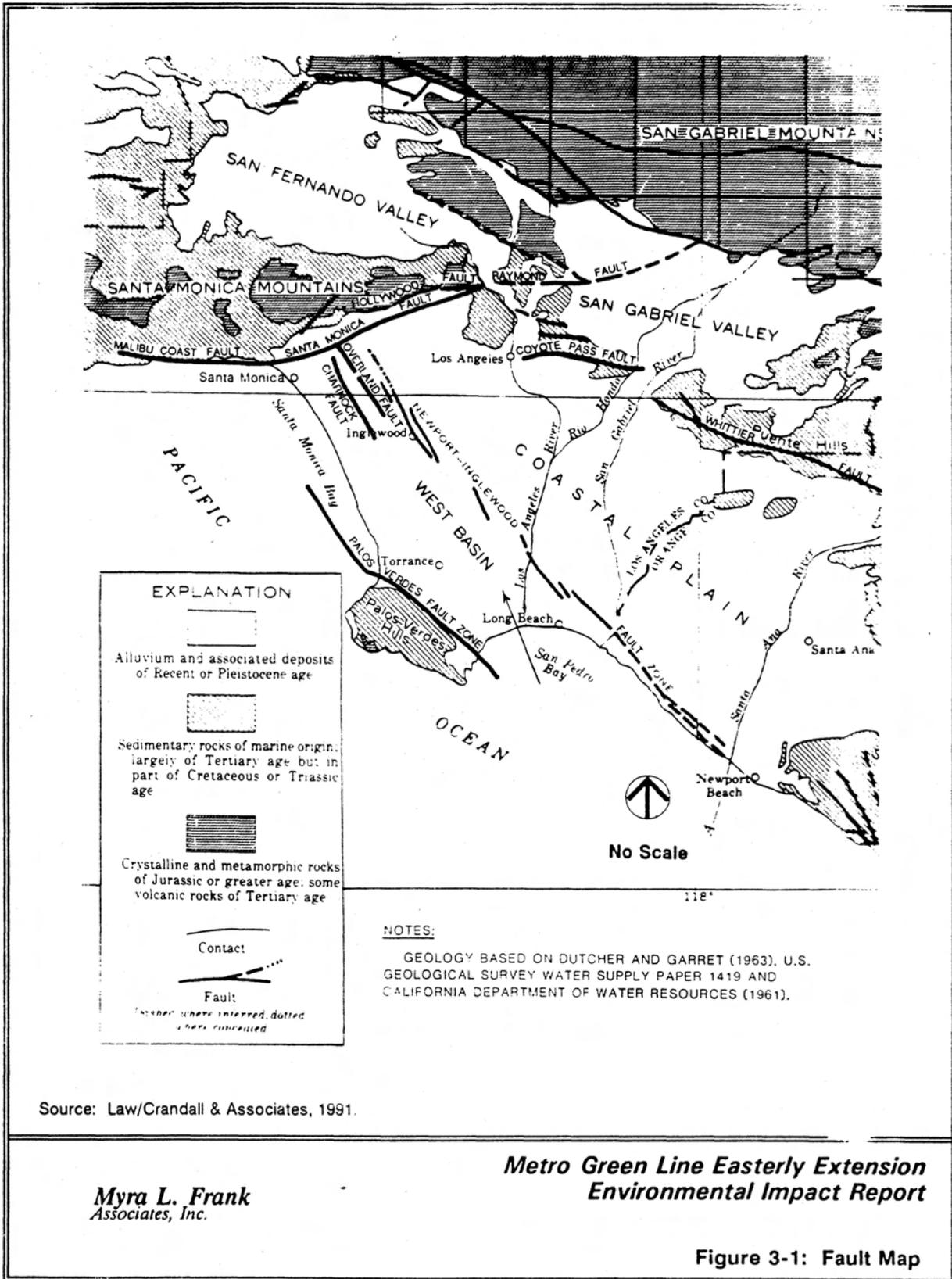
- Newport-Inglewood Fault Zone

The Newport-Inglewood fault extends from the southern edge of the Santa Monica Mountains southeastward to an area offshore of Newport Beach and is eight miles west of the project corridor. This zone, commonly referred to as the Newport-Inglewood uplift, or zone of deformation, can be traced at the surface by following a line of geomorphically young anticlinal hills and mesas formed by the folding and faulting of a thick sequence of Pleistocene and tertiary age sedimentary rocks (Barrows, 1974). These hills and mesas include the Baldwin Hills, Dominguez Hills, Signal Hill, Huntington Beach Mesa and Newport Mesa. Recent earthquake focal mechanisms for 39 small earthquakes (1977 to 1985) show faulting along the north segment (north of Dominguez Hills) and along the south segment (south of Dominguez Hills to Newport Beach) (Hauksson, 1987).

The 1933 Long Beach earthquake has been attributed to movement on the Newport-Inglewood fault zone. Based on historic earthquakes along the corridor, the fault zone is considered active. The Newport-Inglewood fault zone is considered capable of generating a maximum credible earthquake of a magnitude 7.0.

- Raymond Fault

The active Raymond fault is located 14 miles to the north of the corridor. The Raymond fault is a high-angle reverse fault thrusting basement rocks north of the fault, over alluvial sediments



Source: Law/Crandall & Associates, 1991.

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Figure 3-1: Fault Map

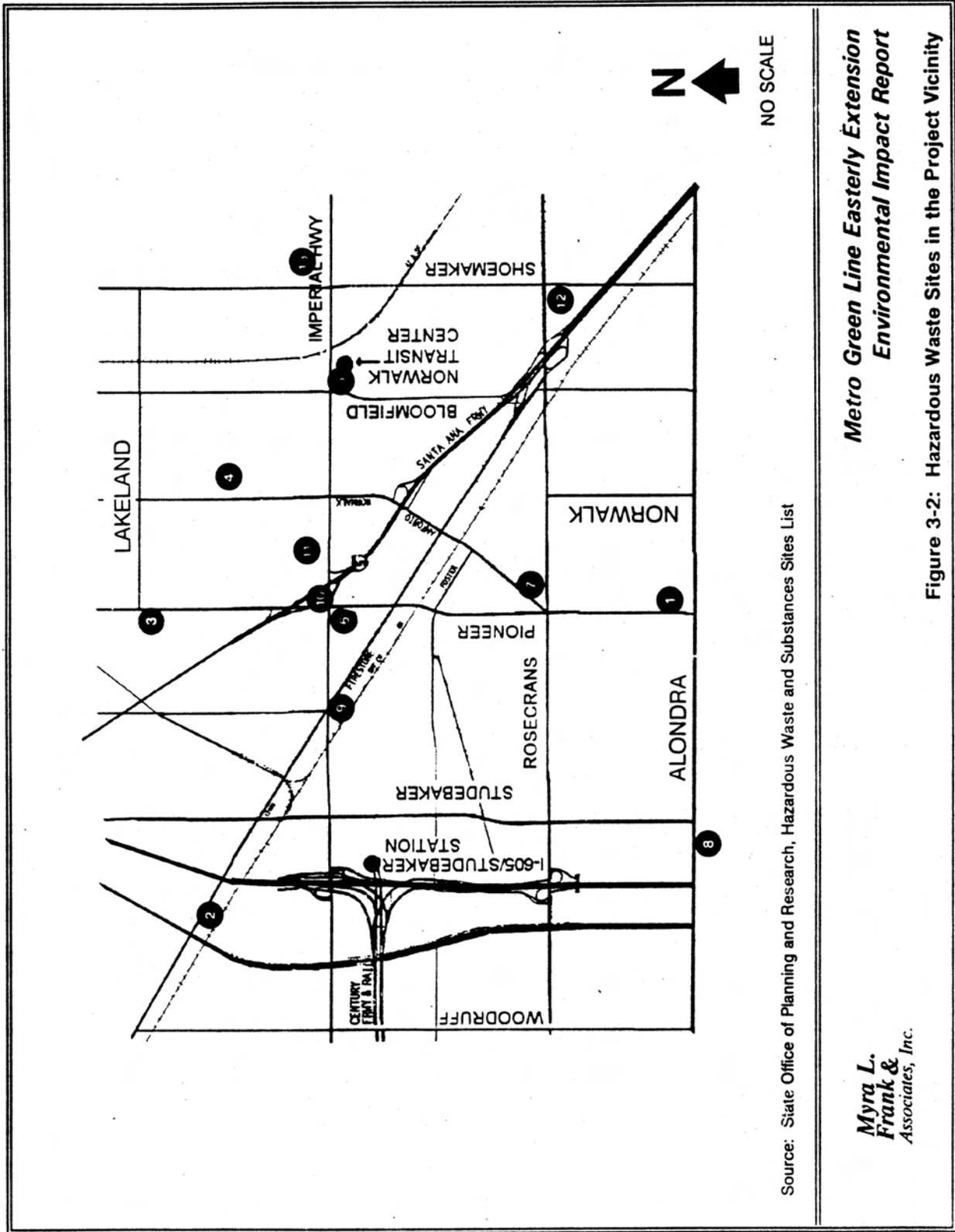
Table 3-2: Major Named Active Faults

FAULT (in alphabetical order)	DATE OF LATEST MAJOR ACTIVITY	MAXIMUM CREDIBLE EARTHQUAKE	DISTANCE FROM ROUTE (miles)	DIRECTION FROM ROUTE
Big Pine	1852	7.5 (b)	82	NW
Cucamonga	(e)	6.5 (b)	28	NE
Elsinore	1910	7.5 (b)	35	ESE
Elysian Park Structure	1989	6.75 (c)	13	NE
Garlock	(d)	7.75 (b)	74	NNW
Helendale	(e)	7.5 (b)	70	NE
Malibu Coast	1973	7.0 (c)	32	W
More Ranch	(d)	7.5 (b)	103	WNW
Newport-Inglewood	1933	7.0 (b)	8	W
Palos Verdes	1982	6.6	20	SW
Pinto Mountain	(e)	7.5 (b)	77	E
Raymond	(e)	6.6 (c)	14	N
San Andreas Zone	1857	8.25	37	NE
San Cayetano	(e)	6.75 (c)	51	NW
San Fernando Zone	1971	6.5 (b)	30	NNW
San Gabriel	(e)	7.5 (c)	22	NNW
San Jacinto Zone	1968	7.5 (b)	19	NNE
White Wolf	1952	7.75	89	NNW
Whittier	1987(?)	7.1 (c)	4	NE

Notes:

- (a) Historic movement (1769 to present).
- (b) Greensfelder, C.D.M.G. Map Sheet 23, 1974.
- (c) Mark (1977) Length-Magnitude relationship.
- (d) Intermittent creep.
- (e) Movement within the last 11,000 years; zoned by the State Geologist for the Alquist-Priolo Program.

Source: Law/Crandall and Associates, 1991.



Source: State Office of Planning and Research, Hazardous Waste and Substances Sites List

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Figure 3-2: Hazardous Waste Sites in the Project Vicinity

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Table 3-3: Hazardous Waste Sites in the Project Vicinity

NO.	SITE	ADDRESS	APPROXIMATE MILES FROM IMPERIAL
1	Norwalk Fuel Supply Depot	15306 Norwalk Boulevard	1.9
2	Peacock Engineering & MFG.	10620 East Firestone Boulevard	0.6
3	General Petroleum Corp. #3	11101 S. Pioneer Blvd.	0.9
4	Metropolitan State Hospital	11400 Norwalk Boulevard	0.7
5	Mobil Station #11-F20	12616 Imperial HWY.	0
6	Power Rated	11750 Imperial HWY.	0
7	Shell Station	11821 Rosecrans Avenue	1.1
8	Cerritos Community College	1110 Alondra Boulevard	2.1
9	Russell Transportation	11600 Firestone Boulevard	0.2
10	Shell Station	11755 Imperial HWY	0
11	Montgomery Ward	12051 Imperial HWY	0
12	Mobile Station #11-FTA	12800 Rosecrans Avenue	1.1
13	Neville Chemical Company	12800 Imperial Highway	0

Source: State Office of Planning and Research, Hazardous Waste and Substances Sites List.

3.1.2 Construction Impacts

Physiographic Features

No impacts during construction of the proposed project are expected either on or from the existing physiographic features in the area.

Geology and Seismicity

No surface evidence of faults or fault-associated features have been identified in the immediate vicinity of the proposed project. However the proposed project does lie near the potentially active Norwalk fault. The site does not lie within an Alquist-Priolo Special Studies Zone for surface fault rupture hazard.

The seismic hazard along the corridor during the construction period is generally limited to those hazards caused by earthquakes. The major cause of damage from earthquakes along the corridor would be violent shaking from earthquake waves, the potential effects of which would be more damaging to the aerial alignment because of its extensive above-ground falsework and

temporary installations; however, the general assessment of earthquake-induced damage during construction would be low for either alignment.

Oil Fields

A review of maps compiled by the California Division of Oil and Gas (DOG) indicates that the project lies outside the Santa Fe Springs oil field. No existing or abandoned wells were observed along the proposed project. Therefore, no impacts related to oil wells are anticipated.

Liquefaction and Other Soil Instability Issues

- Liquefaction

Areas of high groundwater may exist along the proposed project. The areas along the project believed to have liquefaction potential are found in the central portion of the project length.

- Seismic Settlement

As discussed earlier, soils in the area are between fine and medium-course. The probability of problematic settlement associated with an earthquake would be greater the finer the soil. The aerial alignment, because it would be supported by above-ground structures, would be potentially subject to damage from seismic settlement, although this potential can be adequately handled through appropriate design provisions. Pilings for column bases would be placed at a sufficient depth to mitigate the effects of seismic settlement. The subway alignment would be 50 to 60 feet below the surface and below a silty clay layer; therefore it would not be subject to seismic settlement.

Hazardous Materials Deposition

As shown in Table 3-3 a total of four sites are found along Imperial Highway. They could represent potentially significant impacts during construction of the project, producing contaminated soils and groundwater in the project construction area. The aerial alignment would be most affected since soil and groundwater contamination are more likely to be found at depths more shallow than the subway alignment.

3.1.3 Operational Impacts

Physiographic Features

No operational impacts are anticipated during operation of the project.

Geology and Seismicity

The proposed project would be located in a seismically active area. A moderate to major earthquake on any of the major faults in the area during the operational lifetime of the proposed project could subject the project to strong groundshaking. Such groundshaking could result in

the failure of structures along the proposed project or interruption of operating systems. This potential is regarded as potentially significant before mitigation. Mitigation consisting of appropriate design provisions would reduce the risk to below a level of significance.

Oil Fields

No operational impacts with regard to oil fields are anticipated.

Liquefaction and Other Soil Instability Issues

Some areas along the corridor may be subject to liquefaction in the event of an earthquake during the operational lifetime of the proposed project. Soil liquefaction could cause overlying structures to fail through the loss of load bearing capacity, lateral spreading, and settlement; however, this is not considered a potentially significant impact. For the subway alignment, the proposed depth (50 to 60 feet below grade) should be adequate to minimize liquefaction settlement. However, the effects of liquefaction on the aerial alignment would be substantial, and therefore piling depths would probably range from 40 to 100 feet deep. Deeper pilings, passing through the silty clay layer, would be more stable than shallower pilings, which, being shorter, would feel the impact of liquefaction to a greater extent.

Hazardous Materials Deposition

Operation of the proposed project is not anticipated to result in the deposition of hazardous materials in the surrounding environment, and the potentially adverse effect on the project from sources in the area would be remedied during the construction period.

3.1.4 Mitigation Measures

Construction

- **Geology and Seismicity**

The likelihood of a severe earthquake occurring during the construction period is low; however, the possibility does exist and should not be discounted. If the area is subject to a substantial seismic event and associated severe ground shaking during the construction period, the effects of the shaking can be minimized through appropriate construction techniques. All appropriate construction techniques for the safety of workers, pedestrians, motorists and nearby residents should be implemented. These measures include shoring and falsework. Despite these measures, in the event of an earthquake during the construction period, damage to structures under construction could be extensive.

- **Oil Fields**

Any undocumented or improperly abandoned wells encountered during construction along the corridor would be abandoned according to requirements set forth in Title 14, Chapter 4, Subsection 1, Article 3, Section 1723, of the California Administrative Code.

- **Liquefaction and Other Soil Instability Issues**

All areas of historically high or perched ground water levels along the proposed project should be analyzed in detail during project design to verify the potential for liquefaction. Should soils subject to liquefaction be found below any of the alternatives, then site specific engineering techniques (e.g., importation of stable material, compaction of soils, permanent dewatering and attachment of deep-set piles to bedrock or lower, denser soils) should be implemented.

- **Hazardous Materials Deposition**

Sites along the proposed project that would be disturbed by construction and that are known to contain contaminated soil or groundwater would have to be cleaned prior to or during construction of the project. Clean-up activities would have to be conducted in accordance with all applicable regulations and guidelines governing the removal and disposal of hazardous materials. In most cases clean-up efforts would remediate the problem and no further work would be required; however, in some cases continued monitoring of particular sites may be required to ensure that no migration of existing contamination has occurred subsequent to the primary clean-up operations. Responsibility for clean up (including Phase I assessments) and monitoring of individual sites has not been established.

Operation

- **Geology and Seismicity**

Careful testing of soil foundations and correction of weakness in soil strength, coupled with state-of-the-art seismic design, would lessen the severity of the potential effect. The proposed project would be designed in accordance with all applicable codes and regulations and plans would be approved by a state licensed civil engineer.

- **Liquefaction and Other Soil Instability Issues**

The mitigation measures employed during the design and construction phase of the project would serve to minimize the risks associated with liquefaction during the operational lifetime of the proposed project. Further mitigation beyond that proposed for the construction and design period is not required.

- **Hazardous Materials Deposition**

Since the project does not involve the transportation of hazardous materials mitigation would not be required.

3.2 HYDROLOGY AND WATER QUALITY

3.2.1 Environmental Setting

Precipitation in the Los Angeles area is characterized by intermittent rain during winter months and negligible rain during summer months; 85 percent of the annual precipitation occurs from November to March. Although precipitation normally occurs as rainfall, winter snow is common

in the higher elevations of the San Gabriel and San Bernardino Mountains. As is typical of many semi-arid regions, the Los Angeles area experiences wide variations in monthly and seasonal precipitation totals.

Precipitation may flow into surface reservoirs or groundwater basins, or run off to the ocean. Short-term water storage is in surface reservoirs and long-term storage is in groundwater basins. the amount of infiltration possible to groundwater basins is dependent upon the slope, soil type, and intensity and duration of rainfall. Because most of Los Angeles is either paved and developed or steeply sloped, a great deal of runoff occurs. Flood control structures have been constructed to channel the water safely through the inhabited areas to minimize flooding and to aid in recharging the water storage units.

The Norwalk area is part of the Los Angeles River Basin. The Los Angeles River Basin, as defined in the Basin Plan of the State Water Resources Control Board (SWRCB), involves the coastal areas of Los Angeles county south of the divide of the San Gabriel Mountains and Santa Susana Mountains, plus a small part of the coastal portion of Ventura County south of the divide of the Santa Monica Mountains. This basin is drained by four major streams: the Los Angeles River, the Rio Hondo River, Ballona Creek, and the San Gabriel River. Numerous tributaries discharge into these major drainages, most of which have intermittent flow. Except for a few rivers in the mountainous areas, most have been converted to flood control channels lined with concrete and stone rip-rap. The drainage pertinent to this project is the San Gabriel River.

Surface Water Resources

- San Gabriel River

The San Gabriel River originates in the San Gabriel Mountains north of Los Angeles. The river is controlled by a series of dams including the Cogswell, San Gabriel, Morris, and Whittier Narrows. Tributaries to the San Gabriel River include Walnut, San Jose and Coyote Creeks. The river is located approximately 0.70 miles west of the project site. At this location the river is contained within a trapezoidal concrete-lined channel and remains so until it reaches the ocean.

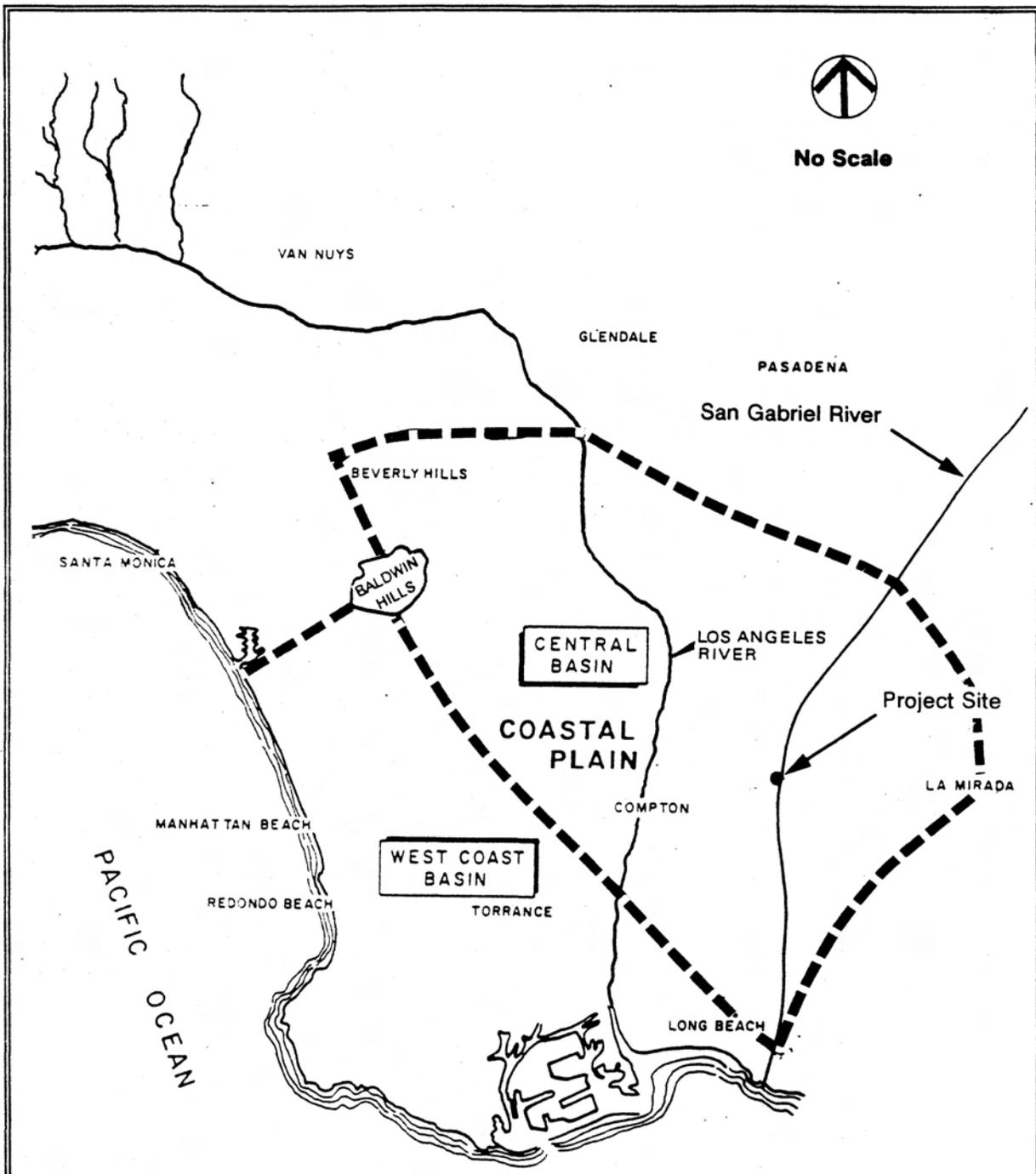
Flooding

A Federal Insurance Rate Map has not been produced by the Federal Emergency Management Agency for the City of Norwalk because it is classified as Zone C, an area of minimal flooding.

Groundwater Resources

Groundwater resources are shown in Figure 3-3 and are discussed below.

Freshwater permeates soils to varying degrees depending on the composition of the soil. Coarsely grained, sandy, or gravelly strata comprise individual aquifers. These water-bearing deposits are readily capable of absorbing, storing, transmitting, and yielding water to wells. Fine-grained sediments, such as silts and clays, are interbedded with the aquifers and form aquicludes which limit the transmission of water out of the aquifer. The aquicludes form discrete boundaries, and the aquifers may merge and coalesce with adjacent aquifers.



Source: MFA, Inc., 1992.

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Figure 3-3: Groundwater Resources

Groundwater basins are underlain by one or more permeable layers. Basin boundaries do not necessarily coincide with drainage basins and are derived from political boundaries, surface features, and/or geologic features such as faults, non-waterbearing rocks, and natural or artificial divides in the water table surface. The elevation of groundwater varies with the amount of pumping and the amount of recharge occurring. Groundwater basins may be recharged naturally through percolation of precipitation or artificially with imported water or reclaimed water. Artificial recharge with imported water is practiced as a means of offsetting declining groundwater levels and providing storage for use in times of drought.

The groundwater basins of the Los Angeles Coastal Plain are incorporated into the Coastal Plain Hydrographic Subunit. The Coastal Plain Hydrographic Subunit contains the Central, West Coast, Santa Monica, and Hollywood Basins. The most important of these basins with respect to the proposed project is the Central Basin.

- **Central Basin**

The Central Basin extends over much of the Coastal Plain and holds most of its groundwater. Groundwater occurs within alluvium, Lakewood Formation and San Pedro Formation sediments. These sediments contain several very permeable layers of aquifers.

Groundwater enters the basin through percolation of precipitation, stream flow, and artificial recharge in spreading grounds such as those located along the Rio Hondo and San Gabriel Rivers. Groundwater movement within the basin is toward pumping depressions located in the Vernon area and at the point where the Los Angeles River crosses the Newport-Inglewood Fault. Some groundwater moves across the fault replenishing the West Coast Basin. 194,900 acre feet of water were extracted from the basin between July 1, 1986 to June 30, 1987 for use as municipal potable supply. The basin capacity is considered stabilized, and all extractions of water are monitored by the Department of Water Resources.

3.2.2 Construction Impacts

Surface Water Resources

Construction impacts to surface water resources within the study area would be confined to the immediate area and would be related to water run-off from construction sites and the erosion of barren rock and soil surfaces exposed during excavation. Construction-related runoff would occur along the entire route of the aerial alignment, and the station area at the east end of the route. For the subway alignment, runoff would be confined to the construction staging areas (east or west). This would not be considered a significant impact. No further construction-related impacts to surface waters are anticipated.

Groundwater Resources

The excavation required for the subway alignment could have an impact on groundwater quality and solid waste disposal. Excavation may intercept shallow groundwater and would require dewatering and muck disposal. The removed water and soil could be contaminated with oil, tar and other hazardous wastes, which would necessitate wastewater treatment and possible transport of muck to a Class I or Class II landfill. Potential effects on groundwater associated

with the aerial alignment would be confined to column locations where caissons would be used. In either case, the effects are not considered significant.

3.2.3 Operational Impacts

Surface Water Resources

The project is not expected to have operational impacts related to surface water resources.

Groundwater Resources

Once constructed the corridor would be completely separated from the water table and would have no affect on groundwater resources under normal operating conditions.

3.2.4 Mitigation Measures

Surface Water Resources

Typical mitigation measures used to reduce potential impacts to surface waters from construction runoff and from erosion of barren material during the construction period include the use of proper grading techniques and appropriate sloping, shoring and bracing of the construction site.

During construction, the project will comply with rules and regulations applicable, as per the General Construction Permit and construction stormwater regulations.

Groundwater Resources

During construction groundwater control may be accomplished by temporarily lowering the groundwater level, a process termed dewatering. Dewatering would most likely only be required for the subway alignment. Dewatering is considered to be the most practical method of groundwater control. Other possible methods include the use of compressed air to balance the hydraulic pressure or creating a barrier to groundwater flow within the surrounding soil by freezing or grouting, but these methods are not desirable due to their increased complexity, safety hazards and associated high cost.

A series of soil borings would be undertaken prior to final design and construction. These boreholes would identify groundwater levels at various locations along the corridor where dewatering would be necessary. The results of these test borings would become part of the design process, thereby enabling proper groundwater control measures to be utilized during construction.

During dewatering operations, groundwater may become contaminated. Should this be the case, the disposal of water removed from underground areas containing oil and tar or other hazardous materials is expected to require wastewater treatment to remove hydrocarbons and other hazardous substances before discharge. Treatment could be accomplished by an oil/water separator, with the separated materials removed by truck to a Class I or Class II disposal site. This would require a National Pollutant Discharge Elimination System (NPDES) permit issued by the Regional Water Quality Control Board (RWQCB).

With regard to groundwater contamination resulting from a material spill, which would be highly unlikely after the project is operational, the same emergency response plan would be employed as discussed above.

3.3 VEGETATION AND WILDLIFE

This section analyzes potential impacts to plant and animal life associated with the proposed Metro Green Line Easterly Extension. The analysis is based on information obtained from the California Natural Diversity Data Base (CNDDDB) species account records and a field survey of the site.

3.3.1 Environmental Setting

The Los Angeles region is primarily urbanized and dominated by paved surfaces and landscaping. Typical of a Mediterranean climate, the region is arid with highly seasonal rainfall occurring primarily in winter. Native vegetation has been largely replaced by urban landscaping. Invasive exotic species have also displaced native vegetation, although remnants of the native vegetation of the Los Angeles Coastal Plain occur on some hillsides. In undeveloped but disturbed urban areas, flora consist of native and non-native species that are tolerant of disturbances. Typical species found include eucalyptus, palms, and iceplant. Landscaping along the proposed project include pines, jacaranda, palms, eucalyptus, oleander, bottlebrush and magnolia trees.

Wildlife in the area also include species adapted to a disturbed environment. Examples include pigeons, gulls, mockingbirds, scrub jays and house mice.

Applicable Rules and Regulations

The federal Endangered Species Act of 1973 (as amended), the State of California's endangered species legislation of 1970 (California Administrative Code, Title 14) and the California Fish and Game Code require the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) to list all species threatened with extinction. The USFWS lists species in the Federal Register and the CDFG lists species in California Administrative Code Title 14. In addition, the California Department of Fish and Game Natural Diversity Data Base (NDDDB) lists species considered sensitive by the scientific community, though this listing offers no legal protection. The NDDDB identifies the location and status of a species by recording observations.

Sensitive habitats are also identified by the USFWS and CDFG. The California Coastal Act of 1976 defines a sensitive habitat as an area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which would be disturbed or degraded by human activities and development.

Threatened and Endangered Species

There were no species identified by the NDDDB within the project area.

3.3.2 Impacts

The project corridor is highly urbanized and has been so for many years. Consultation with the NDDDB indicates that no state or federally listed endangered species are found within the project boundaries. The proposed project is not expected to either create or affect any habitats for sensitive species and therefore would not result in any significant impacts to biological resources.

Impacts would be limited to the removal of some existing landscaping and common urban vegetation. This is not a significant impact. The habitat provided by such vegetation can be found throughout the Los Angeles basin.

3.3.3 Mitigation Measures

No adverse impacts are anticipated and no mitigation is required. Landscaping would be provided when possible along the proposed project.

3.4 LAND USE

This section discusses the land use setting and impacts associated with the subway and aerial alignments along the approximately 2.7-mile length of the project corridor. Mitigation measures for significant adverse impacts are also addressed.

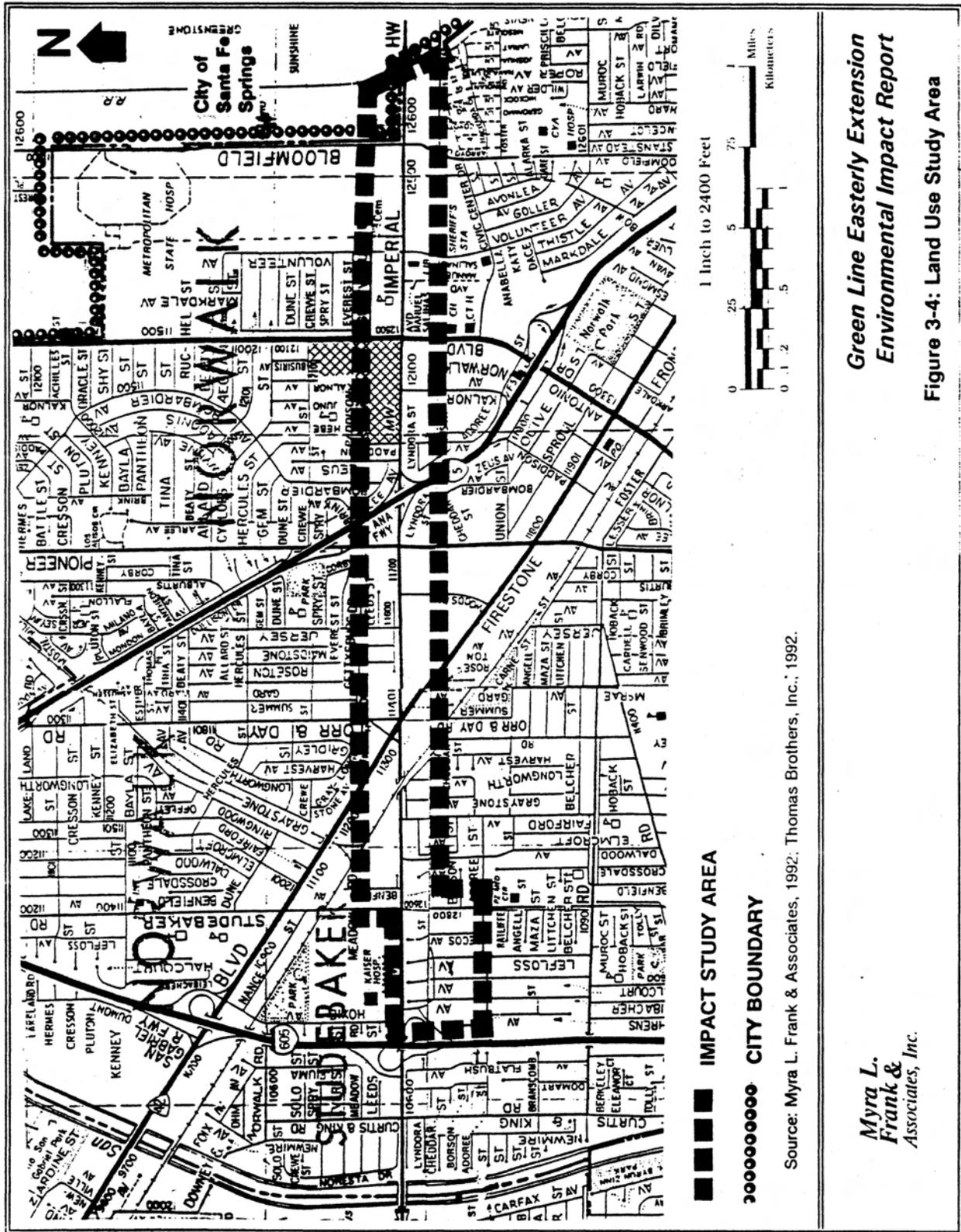
3.4.1 Environmental Setting

Existing Land Uses, General Plan Land Use Designations and Zoning

For land use purposes, the study area was defined as approximately one-fourth mile in width, centered on the project route. It encompasses a small portion of the City of Santa Fe Springs as well as portions of the City of Norwalk.

The project route is located entirely within the City of Norwalk, in Los Angeles County, 17 miles southeast of the City of Los Angeles and 17 miles northeast of the City of Long Beach. At its western end, the project begins on the east side of the San Gabriel Freeway (I-605) in an open patch of land north of Adoree Street, proceeds in a northeasterly direction onto Imperial Highway, continues east along Imperial Highway and ends at the AT&SF railroad tracks at the Norwalk city boundary with Santa Fe Springs. The study area, which encompasses a residential cluster east of I-605, bounded by Imperial Highway to the north, Adoree Street to the south, Studebaker Road to the east and I-605 to the west, contains properties fronting the north and south sides of Imperial Highway between Studebaker Road and the AT&SF railroad at the eastern city boundary and encloses an area currently occupied by a city transportation maintenance yard at the southwest corner of Imperial Highway and the AT&SF railroad. Figure 3-4 indicates the boundaries of the land use study area.

The predominant land use in the City of Norwalk is low-density residential, which accounts for 44 percent of existing land uses. Residential uses encompass over half of all land uses in the city. Transportation infrastructure occupies over one fifth of the city's total land use stock. Table 3-4 shows the distribution of existing land uses in the City of Norwalk. In contrast to the general low-density residential nature of the City of Norwalk, the project study area represents



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Figure 3-4: Land Use Study Area

Source: Myra L. Frank & Associates, 1992; Thomas Brothers, Inc., 1992.

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Associates, Inc.*

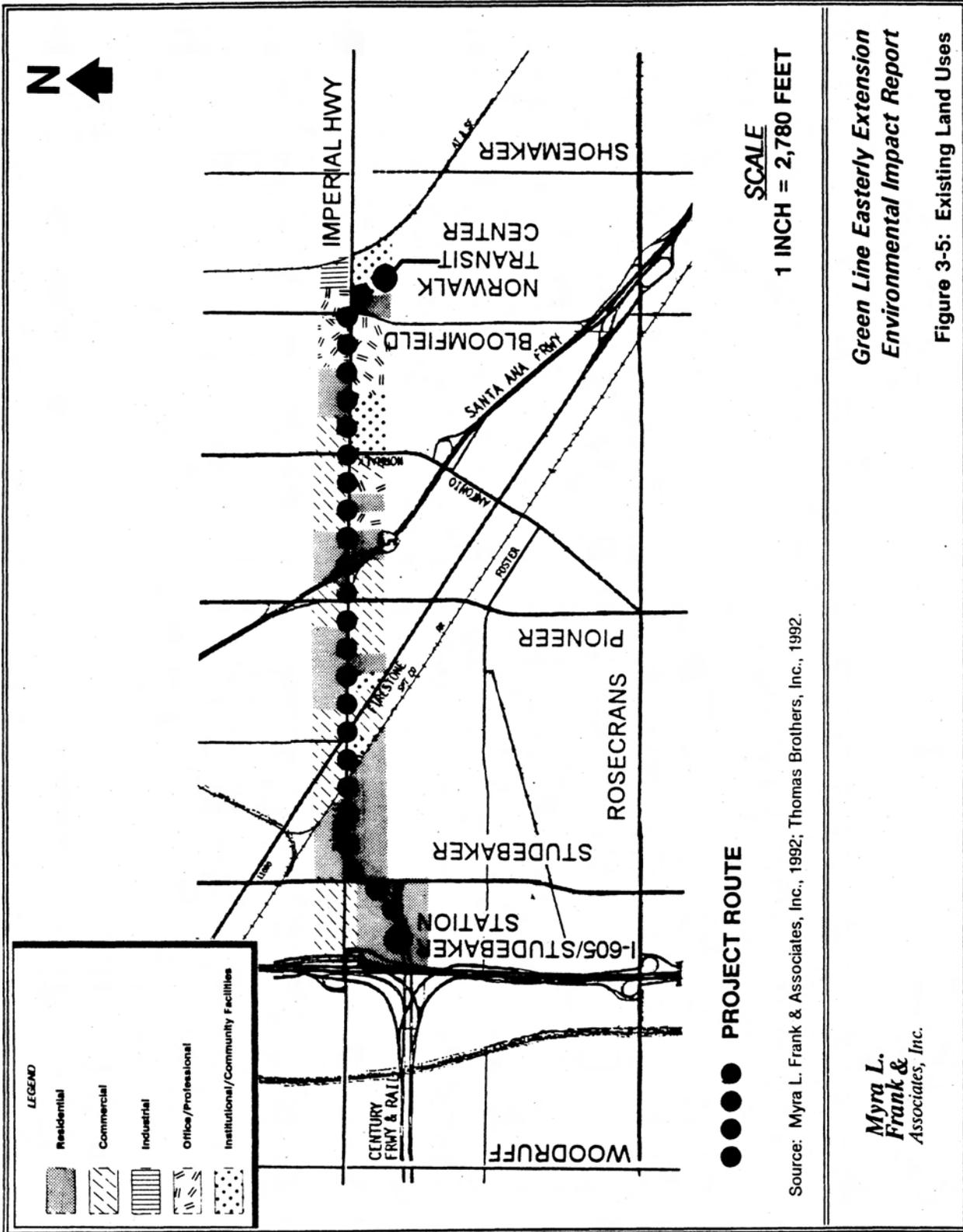
Table 3-4: Norwalk General Plan Distribution of Land Uses (1992)

LAND USES	ZONING	ACRES	% TOTAL
Low Density Residential	R1	2,979	43.6%
Medium Density Residential	R2	24	0.4%
High Density Residential	R3	450	6.6%
Neighborhood Commercial	C1	93	1.4%
General Commercial	C3	289	4.2%
Commercial and Office	CO	47	0.7%
Professional Office	PO	115	1.7%
Light Manufacturing	M1	185	2.7%
Heavy Manufacturing	M2	161	2.4%
Open Space	OS	62	0.9%
Park	PARK	97	1.4%
School	SCH	438	6.4%
Railroads	RR	47	0.7%
Street/Fwy ROW's		1,853	27.1%
CITY TOTAL		6,840	100.0%

Source: City of Norwalk Planning Department, 1992.

a primary commercial and office corridor within the city, interspersed with low and medium-density residential areas. Land uses at the western end of the project are defined by an expanse of open terrain, single-family residential dwelling units, a community garden, church, nursing home, and local commercial retail uses. Existing land uses within the study area are shown in Figure 3-5. This western segment is designated Low Density Residential in the Norwalk General Plan and is zoned R1 (Single Family Residential). Figure 3-6 and Figure 3-7 show general plan land use designations and zoning within the project study area, respectively.

From the Metro Green Line station under construction at I-605 the route curves in a northeasterly direction and proceeds east on Imperial Highway. From Studebaker Road to Firestone Boulevard the project passes by single- and multi-family residential areas, a mobile home park, a church, and regional retail commercial uses. Land in this area is designated Low Density Residential and Light Manufacturing in the Norwalk General Plan and is zoned C1 (Restricted Commercial), R1 (Single Family Residential), R3 (Limited Multi-family Residential), and C3 (General Commercial).

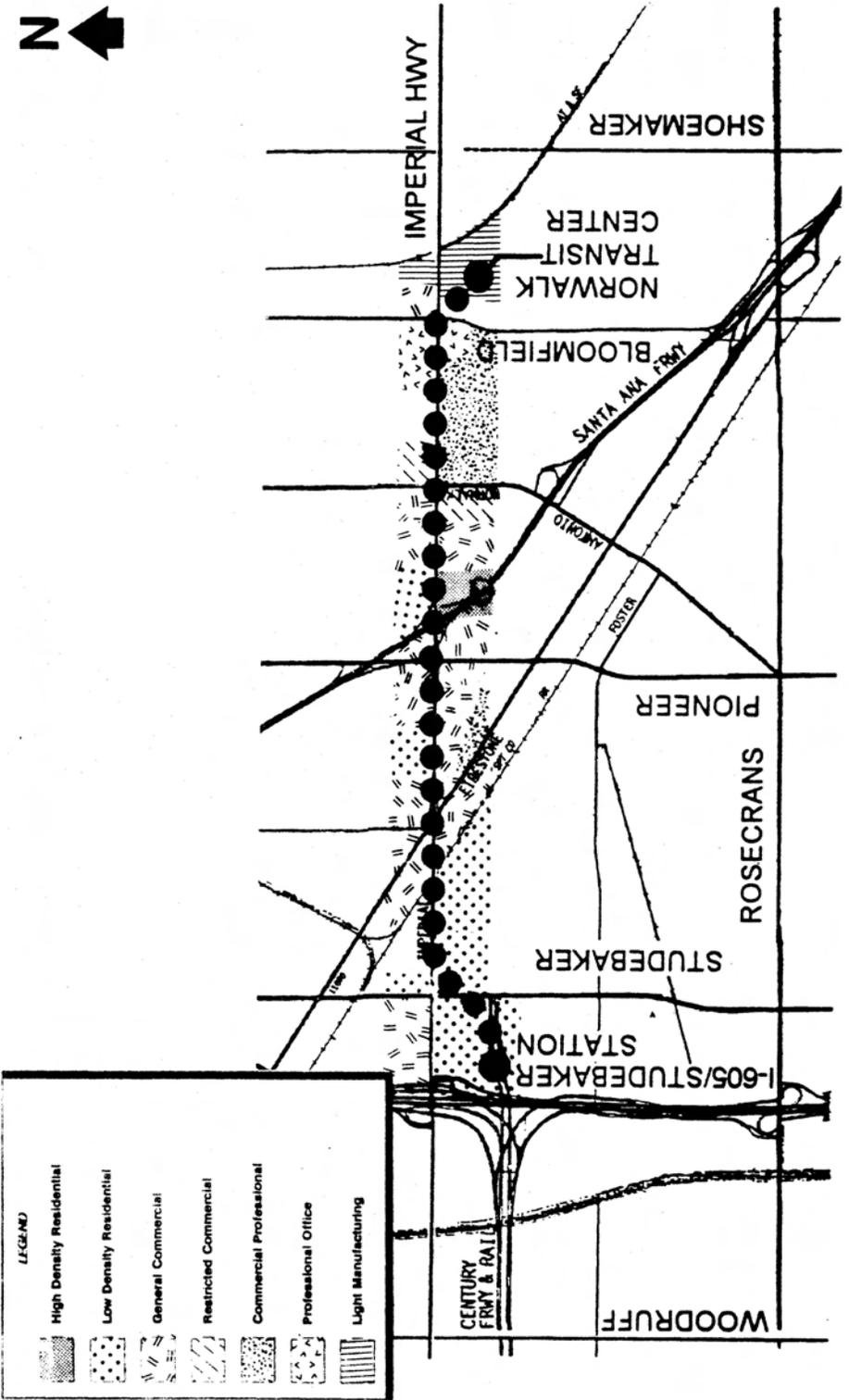


Source: Myra L. Frank & Associates, Inc., 1992; Thomas Brothers, Inc., 1992.

**Green Line Easterly Extension
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Figure 3-5: Existing Land Uses

**Myra L.
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LEGEND

- High Density Residential
- Low Density Residential
- General Commercial
- Restricted Commercial
- Commercial Professional
- Professional Office
- Light Manufacturing

●●● PROJECT ROUTE

SCALE

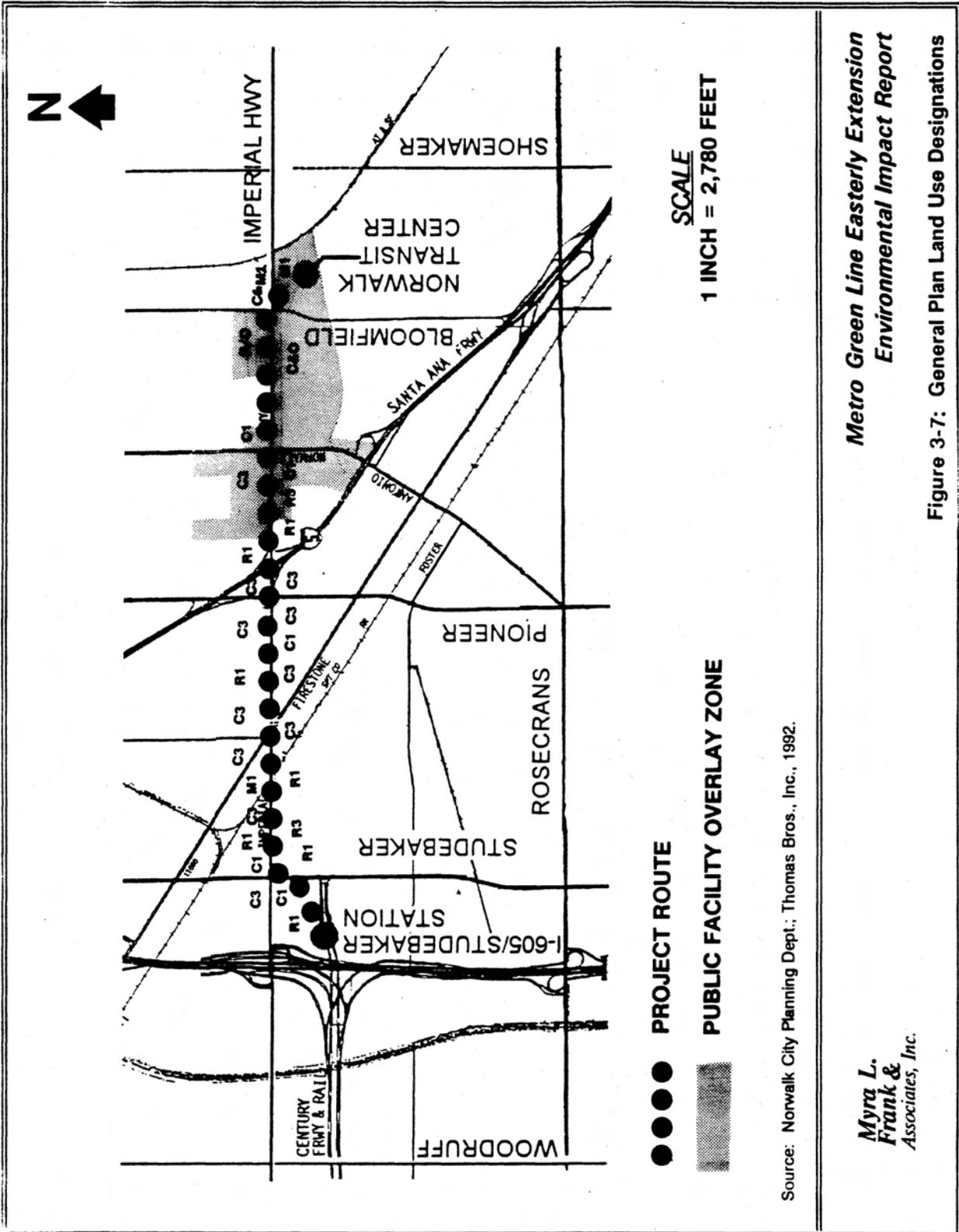
1 INCH = 2,780 FEET

Source: Norwalk City Planning Department, Thomas F. ... Inc., 1992.

**Metro Green Line Eastern Extension
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Figure 3-6: Existing Zoning

*Myra L.
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**Metro Green Line Easterly Extension
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Figure 3-7: General Plan Land Use Designations

Source: Norwalk City Planning Dept.; Thomas Bros., Inc., 1992.

**Myra L.
Frank &
Associates, Inc.**

From Firestone Boulevard to the Santa Ana Freeway (I-5), the route is flanked by a bowling alley, a convalescent hospital, single- and multi-family residential areas, local commercial retail uses, and a hotel. Land fronting onto this stretch of the route is designated General Commercial, Commercial/Professional, and Low Density Residential in the Norwalk General Plan and is zoned C3 (General Commercial), R1 (Single-family Residential), and C1 (Restricted Commercial).

From I-5 to Norwalk Boulevard the route continues past single- and multi-family residential areas, Paddison Ranch and Paddison Square Mall, and office and retail uses. Land in this portion of the project is designated Low Density Residential, General Commercial, High Density Residential, and Restricted Commercial in the Norwalk General Plan and is zoned R1 (Single-family Residential), R3 (Limited Multi-family Residential), C&O (Commercial and Office), C1 (Restricted Commercial), and C3 (General Commercial).

Proceeding eastward from Norwalk Boulevard to the eastern terminus of the route, the project is bounded by the Norwalk Civic Center and an adjacent 4-acre lawn area fronting directly onto Imperial Highway, the Norwalk Public Library, single- and multi-family residential areas, and corporate office parks. Approximately 250 feet west of the City of Norwalk boundary with the City of Santa Fe Springs, the route curves in a southeasterly direction away from Imperial Highway and terminates at the site of the proposed Norwalk Transportation Center, which is currently occupied by a city maintenance facility. This portion of the route is designated Low Density Residential, Professional Office, and Commercial Professional in the Norwalk General Plan and is zoned C1 (Restricted Commercial) and C&O (Commercial and Office).

The site of the proposed Norwalk Transportation Center is surrounded to the west and south by enclosed single-family residential projects and is bordered to the east by AT&SF railroad tracks. The site of the proposed Norwalk Transportation Center is designated Light Manufacturing in the Norwalk General Plan and is zoned M1 (Light Manufacturing). From Zeus Avenue to the site of the proposed Norwalk Transportation Center, the project is contained within a City of Norwalk Public Facilities Overlay Zone. The PF Zone Category was created to ensure compatible development in the vicinity of the Civic Center and major public buildings; as an overlay zone, any development must comply with the regulations of the PF Zone in addition to fulfilling the requirements of the underlying zoning. Under the terms of the PF Overlay Zone, development plan approval from a city-appointed Design Review Board is required for the "establishment, substantial enlargement or change to another use of any outdoor use" (Norwalk Municipal Code).

North of Imperial Highway the area directly across from the site of the proposed Norwalk Transportation Center west of the AT&SF Railroad is located in the City of Santa Fe Springs. In this area, properties fronting onto Imperial Highway are comprised of commercial and light industrial uses; the land is designated Commercial and Industrial in the City of Santa Fe Springs General Plan and is zoned C2 (Community Commercial) and M2 (Heavy Manufacturing).

General Plan, Redevelopment Projects, and Urban Development Trends

Land use policy in the City of Norwalk is governed by the Norwalk General Plan, which was adopted by the Norwalk City Council on February 27, 1961, and revised on May 29, 1973. By meeting the goals and objectives of the general plan the city seeks to 1) protect existing residential development and provide each neighborhood with adequate facilities and services;

2) improve the city as an attractive place in which to live and work; 3) develop high aesthetic standards in all existing and future development within the city; 4) promote Norwalk's position in commerce, industry, recreation, and culture; and 5) create a circulation and transportation system which is integrated with the community pattern of residence and employment and which will ensure the safe movement of people throughout the city.

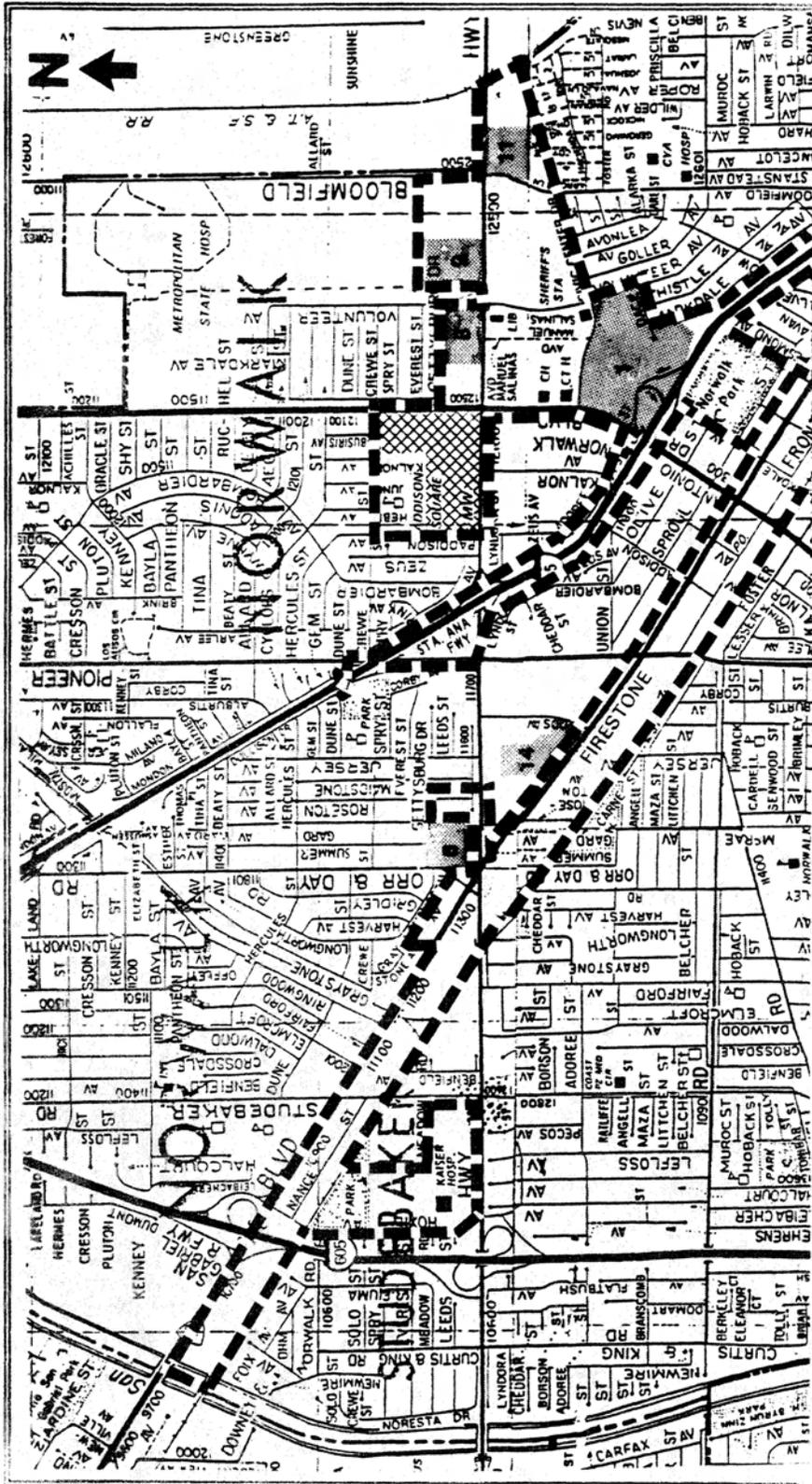
Specific goals of the Norwalk General Plan include the:

- Diversification of certain single-family residential areas to higher density residential and commercial land uses;
- Allocation of high density residential uses in areas near essential community facilities, adequate streets, and required utilities;
- Establishment of ten restricted commercial centers, located approximately one mile apart, with an overall average approximately nine acres each;
- Designation of several areas within the community for commercial-professional office type uses;
- Creation of a high density office complex adjacent to the Civic Center through the development of large scale facilities and high-rise buildings.

The City of Norwalk regulates the development of six specific plan developments in the project study area. Figure 3-8 shows the location of the specific plan boundaries and Table 3-5 indicates the type of development in each of the specific plan areas.

The City of Norwalk is currently revising its General Plan in order to reflect existing conditions and incorporate updated land use policies and goals. Table 3-5 confirms that a primary land use goal of the city is to establish an expanded high density office node encompassing the Civic Center area, including adjacent office space south and east of the Civic Center and commercial/office land uses north of Imperial Highway. The city seeks to promote this 1.2 million square feet (MSF) area as an attractive alternative to the downtown Los Angeles office market and office space is rapidly being occupied within the Civic Center area. The County of Los Angeles plans to transfer its Recorder's Office as well as the office of the County Clerk and the Registrar of Voters to the site of the former Bechtel Company, directly east of the Norwalk Regional Library. The city intends the Civic Center office node to be developed under the guidance of a Civic Center Master Plan, which will ensure the provision of mixed-use office and retail development, pedestrian linkages, recreational open space, and cultural amenities for the area.

The City of Norwalk Redevelopment Agency manages two redevelopment areas which are partially contained within the boundaries of the Green Line Easterly Extension project (see Figure 3-8). Redevelopment Project Area 1 is located along Imperial Highway from approximately Firestone Boulevard to Roseton Avenue; from Pioneer Boulevard to Bombardier Avenue; and from Paddison Avenue to the eastern project terminus. A portion of Redevelopment Project Area 2 is centered about the intersection of Imperial Highway and Studebaker Road.



- Specific Plan Areas**
- Redevelopment Project Area 1
 - ▨ Redevelopment Project Area 2 (Subarea D)
- 1 Inch to 2400 Feet
- 0 .25 .5 1 Miles
0 1 2 3 Kilometers

Source: Norwalk City Planning Department, 1997. © Brotherts, Inc., 1992.

**Metro Green Line Easterly Extension
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Figure 3-8: Specific Plan and Redevelopment Project Area Boundaries

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Table 3-5: Specific Planning Area (SPA) - Project Study Area

SPA #	LOCATION	USE	ACRES	PERMITTED DENSITY NUMBER OF UNITS
6	Orr & Day Road between Firestone Blvd. and Gettysburg Drive	Multi-family Residential	2.62	19 du/acre 50 condominium units
8	North side of Imperial Blvd. between Norwalk Blvd. and Volunteer Ave.	Commercial	4.48	88,950 sq ft
9	North side of Imperial Blvd. between Volunteer Ave. and Bloomfield Ave.	Multi-family Residential	5.02	15.01 du/acre 73 condo units
14	Northwest corner of Firestone Blvd. and Woods Ave.	Multi-family Residential	5.0	50 du/acre 249 apartment units
1	Southeast corner of Norwalk Blvd. and Civic Center Drive	Multi-Family Residential	8.45	20.49 du/acre Existing: 119 condo units Proposed: 49 condo units
		Commercial	14.82	<u>Existing:</u> Hotel (175 rooms) 5,100 sq ft restaurant 1,800 sq ft lounge 6,050 sq ft ballroom 650 sq ft meeting room <u>Proposed:</u> 104,000 sq ft office 52,800 sq ft retail 9,000 sq ft restaurant 14,000 sq ft theater
11	Southeast corner of Imperial Blvd. and Bloomfield Ave.	Multi-family Residential	8.71	24 du/acre 192 apartment units

Source: Myra L. Frank & Associates, Inc., 1992.

The goals and objectives of Redevelopment Project Areas 1 & 2 are to eliminate and prevent the spread of blight; control unplanned growth by guiding revitalization activities and new development; reduce the city's annual costs of local services through the provision of increased sales, business licenses, taxes, and revenues to the city; promote new and continuing private sector investment within the project area; retain businesses via rehabilitation activities; create local job opportunities and preserve the area's existing employment base; develop the city as a transportation hub with linkages to existing and/or proposed systems of regional and subregional significance; establish modern, convenient commercial centers to serve the needs of the city and surrounding areas; and eliminate or improve substandard vehicular circulation systems, inadequate drainage systems, and insufficient off-street parking.

The City of Santa Fe Springs, which is adjacent to Norwalk in the east, manages the Consolidated Redevelopment Project Area, which encompasses the properties located directly north of Imperial Highway across from the proposed Norwalk Transportation Center. Through the Consolidated Redevelopment Project the City of Santa Fe Springs seeks to consolidate industrial properties to facilitate the development of oilfield areas, remediate environmental problems associated with hazardous materials storage, and provide adequate infrastructure for industrial uses.

3.4.2 Construction Impacts

Aerial Alignment

Under the Aerial Alignment, construction-related land use impacts would occur at the western and eastern ends of the alignment, and also at select locations along Imperial Highway. At the western end of the route, the project would cause significant impacts during the construction period by traversing the southeast corner of the block bounded by Lyndora Street on the north, the proposed site of I-105 to the south, Studebaker Road to the east, and Pecos Avenue to the west. Aside from the property acquisitions that would occur, single-family residential homes abutting the southern end of Lefloss and Pecos Avenue would be exposed to construction of the aerial guideway. The project would also create adjacency impacts affecting single-family homes and a nursing home bordering the west side of Studebaker Road, representing significant adverse impacts such as noise and traffic. These effects are described in detail in sections 3.10 and 3.11.

Immediately east of I-5 the project would result in a partial acquisition involving the removal of approximately ten feet of frontage space from single-family residences south of Imperial Highway and approximately five feet of back yard space from a single-family residence north of Imperial Highway. These impacts are considered to be significant adverse because the affected residences would not only be exposed to the project alignment on Imperial Highway but would be required to accommodate fixed aerial guideway posts adjacent to their back yards.

South of Imperial Highway, the project would result in partial acquisitions by removing ten feet of property frontage from a public green space associated with the Norwalk Civic Center and grounds connected to the Norwalk Regional Library, as well as ten feet of landscape frontage space associated with a large professional office complex; these impacts are judged not to be significant because they involve the removal of strips of landscaping that can be relocated adjacent to the widened curbside of Imperial Highway.

Subway Alignment

Construction-related land use impacts associated with the subway alignment would be primarily confined to the areas used for construction staging purposes. Such an area has been identified at the western end of the alignment, but it also may be possible to use the Norwalk Transportation Center site at the east end of the alignment.

The effects of using either end (west or east) as a staging area are fully discussed in sections 3.10 and 3.11.

3.4.3 Operational Impacts--Land Use Consistency

Operational land use impacts are defined in terms of the project's compatibility with surrounding land uses and proposed development, including the project's conformity with established neighborhoods. Operational impacts are also defined by the project's consistency with the policy goals of local land use and redevelopment plans as well as applicable zoning.

The criteria used to assess project consistency with existing and future land uses are summarized in Table 3-6. These criteria are based on previous evaluations using criteria developed by the Federal Transit Administration. A station site without parking would have a high or moderate compatibility with nearby residential land uses, providing pedestrian accessibility to a regional transportation network linking residents to jobs, schools, and shopping opportunities throughout Los Angeles County; such a facility would produce a beneficial impact on an adjacent residential area. A transit station with parking facilities would have a low level of compatibility with adjacent residential uses, producing potentially significant adverse impacts because of additional noise and gas emissions from externally-generated traffic, as well as the appropriation of relatively large amounts of land dedicated to uses that do not serve nearby residents.

3.4.4 Operational Impacts--Property Acquisitions

Other operational land use impacts associated with the project consist of full and partial property acquisitions at the east and west ends and along portions of the alignment. Full property acquisitions resulting from the project are considered to be adversely significant. Partial acquisitions may be considered either moderately significant or adversely significant, depending on the location of the affected parcel in relation to the project and the extent of the acquisition.

Aerial Alignment See Table 3-7 and Table 3-8.

- **Commercial Acquisitions**

The aerial alignment would require the full acquisition of the Norwalk Community Garden and its associated building as well as Immanuel Church and its parking area. Both properties are located on Studebaker Road between Lyndora and Adoree. Full acquisitions involving the displacement of these properties would not be consistent with goals of the Norwalk General Plan to protect existing residential development from incompatible uses and provide neighborhoods with necessary facilities and services.

Table 3-6: Compatibility of Transit Centers and Commuter Rail Stations with Land Use Types

TRANSIT FACILITY	USES WITH HIGH COMPATIBILITY	USES WITH MODERATE COMPATIBILITY	USES WITH LOW COMPATIBILITY
Facilities with Park-and-Ride Spaces	Commercial Light Industrial Heavy Industrial Institutional	Office	Single-family Residential Multi-family residential Open Space
Facilities without Park-and-Ride Spaces	Multi-family Residential Office Commercial Institutional	Single-family Residential Light Industrial Heavy Industrial	Open Space

Source: Draft EIR: Oceanside-Escondido Rail Project, 1990.

Table 3-7: Aerial Alignment Full Property Acquisitions

RESIDENTIAL PROPERTY		
LOCATION/ADDRESS	SINGLE-FAMILY UNITS	MULTIPLE-FAMILY UNITS
12702 Lefloss Avenue	1	
NON-RESIDENTIAL PROPERTY		
LOCATION/ADDRESS	NAME/TYPE	REMARKS
12739 Studebaker Road	Community Garden	Building associated with community garden would also be removed.
12719 Studebaker Road	Church	Parking area associated with church would also be acquired.

Source: Myra L. Frank & Associates, 1992.

Table 3-8: Aerial Alignment Partial Property Acquisitions

RESIDENTIAL PROPERTY			
LOCATION/ADDRESS	SINGLE OR MULTIPLE-FAMILY	AREA ACQUIRED (sq. ft.)	
12483 Arlee Avenue	S	400	
11951 Imperial Highway	M	2000	
11917 Lyndora Street	S	464	
11911 Lyndora Street	S	480	
11907 Lyndora Street	S	880	
11903 Lyndora Street	S	600	
11923 Lyndora Street	S	424	
10959 Lyndora Street	S	200	
10958 Lyndora Street	S	200	
NON-RESIDENTIAL PROPERTY			
LOCATION/ADDRESS	NAME/TYPE	AREA ACQUIRED (Sq. Ft.)	REMARKS
11306 Firestone Boulevard	Albertson's Commercial Center	400	Parking spaces removed
11353 Imperial Highway	Gas Station	250	Frontage pavement removed
11364 Imperial Highway	New Harvest Christian Fellowship Church	100	Parking spaces removed
11459 Imperial Highway	Keystone Bowling Alley	20	Parking spaces removed
11750 Imperial Highway	Vacant lot	6,000	Significance of impact depends on future use
11733 Imperial Highway	Ford Auto Dealership	20	Parking spaces removed
11755 Imperial Highway	Shell Gas Station	20	Frontage removed
12051 Imperial Highway	Paddison Square Mall	1,000	Frontage removed
12155 Imperial Highway	Chevron Gas Station	750	Frontage removed
12138 Imperial Highway	Wendy's, Jack N' Box Restaurant	500	Frontage removed
12213 Imperial Highway	Unocal 76 Gas Station	500	Frontage removed
Norwalk Boulevard	Open Recreational Space	700	Frontage removed
12720 Norwalk Boulevard	Norwalk Public Library	320	Frontage removed
12400, 12440 Imperial Highway	Office	1,350	Frontage and landscaping removed
12655 Imperial Highway	Crescent Transmission	40	Parking spaces removed; partial access block
Imperial Highway	City Maintenance Facility	1,500	Parking and vacant land removed at site of proposed Norwalk Transportation Center
<p>Note: * Entire site subject to acquisition/reconfiguration in conjunction with development of the Norwalk Transportation Center</p>			

Between the Southern Pacific Railroad and Firestone Boulevard, the partial acquisition of parking spaces associated with an Albertson's commercial center north of Imperial Highway would remove approximately ten feet from the parking area, a loss of one fifth of the total available parking. In addition, the acquisition would conflict with the goals of the Redevelopment Project Area 1 to retain existing businesses, provide convenient commercial centers serving the needs of the city and surrounding area, stimulate sales and tax revenues, and eliminate insufficient off-street parking. The project would also cause a partial acquisition involving the removal of ten feet of property frontage from the southern end of a parking area associated with a gas station; this impact is not judged to be significant because no parking or building structures would be affected, and ingress and egress onto business premises would be preserved. South of Imperial Highway, the project would result in partial acquisitions by removing ten feet of parking associated with the New Harvest Christian Fellowship Church. This impact is not judged to be significant because the affected parking represents only five percent of total available parking at the church. East of Firestone Boulevard, the project would require a partial acquisition by removing two parking spaces from the Keystone Bowling Alley. This impact would not be significant because the number of parking spaces displaced represent only five percent of total available parking.

At the intersection of Pioneer Boulevard and Imperial Highway, the project would result in a partial acquisition by removing approximately 40 feet of property frontage from a vacant lot at the southwest corner of Pioneer Boulevard and Imperial Highway; this impact could be significant, depending upon the proposed use of the site. At the northwest corner of Imperial Highway and Pioneer Boulevard, the project would cause partial acquisitions involving the removal of three parking spaces from a Ford automobile dealership and a portion of an asphalt lot associated with a Shell gas station; these impacts are not judged to be significant because only one percent of the display space at the Ford dealership would be affected, and access to and from the Shell station would be preserved.

From Zeus Avenue to Norwalk Boulevard on the north side of Imperial Highway the project would cause a partial acquisition by removing five to eight feet of frontage space from the south side of the Paddison Farm, a significant adverse impact and an action that is not consistent with the goal of the Norwalk General Plan to promote Norwalk's position in recreation and culture and improve the city as an attractive place to live and work. The project would also result in the partial acquisition of 95 parking spaces from the Paddison Square Mall. This impact is judged to be significant adverse because the amount of displaced parking represents approximately eight to ten percent of total available parking at the mall. Also, the partial acquisition of parking area from the Paddison Square Mall would not be consistent with the objectives of Redevelopment Project Area 1. The project would also cause a partial acquisition involving the removal of approximately five feet of property frontage from the south side of a Chevron gas station on the northwest corner of Imperial and Norwalk Boulevards; this impact is not judged to be significant since access to the gas station would be preserved from both Imperial Highway and Norwalk Boulevard. South of Imperial Highway, the project would cause a partial acquisition by removing approximately five to eight feet of property frontage from a Wendy's restaurant, an impact not considered to be significant because the only affected portion of the site would be a landscape buffer. The removal of ten feet from the parking area of a Jack in the Box restaurant would be significant adverse because loss of parking would represent half the total available parking area, and the goals of Redevelopment Project Area 1 would not be met.

From Norwalk Boulevard to the eastern end of the project alignment, the project would cause partial acquisitions on the north side of Imperial Highway by removing approximately five feet of property frontage from a Unocal 76 gas station located at the northeast corner of Norwalk Boulevard and Imperial Highway; this impact is not judged to be significant since access to the business would be preserved. Property acquisitions between Norwalk Boulevard and the site of the Norwalk Transportation Center would be required for street widening associated with the proposed project. The project would also cause partial acquisitions by removing one parking space and a portion of the formal entrance of the Crescent Transmission service center. This impact would not be significant because access to the site would be preserved. The project would result in a full acquisition of the City of Norwalk Maintenance Facility; this impact is judged not to be significant because the entire city maintenance facility is eventually slated to become the site of the Norwalk Transportation Center. Moreover, the NTC site is scheduled to be first developed for parking associated with commuter rail service, with construction of the Metro Green Line Easterly Extension occurring after.

South of Imperial Highway, between Norwalk Boulevard and the east end of the alignment, the partial acquisition associated with a gas station at the southeast corner of Bloomfield Avenue and Imperial Highway would not be consistent with the goal of Redevelopment Project Area 1 to stimulate sales tax revenues to the city and establish modern, convenient commercial centers serving the needs of the city. At the project's eastern terminus, the partial acquisition of parking spaces and the establishment of a transit station at the site of a city maintenance facility would be permitted under the M1 zone category and would be consistent with the objectives of Norwalk Redevelopment Area 1.

- Residential Acquisitions

The establishment of the Metro Green Line transit station with associated park-and-ride facilities, and the presence of an above-grade aerial alignment proposed by the Easterly Extension at the western end of the project alignment would have a low compatibility with surrounding single-family residential uses and would not be consistent with uses permitted in an R1 Single-Family Residential zone. One full acquisition would result from the aerial alignment. Although the acquisition of one housing unit is considered adverse, it is not considered significant.

Immediately east of the Santa Ana Freeway (I-5) the partial acquisition of frontage from single-family homes on the north and south sides of Imperial Highway would not be consistent with the goals of the Norwalk General Plan to protect existing residential development and develop a transportation system that is integrated with the community pattern of residence.

Subway Alignment

Property acquisition associated with the subway alignment would be limited to the western end of the alignment, where a construction staging area is proposed, and the east end of the alignment, where the NTC is located. (See Table 3-9 and Table 3-10.) The NTC site could also be considered as a construction staging area.

The project would result in the full acquisition of up to 17 single-family residences in the block bounded by Lyndora Street to the north, Pecos Avenue to the east and Lefloss Avenue to the

Table 3-9: Subway Alignment Full Property Acquisitions

RESIDENTIAL PROPERTY		
LOCATION/ADDRESS	SINGLE-FAMILY UNITS	MULTIPLE-FAMILY UNITS
12702 Lefloss Avenue	X	
12708 Lefloss Avenue	X	
12718 Lefloss Avenue	X	
12724 Lefloss Avenue	X	
12712 Lefloss Avenue	X	
12703 Pecos Avenue	X	
12707 Pecos Avenue	X	
12713 Pecos Avenue	X	
12717 Pecos Avenue	X	
12723 Pecos Avenue	X	
12729 Pecos Avenue	X	
12708 Pecos Avenue	X	
12714 Pecos Avenue	X	
12718 Pecos Avenue	X	
12722 Pecos Avenue	X	
12728 Pecos Avenue	X	
12734 Pecos Avenue	X	
NON-RESIDENTIAL PROPERTY		
LOCATION/ADDRESS	NAME/TYPE	REMARKS
N/A	N/A	N/A

Source: Myra L. Frank & Associates, 1992.

west, as well as a row of residential units flanking the east side of Pecos Avenue between Lyndora Street and Adoree Street. These impacts are considered to be significant adverse.

Land use impacts arising from the subway alignment would be limited to the area required for staging the tunneling operations and the locations of the portals. If the tunneling operations start at the western end of the project alignment, the full acquisition of blocks of single-family residential dwelling units and additional residential adjacency impacts would not be compatible with the goal of the City of Norwalk General Plan to protect existing residential development and promote a transportation system that is integrated within the community pattern of residences and neighborhood services.

Table 3-10: Subway Alignment Partial Property Acquisitions

RESIDENTIAL PROPERTY			
LOCATION/ADDRESS	SINGLE OR MULTIPLE-FAMILY	AREA ACQUIRED	
None	None	None	
NON-RESIDENTIAL PROPERTY			
LOCATION/ADDRESS	NAME/TYPE	AREA ACQUIRED (SQ. FT.)	REMARKS
Imperial Highway	City Maintenance Facility*	300	Vacant land removed
Note: * Entire site subject to acquisition/reconfiguration in conjunction with development of the Norwalk Transportation Center.			

Source: Myra L. Frank & Associates, 1992.

If the tunneling operations are staged at the eastern end of the alignment, construction of the project would result in the partial taking of vacant land currently being used by the City of Norwalk as a maintenance yard, located immediately west of the AT&SF railroad tracks. Because this site is proposed for development of the Norwalk Transportation Center, this is an impact which is judged to be not significant since it would be consistent with a M1 zone category and the city's goal of establishing a multi-purpose transportation center at this site.

3.4.5 Mitigation Measures

Construction

Temporary sound walls may be considered to buffer sensitive land uses (i.e., single-family and multi-family residential areas, churches, hospitals) from the effects of the project. Should the location of fixed aerial guideway columns require acquisition of portions of the city's street or sidewalk system, the LACTC and the City of Norwalk should ensure that residential areas maintain access to the city's main arterial streets.

In the event that property frontage is acquired for guideway columns that obstruct access to business and retail establishments, the project should maintain access to such uses by minimizing the amount of construction work at those sites or by scheduling construction work for non-business hours.

Significantly adverse amounts of parking that are removed from business and retail commercial establishments as a result of the project can be partially mitigated by allowing property owners of such uses to restripe their lots in order to recoup lost parking opportunities. The city could also permit affected businesses to expand parking areas on adjacent vacant properties or allow for limited street parking during peak business hours to compensate for displaced parking areas.

Should the project alignment remove landscape buffering from residential or commercial uses, LACTC and the City of Norwalk should assist owners of such properties to relocate affected landscape materials.

Operation

Mitigation measures for property acquisition primarily relate to compensation given to property owners. This is discussed in section 3.5. Also, if the east end staging area is selected as part of the subway alignment, fewer residences would be affected at the west end of the alignment.

Measures intended to mitigate the land use compatibility impacts of the project should be designed to reestablish a sense of cohesion between the project and the surrounding community as well as support general plan and redevelopment plan objectives for commercial and office land uses in the vicinity of Imperial Highway.

At the transit station site, LACTC and the City of Norwalk should facilitate access to the station locations from adjacent neighborhoods through the creation of pedestrian linkages and landscaped sidewalks.

To incorporate the project alignment with city land use goals in the study area, the City of Norwalk could establish a physical link between the NTC and the area proposed as a high intensity office node in the vicinity of the Civic Center. Such a measure could be shuttle bus service from the two stations to the Civic Center core.

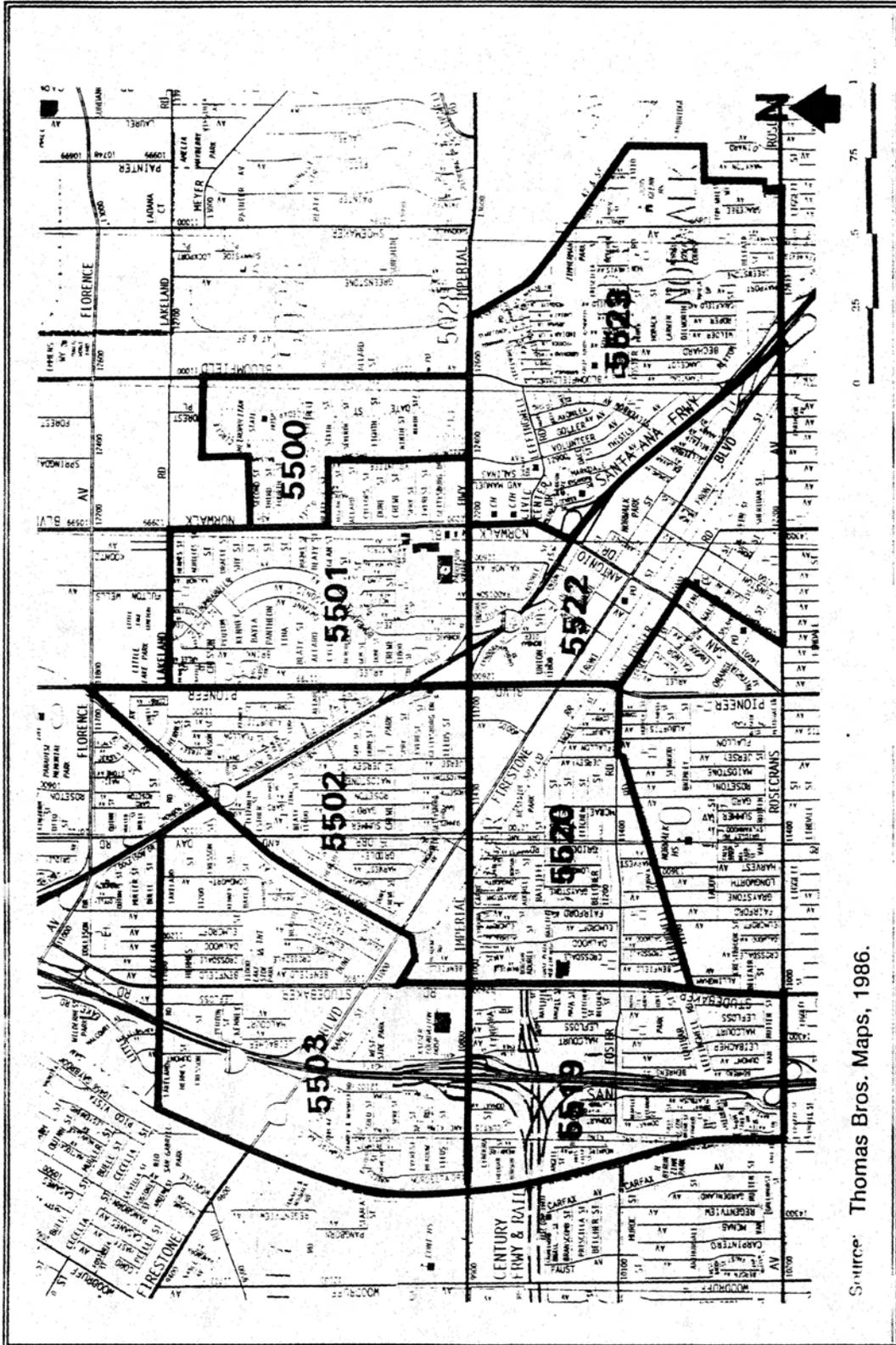
LACTC and the City of Norwalk should provide landscaping along the alignment and ensure that the NTC is designed with architectural treatments so that the project is physically integrated into the surrounding community.

3.5 POPULATION AND HOUSING

The Metro Green Line Easterly Extension is not expected to encourage population or housing growth in the City of Norwalk. The aerial alignment would require displacement of one single-family residence and partial acquisition of nine residential properties. If the tunneling operation is staged at the western end of the route, the subway alignment would require up to 17 single-family residences; however, this impact would be avoided if the tunneling operation were staged at the eastern end. Construction would generate adverse noise, vibration and dust impacts upon residential areas adjacent to the project.

3.5.1 Environmental Setting

The City of Norwalk is an ethnically and racially diverse city, comprised largely of single-family residences and families with relatively high median income levels (\$40,000) compared to the Los Angeles County average. The Metro Green Line Easterly Extension would affect persons and housing units located along Imperial Highway (between Studebaker Road and the Atchison, Topeka and Santa Fe tracks), Studebaker Road (between Adoree Street and Imperial Highway), and immediately north of the I-105 freeway ramp. Eight 1990 census tracts encompass the project study area, as illustrated in Figure 3-9. Demographic and housing information was obtained from the 1990 U.S. Census of Population and Housing. Growth projections and



Source: Thomas Bros. Maps, 1986.

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Figure 3-9: Project Area Census Tracts

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assessed housing needs were acquired from the Southern California Association of Governments (SCAG) 1988 Revised Regional Housing Need Assessment and 1989 Regional Growth Management Plan.

Population

According to the 1990 U.S. Census of Population and Housing, 94,279 persons lived in the City of Norwalk in 1989. Almost half the city's population was made up of minorities: 48 percent Hispanic, 12 percent Asian and 3 percent black. (In the 1990 U.S. Census, Hispanic is not considered a racial category; therefore, one can be Hispanic ethnically and white, black, Asian, Native American or "other" racially.) Almost one third of the population was under the age of 18 years, and 9 percent was over the age of 65 years. By the year 2010, SCAG projects that the city will grow to 100,360 persons, a 6 percent increase.

Table 3-11 presents the population and housing characteristics of the census tracts adjacent to the route. The census tract totals represent aggregates or weighted averages (with the exception of median value, median rent and median income) for the eight census tracts adjacent to the route. The characteristics of the census tracts are very similar to the average of the City of Norwalk.

Housing

According to the 1990 U.S. Census, 27,247 housing units existed in 1989 in the City of Norwalk. Almost two thirds of all households (defined by the U.S. Census Bureau as occupied housing units) were owner-occupied, and three percent of all housing units were vacant. The median housing value was \$166,000, and the median monthly rent was \$642. On average, household size in the city was three to four persons. The median family income was \$40,300, and only seven percent of all families lived below the federally-defined poverty level. (The poverty level is set according to family size, age of householder and number of related children.)

In the eight census tracts adjoining the alignment, there were a total of 14,180 housing units. Housing characteristics for the census tracts were similar to those of the City of Norwalk. Vacancy rates were generally low (four percent) and 62 percent of all housing units were occupied by owners. The median housing value ranged from \$158,000 to \$172,000, with an average of \$165,525. The median monthly rent ranged from \$571 to \$764, with an average of \$664. Median family incomes ranged from \$29,455 to \$43,873, with an average of \$39,370 and approximately seven percent of all families lived below the poverty level in 1989.

According to SCAG's 1988 Revised Regional Housing Needs Assessment, the City of Norwalk's existing housing need was determined to be 4,271 households, or 17 percent of the total number of households in 1988. "Existing need" was defined by SCAG as the number of low-income households (i.e., households with incomes less than 80 percent of the county median) which paid more than 30 percent of household income for shelter. In comparison, 21 percent of all households in Los Angeles County were categorized as low-income households overpaying for shelter. Future need between 1988 and 1994 was defined as the number of housing units needed to accommodate growth in the area, adjusting for vacancies and demolition, and assuming SCAG's Growth Management Plan. SCAG estimated that the City of Norwalk's 1989-1994 future housing need at 1,401 units.

Table 3-11: Population and Housing Characteristics

Table 3-11: Population and Housing Characteristics

Area	Total Population	Population					Housing							Families Below Poverty Level %	
		Hispanic %	Race				Housing Units	Household Size	Owner-occupied %	Renter-occupied %	Vacant %	Median Value	Median Rent		Median Income
			White %	Black %	Asian %	Other %									
City of Norwalk	94279	48%	56%	3%	12%	29%	27247	3.48	65%	36%	3%	\$166,000	\$642	\$40,369	7%
Census Tracts:															
5500	1404	24%	52%	17%	10%	20%	187	2.97	76%	24%	1%	\$171,900	\$764	\$41,250	0%
5501	6652	48%	58%	1%	10%	30%	1817	3.61	78%	22%	2%	\$163,900	\$743	\$37,574	10%
5502	7564	46%	61%	2%	10%	27%	2301	3.42	70%	30%	3%	\$169,500	\$590	\$43,873	5%
5503	6822	37%	66%	3%	11%	20%	2071	3.27	67%	32%	3%	\$167,800	\$617	\$40,446	1%
5519	4656	38%	70%	3%	11%	15%	1445	3.20	70%	30%	3%	\$167,100	\$667	\$42,986	4%
5520	6621	51%	56%	3%	12%	29%	1972	3.53	66%	34%	9%	\$159,800	\$680	\$39,057	6%
5522	5922	61%	47%	6%	7%	41%	1908	3.27	24%	76%	6%	\$158,000	\$571	\$29,455	16%
5523	8472	41%	55%	7%	15%	22%	2479	3.25	59%	41%	4%	\$166,200	\$679	\$40,321	4%
Census Tracts Total	48113	45%	59%	4%	11%	26%	14180	3.53	62%	38%	4%	\$165,525	\$664	\$39,370	7%

Source: 1990 U.S. Census of Population and Housing

3.5.2 Construction Impacts

Aerial Alignment

Under the aerial alignment, construction would produce noise and traffic impacts which would adversely affect residents adjacent to the project. Access across Imperial Highway near proposed guideway columns would be hindered as equipment to drill caissons for the columns would need to be set up in the street or on private property. Traffic lanes would be reduced near I-5 and the SPRR tracks, possibly blocking access to adjoining residential neighborhoods. One lane of traffic in each direction on Imperial Highway would need to be closed.

Subway Alignment

Under the Subway alignment, if the tunneling operation is staged at the western end of the route, up to 17 single-family housing units would be displaced to allow for the contractor's staging area, from which all spoil will exit. If the east end construction staging area is selected, this would be reduced substantially. (The location and type of residential units are discussed below in Operation Impacts.) In addition, noise and vibration impacts caused by tunnelling could affect residents located directly adjacent to the transit route. Residents of the Talk of the Town Trailer Park, located on the north side of Imperial Highway between Dalwood and Fairford Avenue, would be sensitive to vibration impacts. Residents located north of Lyndora Street, between Lefloss and Studebaker, would also experience noise, dust and traffic from approximately 30 trucks carrying excavated material. Light and glare impacts produced by at-grade construction near the Norwalk Transportation Center and the tunnel machine access area would also affect nearby residences. If the tunneling operation is staged at the eastern end of the route, the displacement of residential units will be minimized; however, traffic impacts associated with trucks carrying excavated material would be experienced. For further discussion of traffic and noise and vibration impacts, see sections 3.10 and 3.11.

3.5.3 Operational Impacts

Whether it is a subway or aerial system, the Metro Green Line Easterly Extension is not anticipated to induce significant population or housing growth in the immediate area. The project would serve as a link between the regional Metro system and the Orange/Riverside County Commuter Rail. Population and housing growth in the cities of Norwalk and Santa Fe Springs may be encouraged by development which could occur in conjunction with the Metro Green Line station. Once in operation, the project, whether subway or aerial, is not expected to impede or remove access to residential areas.

Effects Upon the Local Population

- Aerial Alignment

The aerial alignment would require one full acquisition. The impact would not have a disproportionate effect upon minorities, elderly or low-income residents. The aerial alignment would also impose significant noise and vibration impacts upon residents living in dwellings which abut the alignment. Approximately 59 single-family units, 12 multi-family buildings

(apartment complexes and condominium developments) and 10 mobile homes, are currently located within 100 feet of the proposed guideway (along Studebaker Road, Imperial Highway and north of the I-105 freeway ramp). Given that Imperial Highway presently serves as a commercial corridor and boundary for school districts, it is not anticipated that an elevated rail system along Imperial Highway would further divide or present a physical or psychological barrier to neighborhoods in the area.

- Subway Alignment

Assuming the tunneling operation is staged in the west end, approximately 55 persons would be displaced as a result of the acquisition of 17 housing units. With appropriate design mitigation, the subway alignment would produce insignificant noise and vibration impacts upon the local population residing directly along the alignment. The demographic profile of residents adjacent to the alignment are not significantly different from those of the City of Norwalk as a whole. Because the system is below grade, the subway alignment would neither separate or present barriers to existing neighborhoods.

Effects upon the Local Housing Stock

- Aerial Alignment

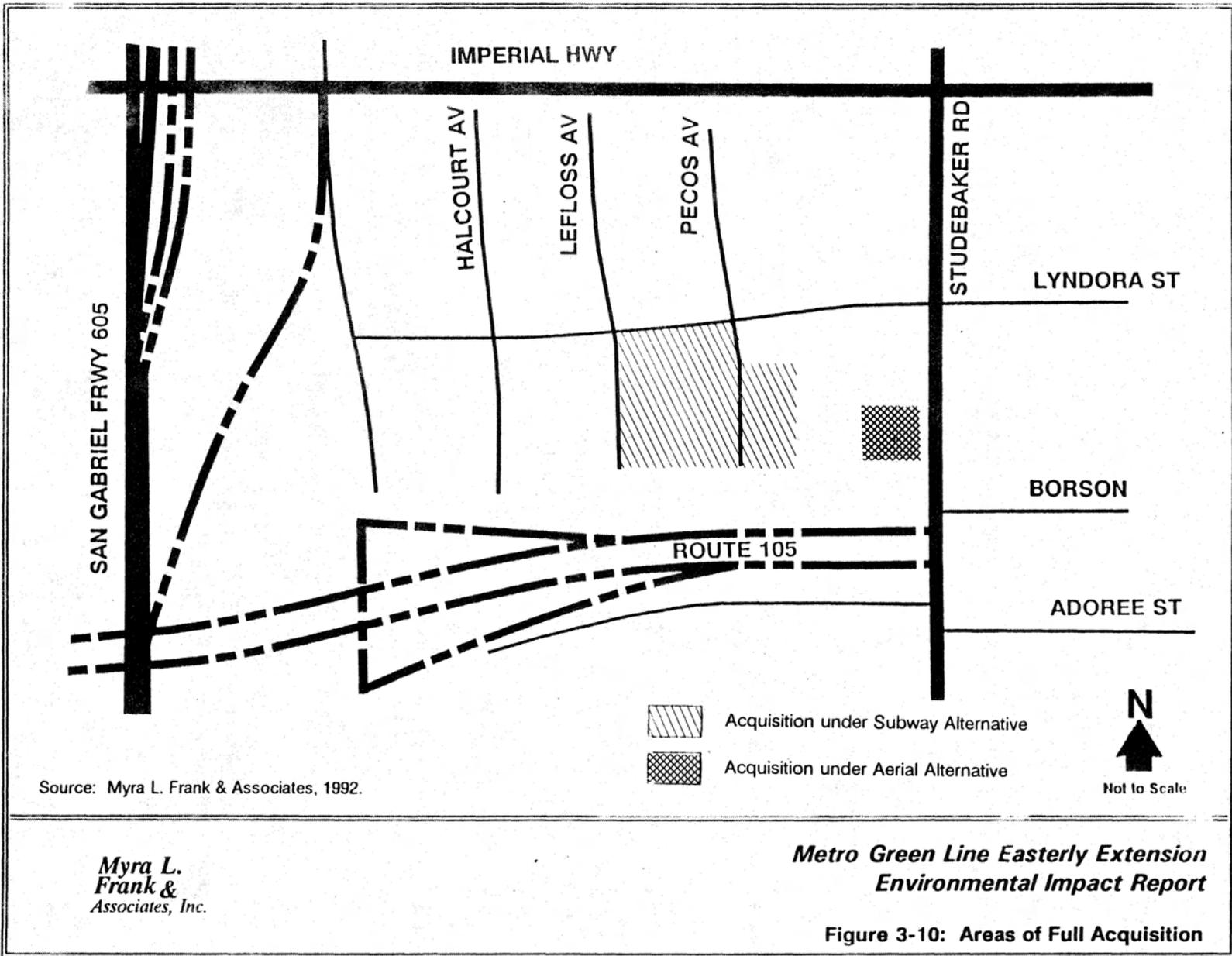
Full acquisition of one unit located at 12739 Studebaker Road and partial acquisition of nine residential properties would be required under the aerial alignment. In all cases of partial acquisition, the residential structure would not be removed, and in most cases the property acquisition would be less than 1,000 square feet. A reduction of one housing unit, though adverse, is not considered significant. Reduction of any units, however, would affect SCAG's five-year housing needs goals.

- Subway Alignment

If the west end staging area is selected, the subway alignment would require acquisition of 17 single-family residences located in the area bounded by Pecos Avenue, Lefloss Avenue and Lyndora Street, and the block of houses east of Pecos Avenue, south of Lyndora. Selection of the east end staging area would reduce this effect. While adverse, removal of 17 units is not considered significant in terms of the net effect upon local housing stock: the City of Norwalk's housing stock would be depleted by less than 0.1 percent. Any housing acquisition would affect the SCAG's five-year housing needs goals for the city (Figure 3-10 illustrates the location of the acquisitions); however, if the tunneling operation is staged at the eastern end of the route, these acquisitions would not be necessary.

Property Tax Losses

When privately-owned property is acquired for rights-of-way or construction, the property tax base is reduced. In general, Los Angeles County collects property taxes for properties within the county and disburses the revenue to individual jurisdictions, based upon a percentage of the total property taxes collected in those jurisdictions. The City of Norwalk, however, receives a



percentage of Los Angeles County's general fund revenues as its property tax reimbursement. Regardless of the reimbursement method, reduction of the property tax base would result in a revenue loss to the county, city and special assessment districts.

Property taxes collected in 1991 on residential properties which would be fully acquired by the project were calculated using 1991 Los Angeles County Assessor rolls. Property tax losses under the aerial alignment, in which only one residential property would be acquired, equalled \$583. Property tax losses under the subway alignment, with tunneling operations staged in the western end of the route, which would require the acquisition of 17 residential properties would be \$16,029. Tax losses per property would range from \$343 to \$1,868. These losses in property tax revenue would not occur if the tunneling operation were staged on the eastern end. Property tax losses to the City of Norwalk and Los Angeles County would be a small portion of their annual property tax revenue and therefore not significant. This loss may be at least partially offset by potentially increased property values.

3.5.4 Mitigation Measures

Construction

The Metro Green Line Easterly Extension would result in construction impacts affecting population and housing in the areas of noise, vibration, traffic, safety and light and glare. These topics are discussed in other sections of this document and the reader is referred to those sections for specific mitigation measures.

Regarding acquisition of residences north of the I-105 freeway ramp, relocation could be avoided by placing the staging area at the east end and locating the tunnel portal on the adjacent lot west of Studebaker Road and south of Lyndora Street. Relocating the tunnel portal to this site would require acquisition of only one residence. Selection of the east end staging area would also eliminate the of acquisitions necessary at the west end.

Operation

The operation of the project in an aerial alignment would require that the property owners of nine residences be compensated for the partial acquisition of their property. Procedures outlined in the Uniform Relocation Procedures and Real Property Acquisition Act would generally be followed with respect to the full acquisition.

Provisions of State law regarding relocation and assistance (California Government Code, Chapter 16, Section 7260 et sea., "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970") would require the Los Angeles County Transportation Commission to provide assistance to eligible residents, business concerns and non-profit organizations displaced by the project. State requirements would need to be followed in principle. Adopted policy of the LACTC at the time of actual property acquisition would apply.