

STATUS OF ENVIRONMENTAL
MITIGATION MEASURES FOR
LOS ANGELES METRO RAIL PROJECT
MINIMUM OPERABLE SEGMENT (MOS-1)

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for the
Urban Mass Transportation Administration
U.S. Department of Transportation

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INTRODUCTION

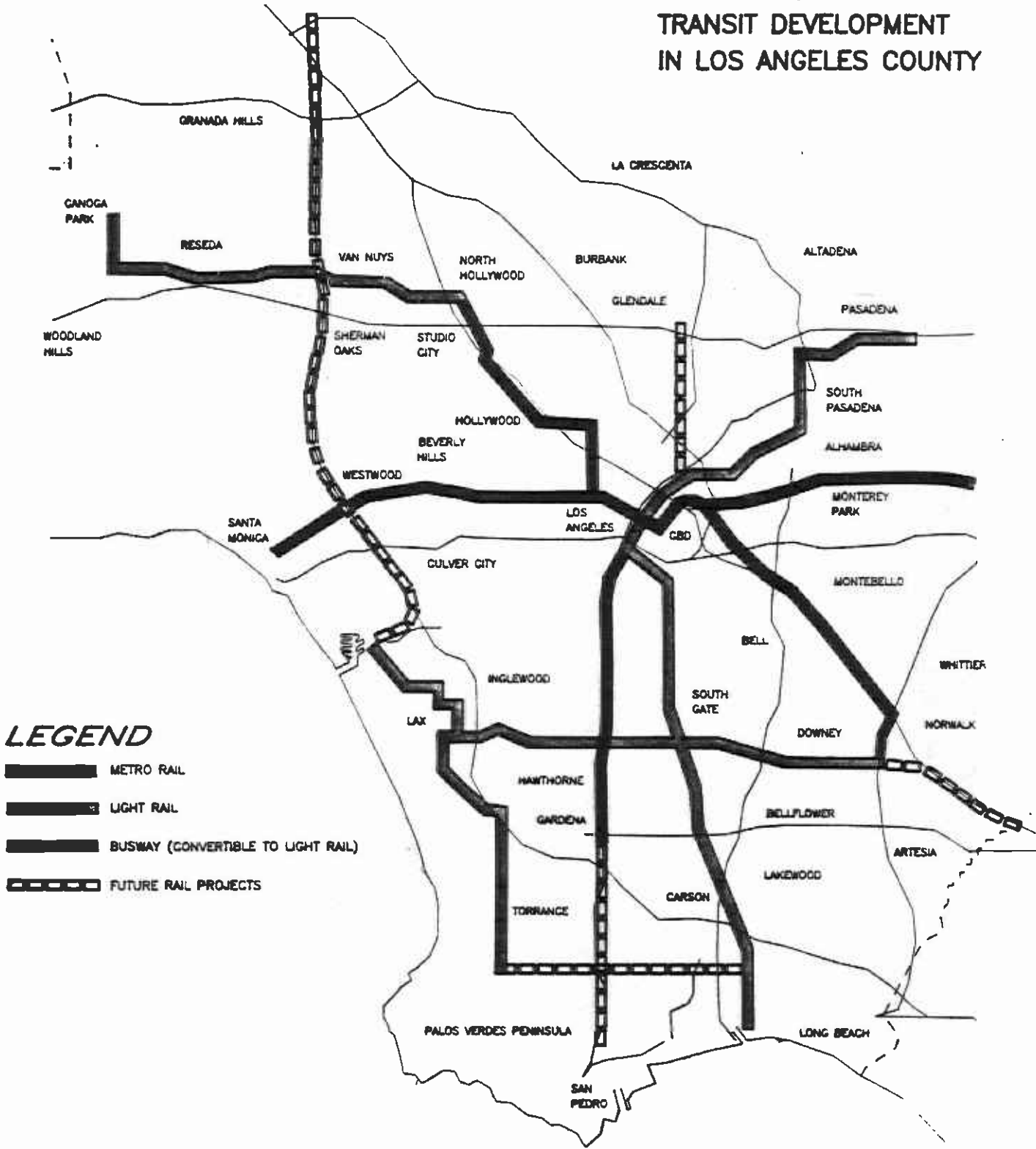
The Los Angeles Metro Rail Project is the backbone of a 150-mile transit system approved by Los Angeles County voters as Proposition A in 1980 and shown in Figure 1. The first 4.4 miles of the Metro Rail Project, shown in Figure 2, is known as the Minimum Operable Segment (MOS-1) and will run from the yard and shops near Union Station to the Wilshire/Alvarado Station. This report has been prepared in fulfillment of a requirement of Section 3A of the Full Funding Contract (FFC) for the construction of MOS-1, between the Urban Mass Transportation Administration and the Southern California Rapid Transit District (District), dated August 27, 1986.

BACKGROUND

In 1983, the District and the Urban Mass Transportation Administration (UMTA) published a Final Environmental Impact Statement (FEIS) containing measures to mitigate impacts of the 18.6 mile Metro Rail Project on the environment. In May 1984, UMTA informed the SCRTD there were insufficient Federal funds to construct either the full 18.6 or the 8.8 mile rail alternatives evaluated in the FEIS. SCRTD subsequently determined that a 4.4 mile transit project from Union Station to the Wilshire/Alvarado Station on the original proposed system would be consistent with federal funding constraints and would perform an important, independent function in alleviating severe downtown traffic congestion. In August 1984, an Environmental Assessment (EA) was prepared to analyze the effects of terminating the line at Wilshire/Alvarado. The EA, along with the Comments and Responses Addendum, contained additional mitigation measures.

On September 13 and October 25 of 1984, in connection with a lawsuit challenging the adequacy of the Final Environmental Impact Report (FEIR), the District's Board of Directors clarified fifteen findings made in their November 10, 1983 Statement of Findings. The clarified findings amplified certain project mitigation measures and the rationale for selecting the Locally Preferred Alternative. In March 1985, an explosion and fire occurred near Third Street and Fairfax Avenue as a result of methane gas seeping from underground sources. This incident was investigated by a task force of the City of Los Angeles. The incident raised issues about the safety of the Metro Rail Project which were

PROPOSITION A TRANSIT DEVELOPMENT IN LOS ANGELES COUNTY



LEGEND





-  METRO RAIL
-  LIGHT RAIL
-  BUSWAY (CONVERTIBLE TO LIGHT RAIL)
-  FUTURE RAIL PROJECTS

FIGURE 1

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

MINIMUM OPERABLE SEGMENT-1 ROUTE MAP

JULY 1986



METRO RAIL PROJECT PROJECT UNIT INDEX

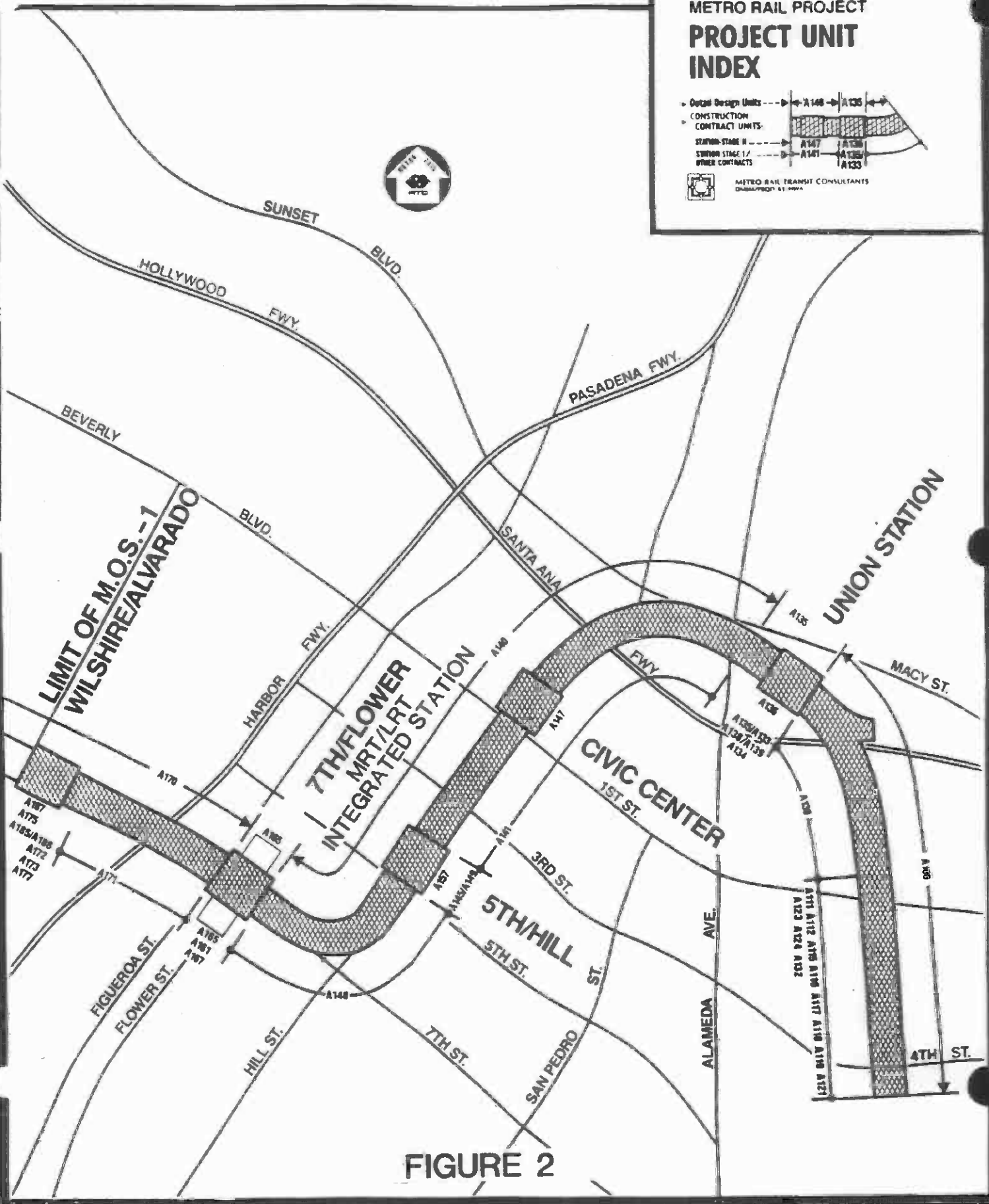
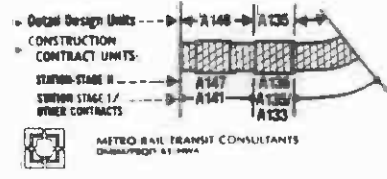


FIGURE 2

explored by an SCRTD in-house board of review and an Independent Review Board appointed by the District.

In December 1985, the U.S. Congress passed a resolution requiring the District to study the potential methane gas risks relating to the proposed alignment of the Metro Rail Project beyond MOS-1 and to avoid tunneling into or through areas identified as "potential risk" or "potential high risk" zones. A Los Angeles City Task Force report, dated June 10, 1985, identified these zones. The Los Angeles City Council established an Independent Technical Review Committee to evaluate the safety of the design and construction methods for MOS-1, with specific references to geology, methane gas, seismic, safety equipment and construction methods. In a January 1986 report, the Committee proposed recommendations to improve the safety of design and construction for the Metro Rail Project. These 14 recommendations were adopted by the Board of Directors of the District on February 13, 1986.

Section 3A of the FFC (Mitigation Measures) incorporates by reference the mitigation measures described in the FEIS, dated December 1983; the Environmental Assessment of August 1984 and the Comments and Responses Addendum dated October 1984; and the Reevaluation of Environmental Record, dated August 1986. The FFC requires the mitigation measures to be implemented as part of the Metro Rail Project. The FFC also provides that where options are still being considered, the District and UMTA will mutually decide on the measures. The District and UMTA will use the scheduled quarterly review meetings to review the progress in implementing adopted mitigation measures and to reach decisions among options. The District may not withdraw or substantively change any of the adopted mitigation measures without the express written approval of UMTA.

MITIGATION MEASURES STATUS REPORT

The mitigation measures status report provides a comprehensive listing of all of the mitigation measures in the following documents:

U.S. Urban Mass Transportation Administration and Southern California Rapid Transit District, Final Environmental Impact Statement for the Los Angeles Rail Rapid Transit Project, December 1983.

, Environmental Assessment for the Los Angeles Rail Rapid Transit Project, Union Station to Wilshire/Alvarado, August 1984.

, Comments and Responses on the Environmental Assessment for the Los Angeles Rail Rapid Transit Project, Union Station to Wilshire/Alvarado, October 1984.

_____, Reevaluation of the Environmental Record for the Los Angeles Metro Rail Project (Minimum Operable Segment), August 5, 1986.

Southern California Rapid Transit District, Clarifications of Findings with Respect to Metro Rail Project (COF) adopted by the Board of Directors on September 13, 1984 and on October 25, 1984.

_____, Independent Board of Review, Design, Construction and Operation in Gaseous Areas, October 31, 1985.

_____, Resolution to Incorporate in the Metro Rail Project (MOS-1) the Recommendations of the City's Independent Technical Review Committee, February 13, 1986.

ORGANIZATION AND FORMAT OF THE REPORT

The report will be updated periodically. The base document will list all measures finalized up to the date of publication. Subsequent editions will indicate measures recently finalized and other areas where decisions are pending. The report will reflect the changes that have taken place as design and construction details have been refined and will indicate where the record of final compliance may be found. Some examples of compliance documents are contract specifications, permits, agency agreements, procedure manuals, policy statements, and actions of the Board of Directors.

Including the complete history of all measures will make the report easy to follow for readers who are new to the project and will reduce the disruption in case of future staff changes.

When a mitigation measure has been implemented and no further action is needed the text describing this measure will be printed in bold-face type. The report will be updated quarterly through FY 1988 and may be updated less frequently when fewer issues remain to be resolved.

The mitigation measures are grouped into the following major categories. Abbreviation letters that will be used to number mitigation measures in each category are also shown.

<u>Category</u>	<u>Abbreviation</u>
Traffic and Parking	TP
Feeder Bus Operation	FB
Land Use, Social and Economic	LU
Safety and Security	SS
Sub-Surface Conditions	SC
Aesthetics	A
Noise and Vibration	NV
Air Quality	AQ

Energy	E
Geology and Hydrology	GE
Construction	C
Cultural Resources	CR

Where appropriate, each category will be divided into a construction and an operations section. Each adopted mitigation measure is assigned a number within the major categories. Each numbered mitigation measure is followed by a reference to the document(s) in which the measure is required, the document which implements the measure, the status of implementing the measure, and future actions needed.

The Reference section indicates in which of the above environmental documents, the mitigation measures are found.

The Implementation section shows what contract, permit, correspondence, procedure manual, or agreement will implement the mitigation measure. MOS-1 is divided into thirty-five Construction Contract Units and is supported by the Project Archaeologist Contract. Most of the mitigation measures apply to the Construction Contract Units, shown in Figure 2. The contract units are also described in detail in the Contract Unit Descriptions Report dated June 1987.

The Status section shows the status of the implementation of the mitigation measure. This section will reflect the history of the mitigation measure, including correspondence, meetings, agreements and the date of final compliance. It will indicate the document(s) in which final compliance is documented. These include contract drawings, specifications, design criteria, plans and programs.

The Future Action section indicates what action is pending, if known, or what action must be accomplished before the mitigation measure can be implemented.

Differences between this report and the previous edition are indicated in the margin through the use of vertical bars of black and white tape.

A summary table is provided at the beginning of the report, which lists the mitigation measures and indicates if they are completed, nearing completion or will be completed in the long term. It will be changed as mitigation measures evolve and are finalized.

SUMMARY OF MITIGATION MEASURES

Mitigation Measures	Complete	Nearing Completion	Long Term
TP1	Dec. 83		
TP2	Jan. 85		
TP3	Dec. 85		
TP4	Dec. 85		
TP5	Jan. 87		
TP6	Dec. 85		
TP7	Dec. 85		
TP8	Dec. 85		
TP9	Dec. 85		
TP10	Nov. 86		
TP11	Nov. 86		
TP12	Feb. 87		
TP13	Sep. 86		
TP14	Nov. 86		
TP15	Nov. 84		
TP16			X
TP17			X
TP18	Sep. 87		
TP19			X
TP20			X
TP21	Oct. 84		
TP22	Oct. 84		
TP23	Oct. 84		
TP24	Oct. 84		
TP25	Oct. 84		
TP26			X
TP27			X
TP28	Apr. 86		
TP29			X
FB1			X
FB2	Mar. 85		
FB3	Mar. 85		
FB4			X
FB5			X
LU1			X
LU2			X
LU3			X
LU4		X	
LU5a			X
LU5b	Dec. 83		
LU5c			X
LU5d			X
LU5e			X
LU5f			X
LU5g	Oct. 84		
LU5h			X
LU5i			X
LU5j	Dec. 83		
LU6			X
LU7			X

SUMMARY OF MITIGATION MEASURES

Mitigation Measures	Complete	Nearing Completion	Long Term
SS1	Dec. 86		
SS2	Dec. 85		
SS3	Dec. 83		
SS4	Aug. 85		
SS5	Dec. 86		
SS6	Dec. 86		
SS7		X	
SC1	Sep. 86		
SC2	Mar. 87		
SC3	Sep. 86		
SC4	Sep. 86		
SC5	Mar. 87		
SC6	Apr. 87		
SC7			X
SC8	Aug. 86		
SC9		X	
SC10		X	
SC11		X	
SC12	Feb. 86		
SC13	Feb. 87		
SC14	Jul. 86		
SC15	May 86		
SC16	Dec. 86		
SC17	May 86		
SC18			X
SC19	Sep. 86		
SC20	Sep. 86		
SC21	Dec. 86		
SC22	Apr. 87		
SC23			X
SC24	Aug. 85		
SC25	Dec. 86		
SC26	Dec. 86		
SC27	Dec. 86		
SC28	Sep. 86		
SC29	Sep. 86		
SC30	Sep. 86		
SC31	Dec. 86		
SC32	Dec. 86		
SC33	Dec. 86		
SC34	Dec. 86		
SC35	Dec. 86		
SC36	Dec. 86		
SC37	Dec. 86		
SC38	Sep. 86		
SC39	Dec. 86		
SC40			X
SC41	Sep. 86		
A1			X
A2		X	

SUMMARY OF MITIGATION MEASURES

Mitigation Measures	Complete	Nearing Completion	Long Term
NV1	Sep. 86		
NV2	Sep. 86		
NV3	Sep. 86		
NV4	Sep. 86		
NV5	Sep. 86		
NV6	Sep. 86		
NV7	Sep. 86		
NV8	Nov. 84		
NV9	Sep. 86		
NV10	Nov. 84		
NV11	Nov. 84		
NV12		X	
NV13	Feb. 87		
AQ1	Feb. 85		
AQ2			X
AQ3			X
AQ4	Sep. 86		
AQ5	Sep. 86		
AQ6	Sep. 86		
AQ7	Sep. 86		
AQ8	Sep. 86		
AQ9	Sep. 86		
AQ10	Sep. 86		
AQ11	Sep. 86		
E1	Dec. 86		
E2	Dec. 86		
E3	Dec. 86		
E4	Dec. 85		
E5	Dec. 86		
E6	Dec. 85		
E7	Dec. 86		
E8	Dec. 86		
E9	Dec. 87		
E10	Dec. 84		
E11	Dec. 86		
E12	Dec. 86		
E13	Dec. 84		
E14	Feb. 87		
GE1	Mar. 87		
GE2	Aug. 84		
GE3			X
GE4	Nov. 84		
C1	Jul. 85		
C2	Dec. 85		
C3	Jul. 85		
C4			X
CR1		X	
CR2		X	
CR3	Feb. 84		
CR4		X	
CR5		X	

SUMMARY OF MITIGATION MEASURES

Mitigation Measures	Complete	Nearing Completion	Long Term
CR6	Nov. 86		X
CR7			
CR8	May 85		
CR9	Mar. 87		
CR10	Mar. 87		
CR11	May. 85		
CR12	Mar. 87		
CR13	Mar. 87		
CR14	Mar. 87		
CR15	Mar. 87		

STATUS OF ENVIRONMENTAL MITIGATION MEASURES

TRAFFIC AND PARKING (TP)

During Construction

Mitigation Measure TP1. Cut-and-cover construction will be minimized and used only at stations and other special structure locations.

- A. Reference: COF, October 25, 1984, Pages 6 and 13
- B. Implementation: All cut-and-cover segments
- C. Status: The Metro Rail Project will use cut-and-cover only at stations, crossovers, Tunnel Boring Machine launch shafts, and the yard leads.
- D. Future Action: None needed

Mitigation Measure TP2. Construction in the Central Business District (CBD) will be phased so that all station areas are not impacted at the same time.

- A. Reference: COF, October 25, 1984, Page 6
- B. Implementation: A-141, A-145, A-165
- C. Status: Construction at these three CBD station sites is phased to start at different times. All excavations will be covered over immediately, and construction activities will be largely underground. Traffic Control Plans have been developed in coordination with and approved by IADOT to expedite and control traffic in and around each construction site.
- D. Future Action: The District will monitor the activities of the contractors during construction.

Mitigation Measure TP3. Cut-and-cover construction will substitute integrated panel decking (typically asphaltic coated steel, precast concrete or composite wood panels) in place of wooden plank decking wherever feasible. Integrated panel decking presents a neater appearance and a smoother roadway surface.

- A. Reference: FEIS, Pages 3-172, 173
- B. Implementation: A-130, A-141, A-145, A-165
- C. Status: The District has determined that the use of integrated panel decking would increase the cost of construction unnecessarily and is

therefore not feasible. Contract Specification Section 01522 contains requirements for decking that will insure a neat appearance and smoother ride quality than traditionally provided by wooden plank decking.

- D. Future Action: The District will monitor the activities of the contractors during construction.

Mitigation Measure TP4. Contractors will be required by SCRTD to control traffic during construction by following the "Work Area Traffic Control Handbook" ("WATCH") (1976 or most recent edition) prepared by the City of Los Angeles; Standard Plan S-160-12, "Notice to Contractors-Comprehensive" (1982 or most recent edition) prepared by Bureau of Engineering, City of Los Angeles; and "Standard Specifications for Public Works Construction" (1982 or most recent edition).

- A. Reference: FEIS, Pages 3-172, 173
COF, October 19, 1984, Finding #2, Pages 6 and 7
- B. Implementation: A-111, A-124, A-130, A-138, A-141, A-145, A-161, A-165, A-171, A-175
- C. Status: Requirements are in Specification Section 01576, Controlling Traffic. Contracts contain Worksite Traffic Control Plans prepared by LADOT which conform to "WATCH" standards.
- D. Future Action: The District will monitor the activities of the contractors during construction.

Mitigation Measure TP5. Before start of construction, possibly during Final Design, traffic control plans, including detour plans, will be formulated in cooperation with the City of Los Angeles and other affected jurisdictions (County, State).

- A. Reference: FEIS, Pages 3-172, 173
COF, October 19, 1984, Finding #2, Pages 6 and 7
- B. Implementation: A-130, A-141, A-145, A-161, A-165
- C. Status: Where State facilities are involved plans were coordinated with Caltrans and permits obtained. Contract drawings include Worksite Traffic Control Plans and Traffic signal rearrangement plans developed by LADOT.

- D. Future Action: The District will monitor and coordinate with involved agencies during construction.

Mitigation Measure TP6. The plans will be based upon lane requirements and other special requirements obtained from the Los Angeles City Department of Transportation for construction within the city and from other appropriate agencies for construction in those jurisdictions.

- A. Reference: FEIS, Pages 3-172, 173
COF, October 19, 1984, Finding #2, Pages 6 and 7
- B. Implementation: A-111, A-124, A-130, A-138, A-141, A-145, A-161, A-165, A-171, A-175
- C. Status: Worksite Traffic Control Plans have been prepared and approved by LADOT.
- D. Future Action: None Needed

Mitigation Measure TP7. The excavation and decking of arterial streets crossing the rail alignments will be phased so that the capacity of these streets is not reduced unnecessarily.

- A. Reference: FEIS, Pages 3-172, 173
COF, October 19, 1984, Finding #2, Pages 6 and 7
- B. Implementation: A-130, A-141, A-145, A-165, A-171, A-175
- C. Status: Worksite Traffic Control Drawings contained in Contract documents contain requirements to prevent simultaneous closure of adjacent streets.
- D. Future Action: The District will monitor the activities of the contractors during construction and coordinate with involved agencies.

Mitigation Measure TP8. Unless unforeseen circumstances dictate, no designated major or secondary highway will be closed to vehicular or pedestrian traffic. No collector or local street or alley will be completely closed preventing local vehicular or pedestrian access to residences, businesses, or other establishments.

- A. Reference: FEIS, Pages 3-172, 173

- B. Implementation: A-130, A-141, A-145, A-161, A-165,
A-171
- C. Status: Worksite traffic plans maintain traffic during
construction. Major roads remain open during
workdays. They may be closed at night and
weekends when essential for construction.
Specifications assure vehicle and pedestrian
access to property.
- D. Future Action: The District will monitor the activi-
ties of the contractors and coordinate
with agencies during construction.

Mitigation Measure TP9. Follow special traffic control measures
of SCRTD and City of Los Angeles. Maintain access to all
businesses as well as safety of walkways.

- A. Reference: FEIS, Page 3-174
- B. Implementation: A-130, A-141, A-145, A-161, A-165,
A-171
- C. Status: Worksite Traffic Control Plans prepared and
approved by LADOT, maintain access to buildings
and safety of walkways during construction.
- D. Future Action: The District will monitor the activi-
ties of contractors and coordinate with
agencies during construction.

Mitigation Measure TP10. Provide community with announcements of
construction procedures, traffic control plans, schedules and
what to expect.

- A. Reference: FEIS, Page 3-174
- B. Implementation: All Contract Segments
- C. Status: The SCRTD MOS-1 Community Relations Construc-
tion Management Plan of November 1986 provides
for notifying the community of construction
procedures, traffic control, and schedules.
Major announcements will be made in media and
by direct communication, including personal
visits.

Staff has held meetings with various Downtown
organizations and individuals near Union Sta-
tion and Civic Center and with Hill and Broad-

way merchants, regarding traffic routing and detours. The District made presentations to Union Station neighbors, Veteran's Administration Clinic, MacArthur Park Association, The Society of Office and Industrial Realtors, Pacific Bell Managers, Central City East, Internal Revenue Service, Chinatown service Center, LAPD Labor Relations, Belmont Adult School, and two delegations from Germany.

The Metro Rail field office began operations April 1987 in the Subway Terminal Building at 4th and Hill Streets. The Metro Rail Hot Line began service April 6, 1987, to provide information about traffic conditions and to act as a clearing house for public inquiries and complaints related to Metro Rail and other downtown construction projects and traffic. Another Metro Rail Field Office began operating January 20, 1988 in the Gianinni Building at 7th and Olive. Additional monthly Metro Grams (newsletters) and quarterly bulletins have been distributed by mail or direct delivery to inform the public about the progress of construction and street closures.

- D. Future Action: The District will monitor the activities of contractors and coordinate with agencies, organizations, and individuals during construction.

Mitigation Measure TP11. Master Agreements with city will be executed to develop specific traffic control plans for each station site.

- A. Reference: COF, October 25, 1984, Finding #2, Pages 7 and 8
- B. Implementation: A-130, A-141, A-145, A-161, A-165, A-175
- C. Status: An agreement was executed with the City of Los Angeles. Worksite traffic plans were developed in coordination with and approved by LADOT for each site.
- D. Future Action: The District will monitor the activities of contractors and coordinate with agencies during construction.

Mitigation Measure TP12. Comprehensive bus re-routing and detour plans will be adopted.

- A. Reference: COF, October 25, 1984, Finding #2, Pages 7 and 8
- B. Implementation: A-141, A-145, A-165
- C. Status: Bus detour plans have been prepared in coordination with LADOT and approved by the SCRTD Board. To ease the flow of traffic, Hill Street was made one way southbound and bus lines were shifted to less congested streets on the east side of downtown in the Fall of 1986.
- D. Future Action: The District will monitor the activities of contractors and coordinate with agencies during construction.

During Operations

Traffic measures were analyzed for intersections with Level of Service E or F after completion of the Metro Rail Project or where the projected volume to capacity ratio increased by 0.02 or more over the No-Project alternative. The mitigation measures considered include:

- o Increasing approach capacity through installation of a parking restriction;
- o Restriping approach to the intersection to provide an additional through lane and/or turn lane;
- o Installing left turn restriction/prohibition;
- o Adding or revising traffic signal phase to accommodate the projected traffic pattern;
- o Widening streets and approaches;
- o Providing reversible lanes, if peak period traffic is highly directional.

The application of these measures to specific intersections has been the subject of negotiations between the SCRTD and the City of Los Angeles. The results are shown below for each intersection or street segment considered.

Mitigation Measure TP13. Widen Center Street and Santa Fe Avenue to 35' half width.

- A. Reference: Letter from J. E. Crawley, SCRTD to Donald Howery, LADOT, Re: Street Replacement Criteria, dated October 2, 1984

Letter from Donald Howery, LADOT to J. E. Crawley, SCRTD, Subject: Metro Rail

Replacement Facilities Design Criteria,
dated May 15, 1984

Memo from Donald Howery, LADOT to Philip King, Los Angeles Bureau of Engineering,
Subject: Metro Rail - Union Station (A-135)
Replacement Facilities, dated March 29, 1984

- B. Implementation: A-111, A-130
- C. Status: Widening the small section of Center Street impacted by the project is no longer necessary, because with the realignment of MOS-1 the alignment will tunnel under Center Street at Commercial Street. Cut-and-cover tunnel section for the yard leads begins just southeast of this intersection.

As agreed with the City of Los Angeles, Santa Fe Avenue's current width will be maintained. SCRTD has executed an irrevocable offer to dedicate an easement to the City of Los Angeles to facilitate future street widening.

- D. Future Action: None needed.

Measure TP14. Provide traffic signalization at the Ramirez Street, Vignes Street and Santa Ana Freeway on/off ramp intersection with the entrance to the Union Station Park/Ride lot.

- A. Reference: Same as TP13A above
- B. Implementation: Contract to be Determined
- C. Status: The design of this intersection, including traffic signalization, was approved by Caltrans in Permit No. 785-7MC 2656, dated September 30, 1986. The City of Los Angeles Department of Transportation approved the A-130 contract drawings in November 1986.

With the realignment of MOS-1, the contract that will include the signalization has not been determined.

- D. Future Action: The District will determine the contract that will accomplish this measure and transfer the approved drawings to this contract later in 1988.

Mitigation Measure TP15. Provide two outbound and three inbound lanes for the driveway to the Union Station Park/Ride lot. Construct driveway entrance with 30' curb radii.

- A. Reference: Same as TP13A above
- B. Implementation: A-138
- C. Status: Three outbound and three inbound lanes are included in Contract A-136, Drawing No. C-004F, Sheet No. 7.
- D. Future Action: These mitigation measures will be transferred to Contract A-138, which will be created later in 1988.

Mitigation Measure TP16. Reconstruct the on and off ramps to the Santa Ana Freeway to streamline entrance to the park-n-ride lot.

- A. Reference: Same as TP13A above
- B. Implementation: To be Determined
- C. Status: This measure was Included in contract A-130, Sheet No. 65B, Drawing No. C074. Also see Sheet No. 46, Drawing Nos. C049. With the realignment of MOS-1, the contract that will include the signalization has not been determined.
- D. Future Action: The District will determine the contract that will accomplish this measure and transfer the approved drawings to this contract later in 1988.

Mitigation Measure TP17. Reconstruct the dividing island at the Ramirez Street, Vignes Street and Freeway on/off ramps or widen the ramps to provide a left turn pocket lane and two northbound lanes at the entrance to the Union Station east parking lot.

- A. Reference: FEIS, Page 3-23
Same as TP13A above
- B. Implementation: To be Determined
- C. Status: Same as TP16C above.
- D. Future Action: Same as TP16D above.

Mitigation Measure TP18. Widen the south side of Ramirez Street from 32' with 8' of sidewalk to 35' with 10' of sidewalk between Vignes and Center Streets.

- A. Reference: Same as TP13A above
- B. Implementation: A-130
- C. Status: This measure was included in Contract A-130, Sheet Nos. 45 & 46, Drawing Nos. C048 & C049. With the approval of the realignment of MOS-1, this measure is no longer applicable.
- D. Future Action: None Needed

Mitigation Measure TP19. Widen Macy Street from 28' to 40' half width and install an eastbound right turn lane on Macy Street at Vignes Street. Make the transition from 28' to 40' street half width via an 80' long reverse curve beginning at the east portal of the underpass and continuing easterly to Vignes Street.

- A. Reference: Same as TP13A above
- B. Implementation: A-138
- C. Status: Presently included in Contract A-136, Drawing No. C-010F, Sheet No. 15.
- D. Future Action: These measures will be transferred to Contract A-138, which will be created later in 1988.

Mitigation Measure TP20. Make the curb return radius at the south-west corner of Macy and Vignes Streets 35'.

- A. Reference: Same as TP13A above
- B. Implementation: A-138
- C. Status: Presently included in Contract A-136, Drawing No. C-010F, Sheet No. 15.
- D. Future Action: These measures will be transferred to Contract A-138, which will be created later in 1988.

Mitigation Measure TP21. Widen Macy Street westbound and install a right turn lane on Vignes Street at Macy Street.

- A. Reference: FEIS, Page 3-23
- B. Implementation: N/A

C. Status: Subsequent study determined that widening Macy Street was not feasible. The right turn lane on Vignes Street at Macy Street is the responsibility of the LADOT and will be considered in their Transportation Improvement Program.

D. Future Action: None Needed

Mitigation Measure TP22. Widen Vignes Street northbound at Macy Street and install a right turn lane on Vignes Street at Macy Street.

A. Reference: FEIS, Page 3-23

B. Implementation: N/A

C. Status: The District and LADOT concluded that these street improvements are not necessitated by Metro Rail impacts. They are the responsibility of the LADOT and will be considered in their Transportation Improvement Program.

D. Future Action: None Needed

Mitigation Measure TP23. Restripe Ramirez and Vignes Streets near Union Station.

A. Reference: FEIS, Page 3-23

B. Implementation: N/A

C. Status: As agreed with the City, will be done by LADOT during street restoration

D. Future Action: The District will monitor the activities of contractors and coordinate with agencies during construction.

Mitigation Measure TP24. Provide left turn channel northbound on Alameda Street at Macy Street. Widen the east side of Alameda Street and construct a right turn lane onto Macy Street.

A. Reference: FEIS, Page 3-23

B. Implementation: A-136

C. Status: Same as TP22C above

D. Future Action: None Needed

Mitigation Measure TP25. Replace two railroad tracks in the center of Alameda Street with one track and provide three through lanes in each direction.

A. Reference: FEIS, Page 3-23

- B. Implementation: N/A
- C. Status: Same as TP22C above
- D. Future Action: None Needed

Mitigation Measure TP26. Encourage or require employer-sponsored ride-share or transit incentive programs to reduce potential parking usage.

- A. Reference: FEIS, Page 3-31
- B. Implementation: Coordination with other agencies and private firms.
- C. Status: This measure requires the cooperation of other agencies or the private sector. The Community Redevelopment Agency requires that 20-40% of the parking generated in the downtown area be located in one of two peripheral parking areas; at Union Station and on Washington Boulevard between Grand Avenue and Figueroa Street. This measure is being expanded to apply to all new development in Los Angeles.

The South Coast Air Quality Management District has issued new regulations designed to increase the average automobile occupancy rate. These regulations will be phased in over several years and apply first to employers with over 500 employees. Employers must make and implement plans to encourage public transit use, van pools, car pools, cooperative parking and flex time.

The Central City Assoc. plans to organize a Transportation Management Assoc. for the downtown, comprised of Transportation Management Organizations which will be neighborhood units of employers. Operations will be funded by employers paying \$3 to \$5 per month and \$5 per year for each employee.

The City of Los Angeles will increase parking fees for lone commuters from \$5 to \$25 per month at the Civic Center. Car poolers will get preferential or free parking and flexible work schedules.

The City of Los Angeles has raised rush-hour parking fines from \$28 to \$53 and proposed new left-turn lanes, parking limits, and longer green lights throughout the City.

The L.A. County Superior Court plans to lease commercial space for 70 courtrooms throughout Los Angeles County to decentralize court operations and reduce downtown traffic congestion.

- D. Future Action: The District will coordinate development of programs with the SCAQMD, the City of Los Angeles, and the CRA as operations near.

Mitigation Measure TP27. Encourage developers and employers to take advantage of the City's new parking management plan to reduce the cost of and the need for parking.

- A. Reference: FEIS, Page 3-31
- B. Implementation: Coordination with other agencies.
- C. Status: Same as TP26C above
- D. Future Action: Same as TP26D above

Mitigation Measure TP28. Provide 26 Kiss and Ride parking spaces at the Alvarado Station. If additional spaces are required, they could be built over the crossover east of Alvarado Station.

- A. Reference: EA, Page 42
- B. Implementation: A-185
- C. Status: Subsequent detailed engineering determined that 20 marked spaces and nine curb side spaces could be provided. Drawings C-004 and C-006 show these spaces.
- D. Future Action: The District will monitor the start of operations and evaluate Kiss and Ride demand. Arrange for additional spaces if needed.

Mitigation Measure TP29. Provide facilities for bicycle parking at Union Station.

- A. Reference: FEIS, Page 3-32
- B. Implementation: A-138
- C. Status: Included in Contract A-136, Drawing Nos. A-007 and A-008.
- D. Future Action: They will be moved to Contract A-138 which will be created later in 1988.

FEEDER BUS OPERATION (FB)

Mitigation Measure FB1. Coordinate with SCRTD Bus Planning the re-routing of east-west local buses that will terminate at the Alvarado Station on Westlake Avenue.

- A. Reference: EA, Pages 37 and 38
- B. Implementation: Bus Planning arranges for changes in bus routes
- C. Status: The EA indicated the required re-routes. Bus Planning will arrange to execute these changes to coincide with the start of rail operations. Westlake Avenue will be resurfaced with concrete to accommodate bus operations. Contract A-175, drawings Nos. C-037, C-039, C-040, and C-072 show concrete pavement on Westlake Ave.
- D. Future Action: The District will monitor construction and execute bus line changes as the start of rail operations approaches.

Mitigation Measure FB2. Increase east side width of Alvarado Street from 33' to 50' in the vicinity of the station.

- A. Reference: Letter from J. E. Crawley, SCRTD to Donald Howery, LADOT, Re: Street Replacement Criteria, dated October 2, 1984

Letter from Donald Howery, LADOT to J. E. Crawley, SCRTD, Subject: Metro Rail Replacement Facilities Design Criteria, dated May 15, 1984

Memo from Donald Howery, LADOT to Philip King, Los Angeles Bureau of Engineering, Subject: Metro Rail - Union Station (A-135) Replacement Facilities, dated March 29, 1984
- B. Implementation: A-175
- C. Status: Existing street width is 41.25 feet. Contract Drawing No. C-037, Sheet 028 and Drawing No. C-039, sheet 030 shows east side of Alvarado Street half width will be 51 1/3 feet.
- D. Future Action: None Needed

Mitigation Measure FB3. Add a 10' wide bus lane on Alvarado Street at the station.

- A. Reference: Same as FB2A above

- B. Implementation: A-175
- C. Status: Contract Drawing No. C-037 shows a 12.08 foot wide bus lane included in the east side of Alvarado Street half width of 51 1/3 feet.
- D. Future Action: None Needed

Mitigation Measure FB4. Coordinate with LADOT to restrict left turn movements at Alvarado Station from all directions except for buses.

- A. Reference: EA, Page 37
- B. Implementation: Applies to traffic operations
- C. Status: Will be coordinated with LADOT in time for beginning of rail service.
- D. Future Action: The District will coordinate with internal departments and LADOT as the start of operations nears.

Mitigation Measure FB5. Additional measures are proposed for decision by LADOT and SCRTD. They include eliminating on-street parking on both sides of Alvarado Street and eliminating on-street parking on west side of Westlake Avenue in the vicinity of the station.

- A. Reference: EA, Page 37
- B. Implementation: Applies to traffic operations.
- C. Status: These measures will be coordinated with LADOT in time for the beginning of rail service. Removal of approximately 32 one-hour spaces from Alvarado Street and 27 one-hour spaces from Westlake Avenue as proposed would be an inconvenience to the users. An October 1986 SCRTD parking survey recorded over 1800 curb side parking spaces within one quarter mile of the Wilshire/Alvarado Station with a usage rate of only 69%. A total of 6470 on-street and off-street spaces with a usage rate of 64%, available within one-quarter mile of the station, indicated that the removal of spaces from Alvarado Street and Westlake Avenue would not be a significant impact.
- D. Future Action: The District will coordinate with LADOT as the start of operations nears.

LAND USE, SOCIAL AND ECONOMIC (LU)

Mitigation Measure LU1. Develop residential projects on commercially zoned land.

a. Rezone surplus commercially or industrially zoned land for residential uses. The City's Community Redevelopment Agency is to examine potential for residential development on commercially zoned land in the northwest corner of the Union Station area.

b. Require the construction of housing as part of large scale projects or the contribution to a housing fund for small projects.

c. Encourage the construction of housing as mixed use or independent projects through density bonuses and other incentives.

d. Undertake joint development projects which include a housing component.

A. Reference: FEIS, Pages 3-63, 64

B. Implementation: This measure is accomplished outside of the construction contracts through coordination with other agencies.

C. Status: The Community Redevelopment Agency is undertaking a housing project on surplus industrial land leased from the Santa Fe Railroad. The project is a 130 bed temporary homeless shelter on a site east of Union Station, immediately north of the Metro Rail Yard. It was funded by a combination of public and private funds in December 1986.

Since the completion of the Final EIS, the Community Redevelopment Agency has completed Cathay Manor, a 270 unit low and moderate income elderly housing development within the station area. Ground was broken for the 124 unit Hillside Villa low and moderate income apartments in August 1986. Occupancy is expected by May 1988. Two additional low and moderate income projects sponsored by the Community Redevelopment Agency are under construction or about to start in Chinatown just outside the defined study area, but within walking distance of Union Station. They are Bartlett Hill Manor Apartments (65 units, under construction), scheduled for occupancy by August 1988 and TC Apartments (20 units), completed in 1986.

The Community Redevelopment Agency has been approached by a developer requesting financial assistance for a 320 unit, two-phase apartment complex to be located between Cathay Manor and Union Station on the block bounded by New High Street, Ord, North Spring, and Sunset. This project is currently in the discussion phase.

The CRA has a taxing and spending cap of \$750 million for the Central Business District which restricts their ability to develop housing and other projects. The Mayor is seeking to have the cap raised to \$5 Billion with \$2.2 Billion designated for low income and homeless housing and services. County officials oppose removing the cap since they want tax increment money generated downtown spent in other areas. The CRA may go to court to raise the cap.

Three projects with combined commercial and residential development including 662 residential units are scheduled to break ground in the South Park area between September 1987 and March 1988. The projects are on properties zoned for commercial development.

Construction began September 29, 1987 on Phase II of the Skyline Apartments, a mixed use development located on Olympic Boulevard between Hope and Flower Streets in South Park. This phase will have 15% low-to-moderate income units out of a total of 270, with 32,000 square feet of ground floor retail and 2nd floor office space. Completion is expected in July 1989.

The Del Prado Apartments on the southern edge of Grand Hope Park, originally called Park Place Apartments, will have 192 apartments with 15% of the units rented to low and moderate income residents. The ground floor will be retail and the second floor, commercial. Construction should start in April 1988, with completion set for September 1989.

Parkside at Grand and Ninth where 200 existing residential units will be renovated with ground floor commercial. Construction should start in May 1988, with completion set for November 1989.

The District recommended that a high density, mixed use development on First Street between Hill and Hope Streets connect with the Metro Rail Civic Center Station.

In the South Park area, the CRA selected the South Park Consortium, led by Jupiter Industries, to develop three square blocks bounded by Olympic, 11th, Flower, and Olive. The project will add up to 1,900 residential units, about 775,000 square feet of office space and 450,000 square feet of retail space.

The City's Planning Commission has recommended a rezoning of the South Park area that will allocate two-thirds of the 6:1 Floor Area Ratio to residential use and one-third to commercial.

The CRA is negotiating with CalMark and First Capital Decision, Inc. for the construction of a 1,350-room hotel on Figueroa between 12th and Pico.

At 9th and Figueroa, RCI International is negotiating plans for 800,000 square feet of commercial office and retail space and about 100 housing units. This project will preserve the historic Variety Arts Center.

These South Park projects are located within close walking distance of the 7th/Flower Station.

Parkhill Partners is conducting a design competition for a 161,000 square foot parcel bounded by 8th, 9th, and Francisco Streets and the Harbor Freeway. They envision a mixed-use "urban village" including 175,000 square feet of residential space, 270,000 square feet of retail, a 400,000 square foot hotel, and a 28-story office tower.

On Bunker Hill, the Grand Promenade, which calls for a total of 975 residential units, is under development. The initial phase of 372 apartment units, 10,000 square feet of retail, and 31,000 square feet of office space is expected to be complete in 12 to 15 months.

California Plaza, on Bunker Hill, is expected to break ground on 450 hotel rooms in early 1988. The first of two 250 unit residential towers should follow the hotel in the fall of 1988. The second office tower, with 1.4

million square feet of office and retail space, could also start then.

The CRA has replaced many of the housing units lost during the Bunker Hill Urban Renewal and Redevelopment process. This has been funded by the Bunker Hill Low and Moderate Income Replacement Housing Fund using tax increment money. In the last nine years, 5,130 new housing units have been built, 1,796 new units are under construction, 1,970 are scheduled to begin within 16 months, and funds are committed for 691 more. This makes a total of 9,457 replacement units for 7,310 units lost during the development process.

Gateway Center is planned for Figueroa and Temple with one floor of retail, eleven stories of luxury hotel, six floors of condominium, and 21 stories of office space.

The Pershing Square Development near 5th/Hill Station, has been approved in concept and will include office space, a 540-room hotel and residential units. Houk Development should start construction in 1988.

In Little Tokyo, the El Taira Project will provide 60 condominium units on commercially zoned land.

For the First Street North project in Little Tokyo, the CRA has issued a Request for Proposals calling for 200 residential units on commercially zoned land. The complete project could include 250,000 square feet of retail and 1.25 million square feet of offices. The City Administrator has narrowed the field of competitors to two and will report his findings to the City Council later in January.

Ginza Plaza is planned for 2nd and Central with 300 hotel rooms and 35,000 square feet of retail.

The CRA has under contract or completed 700 affordable single room occupancy/apartment units in the Downtown area.

The Los Angeles Mission has begun construction of its new \$11.25 million facility at the corner of 5th and Wall Streets. The 113,000 square foot building will provide food, shel-

ter, counseling rooms, a health clinic, barber shop, library, and a gym and weight room.

At three of the five MOS-1 stations located in-street, the District only purchased enough land or easements for entrances, thus eliminating opportunities for joint development above stations. While Wilshire/Alvarado and Union Stations are located off-street and have substantial joint development potential, the District owned land at Wilshire/Alvarado is not available for joint development until after the station is built. The District owned land at Union Station also will be unavailable during construction, however, the Los Angeles Union Passenger Terminal Corporation has assembled a large vacant parcel on the Union Station site. The Community Redevelopment Agency is negotiating the terms of a new master land use plan for this site, and with the District's cooperation, may include housing on-site or en lieu payments to the downtown housing fund as part of the negotiation.

The District will continue to work with the Community Redevelopment Agency to insure that housing is built within walking distance of MOS-1, and anticipates continued substantial near term progress in the vicinities of Union Station and 7th/Flower Stations. In the longer term, after the disruptions of construction are over, the District expects the elements of the Draft Station Area Development Plan prepared by the City of Los Angeles which allows Transfers of Development Rights, Residential Financial Assistance, and development bonuses for provision of amenities and improvements in the station area to yield additional new housing in the Wilshire/Alvarado Station area.

- D. Future Action: The District will continue to coordinate with the CRA and Los Angeles Department of Planning to insure residential development is included in station areas.

Mitigation Measure LU2. The District and the Community Redevelopment Agency will identify historic and cultural properties that could be affected by the indirect effects of increased developmental pressures resulting from the subway project. They will consider these properties in the planning process for the Station Area Specific Plans for MOS-1.

They will examine areas where indirect effects on historic and cultural properties are expected in consultation with the SHPO, the Los Angeles Cultural Heritage Board and interested local groups.

They will include mechanisms for the preservation of significant historic and cultural properties in the MOS-1 Station Area Specific Plans. These mechanisms may include :

Transfer of Development Rights,

Down-zoning,

Grants or low-interest loans for rehabilitation,

Establishing a revolving loan fund for rehabilitation,

Conditioning of bargain sale or joint development with the preservation/rehabilitation of an historic or cultural property,

Property tax abatement or discount,

Advocacy of the tax incentives of Section 212 of the Economic Recovery Tax Act, and

Donation/acceptance of a facade easement.

The SCRTD and private developers will cooperate with the CRA's preservation program.

A. Reference: FEIS, Pages 3-66, 67

FEIS, Pg 4-29, 30 (Section V, Memorandum of Agreement)

EA, Pages 49 and 50

COF, October 25, 1984, Page 21

B. Implementation: This measure is accomplished outside of the construction contracts.

C. Status: Progress to date has centered on the establishment of historic districts to help ensure preservation of historic structures near these two stations. Two historic districts in this area have been added to the National Register of Historic Places. South Spring Street between Fourth and Seventh Streets has been designated a National Register Historic District. The Historic District includes 29 buildings that form the heart of what was once known as "The Wall Street of the West." One block to the

west, Broadway between Third and Ninth Streets has been designated as the Broadway Historic Theatre District and is the largest Historic Theatre District on the National Register of Historic Places.

The Draft Core Area Development Framework Plan contains a listing of all buildings listed on the National Register of Historic Places, buildings eligible for listing on the National Register of Historic Places, buildings potentially eligible for listing on the National Register of Historic Places, and all Historic/Cultural Monuments of the Los Angeles Cultural Heritage Board.

The Los Angeles Conservancy has proposed evaluating over 300,000 properties to identify those which are historically significant.

The Los Angeles Theatre Center (LATC) on Spring Street has difficulty raising sufficient funds to meet its operating expenses. The CRA has subsidized LATC operations for three years but is pressing them to keep production costs in line with contributions. Arco is leading a \$7.2 million fund drive to stabilize LATC. Increased development resulting from the subway project could lead to better support of the LATC from individuals and corporations.

The Bank of America at 7th and Spring Streets has closed. The Stock Exchange Club is interested in opening a new club there called "The Bank".

The District has requested, in a letter dated November 11, 1986, that the Community Redevelopment Agency incorporate a special section in the Final Metro Rail Station Area Master Plan for the Central Business District (CBD), with a detailed list of the mitigation measures to be taken for all historic structures within the Plan Area and that the Environmental Impact Report for this Plan include a discussion of impacts on and mitigation measures for the historic properties within the Master Plan Area.

Recent CRA activity in preservation of historic buildings includes efforts related to the Little Tokyo historic district and rehabilitation work on the Embassy Theatre Hotel, the Variety Arts Building, the Pantry Cafe, the Federal Reserve Bank, the Standard Oil and

Petroleum Building, Engine Company No. 28, Bank of America, The Broadway Center Building, and the former Pacific Stock Exchange Building. Additional rehabilitation and preservation work is underway or recently completed on City Hall, Pershing Square Park, El Pueblo de Los Angeles State Park, Broadway historic movie house district, Spring Street historic financial district, 548 South Spring Street, One Bunker Hill, Bradbury Building, Site of Bidy Mason's home at 333 S. Spring St., old Broadway Department Store, Continental Building, County Engineering Building, San Fernando Building, Rowan Building at 458 South Spring, Grand Central Market, Church of the Open Door, conversion of the Yorkshire Hotel to residential, office, and retail, Huntington Hotel, Biltmore Hotel, and the Mayflower Hotel.

The L.A. City Council will place an \$88 million Central Library restoration fund bond issue on the June ballot. The CRA will pay the balance of the \$152 million to repair and expand the library. The Library is negotiating with the Design Center at 433 South Spring Street for a temporary location. A fund raising campaign for the library met its \$10 million goal.

Bidding for the first phase of the Central Library restoration process will be open in January 1988. The first phase involves rehabilitation work, including demolition of walls, ceilings, and stairwells and the removal of artworks and historical furnishings. CRA also approved a contract to clean and repair the extensive murals and stenciling on the library walls and ceilings.

Selection of an architect is underway for Disney Hall, a 2500 seat auditorium funded by a gift of \$60 million in Disney stock.

"Power of the Place", a non-profit organization is working to save Fire Station No. 30 at 14th and Central Avenue from demolition for re-use housing several police units.

As of January 1, 1988, the state has begun the process of transferring responsibility for administering their portion of El Pueblo State Park and the Olvera Street Commercial District to the City of Los Angeles. The Olvera Street Merchants' Association has funded a study of how best to improve and develop the location.

The merchants would like the City to organize a non-profit Olvera Street Corporation to oversee rehabilitation and development. Plans include a 500 space parking structure, expanded walks and retail service, and historic rehabilitation.

A Chinatown Community Advisory Committee has been formed to select proposals for the design of the Chinatown Cultural and Community Center.

Preliminary plans are underway to develop a gateway park at the Santa Ana Freeway between Main and Los Angeles Streets as a memorial to immigrants.

Architects have been chosen to renovate the city-owned site of the Japanese American National Museum on Central Avenue in Little Tokyo.

The Dance Gallery, scheduled in Phase II of the Bunker Hill Cal Plaza development, is attempting to raise \$5 million to match a \$5.5 million loan offered by the CRA.

The owners of the Grand Central Market and the adjacent Million Dollar Theatre are seeking funding to refurbish the two sites. Phase One included refurbishing the ground-floor hall and the Hill Street side of the Grand Central Market. The historic facades could be restored and 80,000 square feet of space above the market could be developed. Plans include development of a parking structure and restoration of the Million Dollar Theatre.

Private property owners around Pershing Square have formed a volunteer benefit assessment district for the purpose of renovating the park. The CRA has committed \$6 million to the project.

A group of merchants has organized the "Miracle on Broadway" using a \$430,000 CRA grant and private funding to refurbish and revitalize the street.

Holographic Visions, the first museum in Los Angeles to devote itself wholly to holographic art, opened December 9, 1987. The museum is located a block from a Metro Rail station entrance and is designed to educate the general

public about the process of holography, which has both artistic and scientific purposes.

The CRA and the Spring Street Association will cooperate in an effort to spruce up and "accessorize" the buildings along the Historic Spring Street District. The program entails visual marketing to dress up the street and help lease ground floor space. Artists will be employed to decorate windows. Lighting and flower pots will be added. The CRA will begin a public relations effort, including a quarterly newsletter for the area. The work has been rescheduled for completion in summer 1988.

The South Park Consortium complex will include a new Museum of Photography. The developer is trying to convince the Los Angeles Children's Museum to relocate here as well, however the Children's Museum staff and trustees favor the Terminal Annex site, near Union Station.

Archaeologists and paleontologists are studying Metro Rail excavations, hoping to find historic and cultural artifacts. Bottles, ceramic pieces, dominoes, Chinese medicine bottles, fishbones, seashells, and shark's teeth have been found.

The L. A. Community Development Department is funding the MacArthur Park Public Art Program to improve the park environment.

- D. Future Action: The District will follow-up with the CRA to ensure that at least some measures in the Memorandum Of Agreement with the Advisory Council on Historic Preservation are incorporated in final station area plans.

Mitigation Measure LU3. Assist the City, County and Community Redevelopment Agency in the development of Specific Plans.

- B. Implementation: Coordination with other agencies
- C. Status: The District provided funding assistance in the development by the City of Los Angeles of the Metro Rail Transit Corridor Specific Plan covering portions of the CBD, one City prepared Station Area Development Plan at the Wilshire/Alvarado Station and a CBD Master Plan, covering four CBD stations, developed by the Community Redevelopment Agency.

The City prepared and circulated an EIR for the Transit Corridor Specific Plan (TCSP) and public hearings have been held. The Plan has been divided into two parts, one dealing with the MOS-1 section and one dealing with the CORE Study area. The LA City Department of Planning is revising the plan to focus on the Wilshire/Alvarado Station area. Adoption is expected in November 1988.

The District has begun preliminary studies for the Alvarado master planning process called for in the Draft Station Area Development Plan. Adoption of these plans is awaiting completion of the CORE Study to fix the middle portion of the Metro Rail alignment.

City officials and the Central City Association (CCA) are on the verge of convening a new "Silver Book" committee to revise the "Central City Los Angeles General Development Plan". CCA will attempt to increase residential units planned for South Park from 6,000 units to 20,000 units.

The Central City West (CCW) Specific Plan process is still underway and the CCW Steering Committee has chosen a lead consultant. On June 9, 1987 the City Council approved the specific plan work program and instructed that an Interim Control Ordinance be prepared to establish discretionary review of projects during the preparation of the specific plan. On October 15, 1987, the City Council approved an interim control ordinance for the Specific Plan area that calls for a conditional use type process for the issuance of building permits for all commercial, industrial, and residential areas zoned R3 and greater. This process is detailed in a "Proposed Interim Control Ordinance for the Central City West Land Use/Transportation Specific Plan Program" which requires Planning Commission approval for such building permits and the payment of an Traffic Impact Fee of \$5,050 per additional P.M. peak hour vehicle trip generated by a project.

The Station Area Development Plan for Wilshire/Alvarado is under revision, with completion expected in November 1988. This plan will respond to initiative U which reduces the allowable Floor Area Ratio (FAR) in Height District One from FAR 3 to FAR 1.5. This results in downzoning substantial amounts of land in the

Wilshire/Alvarado Station Area but should not affect the land owned by the District. Since none of the Metro Rail Transit Corridor Specific Plans nor the Station Area Development Plan has been adopted, some or all of this land could be rezoned.

The Draft CBD Master Plan, written by the Community Redevelopment Agency, has been completed and reviewed by the District. On November 12, 1986 the agency notified the District that they would finalize the CBD Master Plan when results are available from the rezoning of all of downtown in compliance with California laws, the Development Framework Plan and the adoption of a Transportation Implementing Ordinance for downtown. They expect these events will take until late 1988, but, until then they will use the draft Master Plan as a guideline for discussions with developers.

The CRA, in cooperation with the LADOP, has begun transcribing informal guidelines for transferring density in the City into policy stated in an ordinance.

In 1987, Los Angeles City Planning Department hired a new planner who will devote the majority of their time to Metro Rail related specific plans. They intend to hire a second staff member for this purpose.

The CRA and the owners of Union Station have entered into a memorandum of understanding that requires the site be developed as a transportation center, that its historic context be maintained, that its development be economically viable, and implementation mechanisms be established. The CRA, with the Postal Service and the owners have commissioned a study to address marketing, design and transportation for Union Station, which may ultimately be developed under a specific plan, a joint development agreement, or a redevelopment project. A draft of the design element of the study is under internal review. Two levels of development are under study for transportation impacts and marketability.

Union Station is also affected by the general plan/zoning consistency process that is in progress for Central City North. The L.A. City Council approved the Central City North Plan/Zoning Consistency Program on January 5, 1988.

The City Council approved the Westlake General Plan/Zoning Consistency Program on January 5, 1988.

The Central City Association has raised \$250,000 from the private sector for the purpose of exploring the feasibility of a Metro Rail Station at Witmer Street.

The Planning and Environment Committee of the City Council heard public comments on the general plan/zoning consistency process for the Central City and adopted the general plan/zoning amendments. For Metro Rail station areas, the City is conducting a separate General Plan/Zoning Consistency Program. Initial work is underway but no public hearing dates have been set. The original March 1988 deadline for completing all General Plan/Zoning Consistency programs has been extended. June or July 1988 is set as the tentative date for submission to the Planning Commission.

The City of Los Angeles plans to begin preparing a Specific Plan for Central City East about July 1, 1988, with EIR approval set for July, 1990. The plan area boundaries are to be determined.

The L.A. City Council approved establishment of local panels, called "Community Planning Advisory Committees", to monitor land usage and assist in the revision of community plans.

- D. Future Action: The District will continue to coordinate with the City and CRA until Specific Plans are complete.

Mitigation Measure LU4. Relocation Assistance for displaced residents, tenants, businesses and non-profit organizations will be provided in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (of 1970) and the California Relocation Act.

- A. Reference: FEIS, Page 3-104
- B. Implementation: Coordination with other agencies
- C. Status: All federal and federally assisted projects in the Metro Rail Corridor will comply with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (of 1970).

All projects in the Metro Rail Corridor where a public entity (including the state, the Regents of the University of California, a county, city, district, public authority, public agency, or other political subdivision) acquires real property for public use are required by law to provide relocation assistance under the terms of the California Relocation Act. In addition, the Community Redevelopment Agency requires compliance with the California Relocation Act as a condition of approval for all projects requiring discretionary Community Redevelopment Agency action.

RELOCATION

The relocation program is organized to comply with the provision of the Uniform Relocation Act. A Real Estate Specialist was assigned to each displaced occupant to completely inform them of the relocation benefits and services.

A community meeting was held with the commercial tenants displaced from the Wilshire/Alvarado station site to familiarize them with the route alignment and the relocation benefits. Other displacees were briefed on a one-on-one basis to discuss the Project and to explain their benefits. A relocation brochure for Tenants and Homeowners and a brochure for Business and Non-Profit Organizations were prepared and distributed to each occupant displaced by the Project.

Listed below is a summary of the relocation work load. The units are families or businesses relocated.

	<u>CCU</u> <u>A100</u>	<u>CCU</u> <u>A130</u>	<u>CCU</u> <u>A145</u>	<u>CCU</u> <u>A165</u>	<u>CCU</u> <u>A171</u>	<u>CCU</u> <u>A175</u>	<u>TOTAL</u>
Total Relocation	4	4	0	0	5	42	55
Relocations Completed	4	3	0	0	5	42	54
Relocations Remaining	0	1	0	0	0	0	1
Residential	0	0	0	0	0	25	25

RESIDENTIAL RELOCATIONS

The 25 residential relocations displaced in Construction Contract Unit (CCU) A175 consisted of tenants occupying an apartment building. The tenants were primarily low-income, Spanish-speaking occupants who were living in substandard units. A Last Resort Housing Plan was submitted to UMTA and approved December 28, 1984. The plan authorized the payment of a relocation payment over and above the normal tenant supplement maximum authorized by the Uniform Act. All 25 tenants were relocated to decent, safe, and sanitary units.

COMMERCIAL RELOCATIONS

Twenty nine commercial tenants have been relocated with the assistance of a Real Estate Specialist. The commercial tenants consisted of two transport companies, a wholesale grocery distributor, a sheet metal processor, a corn processor, a medical clinic including individual medical practices, four fast food restaurants, a grocery market, a bar, several retail clothing operations, and several other small businesses.

Individualized service will be provided to the remaining commercial occupants. Referrals to other commercial locations are routinely provided as well as other advisory services.

SUMMARY

A total of \$626,000 has been paid to date in relocation expenses. The acquisition and relocation program will continue to be implemented with the remaining occupant.

- D. Future Action: The District will continue real estate acquisitions until all right of way has been purchased.

Mitigation Measure LU5. The following mitigation options may be implemented by SCRTD or other public agencies such as the L.A. County: Community Redevelopment Commission and Department of Regional Planning; L.A. City: Department of Planning, Department of Transportation, Community Development Department, Economic Development Office, and the Community Development Commission.

a) Include affordable market rate housing on commercially zoned sites in lieu of increased density in adjacent neighborhoods.

- A. Reference: FEIS, Pages 3-104, 105
EA, Pages 66, 67
- B. Implementation: Coordination with other agencies for Civic Center, 5th/Hill, and 7th/Flower Station areas
- C. Status: Page 67 of the Community Redevelopment Agency Draft Central Business District Station Area Master Plan requires new developments in the Central Business District which need agency discretionary action (desire to build higher than the by-right plan limit of up to F.A.R. 6) to provide either onsite housing or make a direct contribution to the South Park Housing Fund (a Community Redevelopment Agency designated future housing neighborhood at the southwest end of the Central Business District).

The CRA has required developers to provide affordable housing in the Central Business District. Projects underway or planned include:

- o 56 low income units on Bunker Hill
- o 42 low income units in at Skyline II in South Park
- o 40-50 very low income units and 150 moderate income units in South Park
- o 19 low and 10 moderate income units in South Park
- o 29 low/moderate income units at Del Prado in South Park
- o 105 low/moderate income units in South Park Consortium Development Phase I
- o 96 very low, 96 low, and 96 moderate income units in South Park
- o Rehabilitation of a Single Room Occupancy hotel in Little Tokyo
- o 36 low and 88 moderate income units in Hillside Villa Apartments on Sunset
- o 20 very low and 45 moderate income units in Bartlett Hill Manor near Bunker Hill
- o 116 very low, 70 low, and 162 moderate income units in Grand Plaza at Sunset and Grand. It will include a market and drugstore.
- o 20 units in the Buena Vista Apartments
- o A mixed use development, the Parkhill City Centre Development, with 175,000 sq. ft. of residential space, 270,000 sq. ft. of retail, a 400,000 sq. ft. hotel, and a 28-story office tower.

o Because of cost overruns and financial problems, 45 of 60 condominiums in the Angelina Terrace, 916 W. College Street will be sold at market rate. This was to have been Chinatown's first low/moderate income project.

Low and moderate income housing developed before 1980 and subsidized by FHA or HUD were built subject to agreements to maintain low/moderate rent structure for 20 to 40 years. As these agreements expire, up to 23,000 units will disappear from the low to moderate rent range in coming years. Councilwoman Molina is sponsoring a plan to retain these units and is working to install rental caps throughout the City.

The CRA has increased funding to preserve low-income housing Downtown, with emphasis on a seismic safety loan program.

The mayor proposed that the City of Los Angeles issue \$100 million in bonds to reinforce older buildings to meet earthquake standards. These buildings would be used to house the homeless.

The SRO Housing Corp. has available \$6.5 million in low interest loans to rehabilitate four residential hotels and purchase a fifth. They are investigating purchase of three more SRO hotels for rehabilitation. Salvation Army has purchased and is rehabilitating a SRO hotel.

The City has imposed a six-month moratorium on the demolition of old skid row hotels and rent increases in SRO's.

The City is exploring ways to provide shelter for up to 2000 homeless people using a combination of prefabricated units or mobile homes. The mayor has asked the CRA to organize the acquisition and installation of 240 units of modular, factory constructed apartments for sale by the Utah Intermountain Power Authority to be used for low-to-moderate income housing.

The National Equity Fund is conducting a campaign to use corporate donations and government housing funds to allow non-profit corporations to build 1,000 new low-income apartments in Los Angeles each year. First Interstate Bank, Arco, Great Western Financial Corporation, and

Transamerica Occidental Life Insurance Co. have agreed to contribute \$1 million each to this program.

The City Council approved a six-month moratorium on a provision of the rent control laws that enables landlords to evict tenants to allow major rehabilitation of apartments. The council also increased the financial burden on landlords who use the provision and the allowance payable to tenants forced to move when the moratorium is lifted.

The Los Angeles Mission has submitted plans for a 171 bed facility at 4th and Los Angeles Streets.

The Church and Temple Housing Corporation has obtained a \$273,000 loan from the CRA to refurbish the Pennsylvania Hotel at 5th and Main.

The Hotel Howard reopened with 60 rooms for long-term, low-income residents after a 1\$ million rehabilitation. Nine additional hotels, with nearly 900 rooms, are due for refurbishment or reconstruction by 1989.

The University of Southern California now houses 300 students in the newly renovated Embassy Hotel, 851 South Grand Avenue.

In cases where landlords have refused to repair unsafe or substandard buildings, the L.A. City Council adopted a plan to let renters place their rents in an escrow account.

- D. Future Action: The District will continue to monitor the progress of developers and other agencies.

b) Establish special rent control districts to avoid severe increases in rental rates in the station area.

A. Reference: Same as LU5a(A) above

B. Implementation: Existing policies at all station areas

C. Status: The City of Los Angeles adopted a Rent Stabilization Ordinance (Chapter XV) of the Los Angeles Municipal Code), operative from May 1, 1979. This ordinance includes rent controls in currently occupied apartments, protects tenants from the use of evictions to raise rents, provides for annually adjusted fair rent increases

based on historic costs (now 5%), safety regulations, and administrative recourse for both landlords and tenants in the event of disputes. The Rent Control Ordinance does not cover single family dwellings but does include residential hotel rooms rented for more than 50 days. It requires all rental units to be registered with the Rent Stabilization Board. The ordinance is in effect in the entire City of Los Angeles, including all of the MOS-1 alignment and station areas.

D. Future Action: None Needed

c) As a last resort, provide housing assistance for low income residential tenants in station areas to mitigate severe increases in rental rates.

A. Reference: Same as LU5a(A) above

B. Implementation: Coordination with other agencies and tenants in all Station areas

C. Status: Both the City and County of Los Angeles have Department of Housing and Urban Development (HUD) Section 8 housing programs. Under this program, low income residents may qualify for a certificate which subsidizes their rent. They are then able to seek housing themselves at the location of their choice. This program applies throughout the City and County, but is much in demand and there are restrictions on the disbursement of the limited funds. See also status of LU5b above.

The CRA said that rental rates for low income housing have not yet been adversely affected by Metro Rail development. An unrelated expansion of the Convention Center will remove 411 housing units. According to the CRA, these will be replaced on a two-for-one basis within a three mile radius.

D. Future Action: The District will continue to monitor increases in rental rates in station areas.

d) Implement measures to reduce parking spill-over into adjacent neighborhoods.

A. Reference: Same as LU5a(A) above

B. Implementation: Coordination with agencies and residents in all station areas

C. Status: The City of Los Angeles Department of Transportation has implemented a preferential parking program administered by a separate preferential parking section within the Department. A new preferential parking district can be established in an area of approximately six city blocks following the gathering of signatures of three-quarters of the residents on a standardized City form, technical studies by the City, and advertised public hearings. The fastest that a parking district has been established is five and one-half months but a more representative time would be 12 to 18 months.

When a preferential parking district is established, on-street parking is limited to residents displaying permits. Permits cost \$15 a year. Up to three permits are permitted per household (four on written request), and temporary or visitor passes are available for lesser amounts.

In the downtown area the Peripheral Parking Program would include several large parking facilities that could collect some cars that might otherwise park in neighborhoods. The tentative provisions of this program allow one parking space per 1000 square feet of office space for projects north of Olympic Boulevard. Of this 60-80% can be developed on site, while 20-40% would have to be developed on a peripheral lot.

A peripheral parking site is still sought by CRA. One potential site is located behind Union Station.

The CRA is including Transportation System Management (TSM) programs in development agreements for projects with significant square footage and employees. Such programs include employer subsidized bus passes, preferred parking for car poolers, convenient transit access, and ride-share coordinators. The District suggests such programs be adopted as mitigation measures when commenting on environmental documents. Recent documents circulated for comments include the First and Broadway Project where there are plans for 1,600 parking spaces and measures to encourage transit use, subsidized bus passes, car-and-vanpools, and flextime.

The Sixth Street Parking Structure at Main Street will have 10,000 square feet of retail and spaces for 930 cars in six stories.

New developments and rehabilitation of existing developments underway or planned Downtown include approximately 12,000 additional parking spaces.

In August 1987 the City tightened environmental reviews of proposed projects before granting building permits, effectively lowering the threshold for environmental review of projects. This will help prevent parking spillover into adjacent neighborhoods.

In December 1987, the South Coast Air Quality Management District proposed a comprehensive ride-sharing program that could cut rush hour traffic by 25%. Businesses with 100 or more employees will be required to offer incentives to employees to share rides or use public transit.

In January 1988, the City Council raised the parking rates at city-owned or leased lots downtown from \$5 to \$25. The added revenue, estimated at \$1 million annually will be used to subsidize bus passes and other ride-sharing measures. Car-poolers will receive free parking with close-in access to entrances and elevators and flexible working schedules.

The Central City Association has proposed organizing a Downtown Transportation Management Organization to start satellite ridesharing offices for each area of Downtown under an umbrella organization put together by CCA and the Building Owners and Managers Association.

In Central City West, a 2.3 million square foot mixed-use project, including a 4,000 car parking garage is planned for eight acres next to the new Pacific Stock Exchange.

D. Future Action: The District will monitor and coordinate with neighborhood groups and LADOT when operations begin.

e) Establish special commercial zoning or development review procedures to preserve existing small businesses that provide community services in the station areas.

A. Reference: Same as LU5a(A) above

- B. Implementation: Coordination with agencies and neighborhood businesses
- C. Status: The Draft Metro Rail Station Area Development Plan (Page VIII-3) includes a Development Area Review Team (DART) which will review development and could act to preserve existing small businesses that provide community services in the station areas.

A City Planning Department representative estimates that the DART will be operational one year after the adoption of the Metro Rail Transit Corridor Specific Plan. See LU3C above for a discussion of implementation.

Specific responsibilities of DART might include:

- o Receive and review development project applications.
- o Establish preliminary negotiating positions and recommendations
- o Coordinate with the Economic Development Office and Community Development Department on financial incentives and economic development programs.
- o Recommend use of density bonuses and other incentives to the Planning Commission.
- o Recommend related public improvements to the Planning Commission.
- o Coordinate with the SCRTD Operations, Planning, Engineering, Real Estate and Architecture (OPERA) committee, the District's equivalent of DART, in processing development applications. The OPERA committee has since been disbanded and replaced with another committee that coordinates joint development activities for the District.

In 1987, the L. A. Planning Department hired a new planner to work on the Metro Rail Transit Corridor and Station Area Specific Plans. This will allow progress to resume on preservation of existing small businesses. Councilwoman Gloria Molina has expressed interest in this subject for Wilshire/Alvarado.

The Los Angeles Chapter of the American Institute of Architects is sponsoring a design competition for the Alvarado station area near MacArthur Park with a goal of designing a mixed use project for the square-block area that includes air rights above the station.

The District has opened a Metro Rail Information Center at 415 Hill Street to inform the public about construction activities and assist property owners and tenants affected by construction.

The general plan/zoning consistency process is continuing, including areas such as Central City, Central City North, and Westlake. On completion in March 1988 the plan and zoning changes will provide guidance for the location of small businesses.

The City administers a small business revolving loan program, which can help businesses stay viable in their current location.

The SRO Housing Corporation has leased space at a favorable rate to a small grocery store in a hotel and has offered favorable leasing rates to other grocery stores provided the leasee not sell alcohol.

An Employment Incentive Area has been formed for East Los Angeles that encompasses the Union Station area to encourage businesses to hire residents within the area. Another similar area has been established for the Central City area just south of the Santa Monica Freeway.

The L.A. Merchandise Mart opened in the remodeled Greyhound Bus Terminal at 6th and Los Angeles Streets. It will eventually house over 300 merchants, offering electronic devices, appliances, gadgets, clothing, shoes, toys, a pharmacy, and restaurants. Rooftop parking is available.

The City Council approved the "Hope Street Promenade," which calls for an 18-foot wide sidewalk and street limited to 44 feet, in order to encourage a pedestrian walkway with small storefronts and cafes.

D. Future Action: The District will continue to monitor and coordinate with L. A. City Planning through implementation and operation of DART.

f) Encourage tenancy and investment in joint development to displaced firms.

A. Reference: Same as LU5a(A) above

- B. Implementation: Coordination with agencies and firms in the station areas
- C. Status: The District encourages tenancy and investment in joint development by displaced firms. The District's first joint development agreement in construction, the Home Savings Tower, is an investment in the site by the firm originally occupying the site needed for the Metro Rail Portal.

At the Wilshire/Alvarado Station the District has successfully relocated firms displaced by the MOS-1 construction. As construction progresses and the climate for joint development improves, the District will notify the displaced firms when Requests for Proposals for Joint Development projects are issued and will invite their participation. In the case of smaller firms the District will suggest participation as part of a consortium or joint venture. See also the status of LU5e above and LU5h below.

Councilwoman Gloria Molina has taken an interest in constituent concerns in this area and met with District staff and interested developers regarding preliminary joint development ideas. Such coordination will assist in including displaced firms in joint development activities.

Preliminary meetings have been held with a developer regarding a joint development project that would include displaced firms.

- D. Future Action: The District will continue to coordinate its efforts in joint development with L. A. City Planning and CRA.

g) Provide relocation assistance to social services or facilities displaced by new development.

- A. Reference: Same as LU5a(A) above
- B. Implementation: Coordination with agencies in the station areas.
- C. Status: No social services or facilities are to be displaced by initial construction of MOS-1.
- D. Future Actions: None Needed

h) Establish special zoning or development review procedures to preserve existing and accommodate new social services and facilities in the station area.

- A. Reference: Same as LU5a(A) above
- B. Implementation: Coordination with agencies in the station areas.
- C. Status: The Draft Station Area Development Plans include a Development Area Review Team (DART) which will determine density bonuses to developments for the inclusion of community services. The DART would act as a liaison between the project applicant and the City, interpreting City plans and regulations. This new Committee would be chaired by the Director of Planning and would recommend project actions to the City Planning Commission and City Council.

The DART probably will be composed of the following departments: City Planning, Transportation, Public Works (Bureau of Engineering), and Community Redevelopment Agency (CRA projects only). The DART chair would have the authority to call in other departments, including the City Economic Development Office (CEDO) and the Community Development Department as needed for specific cases.

The City intends to include SCRTD as a participant in DART meetings and City Planning Commission meetings when Metro Rail issues and land development in Metro Rail station areas are being discussed. The City also intends to place Metro Rail land use items on the DART agenda at SCRTD's request, with tasks arising from these meetings to be completed by each agency.

The City Planning Department anticipates that the DART will be established and active within a year of the passage of the Metro Rail Transit Corridor Specific Plan. The current edition of the Metro Rail Transit Corridor Specific Plan calls for the establishment of a a single DART to serve the entire Metro Rail Corridor including the Alvarado Station Area and the Los Angeles CBD.

If a development application utilizes density bonuses, DART would determine, based on program criteria, the degree of consistency of the project with the Station Area Development Plan.

DART would then determine the magnitude of bonuses to be granted. Criteria would include those in the Station Area Development Plan, when adopted, and:

- o How much the bonusable feature will increase the ridership of Metro Rail,
- o Do the bonusable features provide a use which will fulfill the goals of the Centers Concept,
- o Will the bonusable feature provide an amenity that is not in the Plan area,
- o Will the bonusable feature provide an amenity that meets a need,
- o Will the bonusable feature fulfill the intent of the Transit Corridor Specific Plan and other elements of the General Plan,
- o How appropriate the bonusable feature is to the site or the overall project,
- o The accessibility of the bonusable feature to the intended users.

The District is negotiating with appropriate agencies to ensure that the Wilshire/Alvarado Station Area Development Plan will accomplish the project mitigation measures. The District will be represented on DART and will have the opportunity to work for the project mitigation measures.

The L.A. City Planning Department indicates this issue is still under review. The Department of Water and Power, near the Civic Center Station, is the first city department to institute a child day care and mildly ill child care program. DWP has budgeted \$112,000 for this program, which it will carry out with the California Pediatric Center.

Social facilities will be improved in the South Park area with the development of the 2.5 acre Grand Hope Park and the construction of the Fashion Institute of Design and Merchandising.

Students from the Fashion Institute will attempt to raise \$300,000 in November to benefit various social service providers in the Central City East.

L.A. County has approved the First and Broadway development, which includes a 6,000 square foot childcare center.

Building Blocks Child Care Center is providing day care for up to 60 children under the auspices of the California Pediatric Center.

The Alliance of Business for Childcare Development (ABCD) is a private sector response to the need for childcare in the downtown area. First Interstate Bank contributed \$100,000 to this effort. ABCD has applied for a \$538,000 CRA loan, raised almost \$400,000 from corporate donors, and received \$302,000 from the United way. They are already operating one childcare center, at the First United Methodist Church.

The Family Housing Corporation of Los Angeles will receive \$300,000 under the McKinney Homeless Assistance Act to help homeless families with children.

The CRA has adopted an expanded childcare policy designed to incorporate childcare facilities and programs into new development Downtown and in neighboring communities. The CRA will offer density bonus incentives to developers who integrate childcare facilities into new developments. Also, a new city ordinance allows developers to exceed the maximum allowable floor area in their developments by twice the size of the childcare facility, if the developer makes the space available at no cost to a qualified, nonprofit childcare provider. Priority for assistance goes to projects targeted at least 50% on low-and-moderate income facilities.

The State Office Building will include daycare for up to 100 children.

The proposed First Street North project includes childcare facilities.

Rehabilitation of the Optimum House Child Care Center near the Convention Center will provide daycare for up to 60 pre-school children.

The Los Angeles Children's Museum has narrowed its relocation to two choices, both near Metro Rail Stations.

CRA has agreed to pay 84% of the cost of the addition to the Alpine Recreation Center in Chinatown.

The SRO Housing Corporation provides favorable leasing terms to encourage non-profit social service providers to locate in their facilities and they have provided social services as well.

The Los Angeles Men's Place (LAMP) seeks to expand treatment and shelter programs for mentally ill, single men through a "LAMP" Village, with counseling services, a convenience store, a laundry, and a residential component.

CRA approved authorization of a \$427,000 budget for the Skid Row Development Corporation. It oversees counseling and placement services in Transition House, and operates the Renaissance building and a temporary shelter at 6th and San Pedro.

Building a Better Los Angeles, a public private partnership, awarded a series of grants totaling \$865,000 to be shared among 43 agencies dealing with the homeless. Downtown recipients were Para Los Ninos and the Salvation Army.

The Downtown Women's Center will have to be demolished and rebuilt as a result of the recent earthquake. An architect has volunteered to design a new building and an artist will redo the mural that will be lost on the existing building. The Mayor's office has promised a modular building as soon as it is purchased.

The CRA is developing a temporary shelter at 600 S. San Pedro Street to house 138 homeless men and women.

The L.A. City Council will give the YMCA \$100,000 per year for ten years to keep a 37,000 sq. ft. area outside its 401 S. Hope Street facility open for public use.

- D. Future Action: The District will continue to coordinate with the CRA and L. A. Department of Planning.
- i) Encourage the inclusion of displaced and new social services and facilities in joint development projects for the stations.
 - A. Reference: Same as LU5a(A) above
 - B. Implementation: Coordination with other agencies in the station areas.

- C. Status: The District will encourage developers and municipal agencies to support this measure. The Draft Station Area Development Plans include density bonuses allowing developers additional buildable floor space over what they would receive by right for including community services, such as child care, in joint developments.

In MOS-1 station areas, the SCRTD will use its representation on the DART at the Wilshire/-Alvarado station and its contacts with the Community Redevelopment Agency to negotiate for the inclusion of social agencies either in the new development on the existing site or at a new site in the station area.

See also response LU5e above.

- D. Future Action: The District will continue to coordinate with the CRA.

j) Require 15% of all new housing constructed in the CBD to be low-moderate income housing.

- A. Reference: Same as LU5a(A) above

- B. Implementation: Existing policies for Union Station, Civic Center, 5th/Hill, 7th/Flower Station areas

- C. Status: The Community Redevelopment Agency requires 15% of all housing constructed as part of Community Redevelopment Agency projects in the CBD to be low-moderate income housing. This requirement is contained in the Bunker Hill Redevelopment Project, Chinatown Redevelopment Project, Central Business District Redevelopment Project, and Little Tokyo Redevelopment Project plans. See also the response in LU1C and LU5a)C above.

- D. Future Actions The District will monitor the activities of contractors and coordinate with agencies during construction.

Mitigation Measure LU6. The City of Los Angeles has a zoning roll-back program to align the city's zoning ordinances with the general plan, that specifies lower density levels in the Wilshire/Alvarado area. This will create additional protections for the existing low income housing stock.

- A. Reference: EA, Page 50

- B. Implementation: Proposed zoning ordinances for the Wilshire/Alvarado Station Area.
- C. Status: The proposed zoning rollbacks are part of the City effort to bring existing zoning into conformity with the existing City Plan and are in addition to the efforts to encourage housing preservation and the construction of new housing which will be required in the Station Area Development Plan. Preliminary zoning rollbacks for the Westlake Community Plan, which will protect the existing housing stock for low income individuals were scheduled to go to the City Planning Commission on February 2, 1987 for review and public comment. The Planning Commission continued consideration of the proposed changes several times and scheduled another review for April 27, 1987. The Westlake Community Plan revisions do not include any changes in the immediate vicinity of the Wilshire/Alvarado Station because such changes will be accomplished in the Transit Corridor Specific Plan. Development of the Specific Plan by the Los Angeles Planning Department is pending. The Westlake General Plan/Zoning Consistency project was reviewed by the Planning Commission in November 1987. It was approved by the City Council on January 5, 1988. See also the response in LU3C above.

Councilwoman Molina is expected to take an interest in housing preservation at Wilshire/Alvarado. The District has met with the Councilwoman and interested developers regarding preliminary joint development ideas.

- D. Future Action: The District will continue to coordinate with the City Department of Planning on zoning changes and conformity efforts.

Mitigation Measure LU7. Identify the level of revenue contributed by the portion of the property that will be used for a Metro Rail station. Explore methods to compensate the taxing jurisdiction for the revenues they would have received. Identify residual development potential for the parcel and seek to have housing development incorporated into station area development.

- A. Reference: FEIS, Page 3-80
- B. Implementation: Coordinate with agencies affected by property takes at all station areas
- C. Status: Some land used for the MOS-1 will have joint development on it, which will result in equal

or greater revenues to the taxing jurisdiction. Other land required for the project, such as entrances to the CBD stations, will remain on the tax rolls. Further development on land used for the yard and shops and at Alvarado Station will return property to the tax rolls. The District has begun conceptual planning for its Alvarado Station property.

The CRA has not calculated the precise amount of land involved or revenue lost. They are examining joint development, private development of station entrances, leasing of air rights, and other value capture techniques to offset revenue losses.

LADOP has indicated the amount of tax revenue Los Angeles will lose is not significant, since the City owns much of the right-of-way in most cases.

The Home Savings Tower at 7th and Figueroa Streets is near completion and is a prime example of development induced by the construction of Metro Rail. This joint development contains a portal for Metro Rail and will probably offset most of the taxes lost by all taxable properties taken off the tax rolls by this and other MOS-1 developments.

- D. Future Action: The District will monitor development during construction and operation of Metro Rail.

SAFETY AND SECURITY (SS)

Mitigation Measure SS1. Provide adequate emergency exits, power supplies, alarm systems, emergency communication systems, fire sprinklers, standpipes, and smoke and gas detectors. Use low combustion or non-combustible materials to the maximum extent. Low combustion material should be low smoke and toxic fume producing.

- A. Reference: FEIS, Page 3-110
Comments and Responses to EA, Page 36
- B. Implementation: All Contracts
- C. Status: These measures are required by the Fire/Life Safety Criteria for the Project. The District Fire/Life Safety Committee (FLSC) has reviewed all plans and specifications for conformance with Fire and Life Safety Criteria. Final plans were approved by the FLSC prior to the end of 1986 after all criteria provisions were incorporated. Any changes to final design require resubmittal to and approval by the FLSC.
- D. Future Action: Staff will monitor any changes for compliance.

Mitigation Measure SS2. Station design includes walking surfaces constructed from non-slip materials.

- A. Reference: FEIS, Pages 3-187, 188, 189
- B. Implementation: All Contracts
- C. Status: Metro Rail Design Criteria, Volume 3, Section 13, calls for slip resistant flooring such as granite and terrazzo tile with slip resistant finish. The Technical Specifications Sections 03300 (Concrete), 04465 (Granite), 09310 (Ceramic Tile), 09330 (Quarry Tile), and 09420 (Terrazzo Tile) indicate the finish to be used. To achieve a non-slip surface, a thermal finish is used on granite and an unglazed finish is used for floor tile.
- D. Future Action: None Needed

Mitigation Measure SS3. Design station and surrounding site so that bus and automobile traffic patterns will safely interface with pedestrian and street traffic. Use clear sight lines and comprehensible signs. Provide clearly lighted station interiors. Monitor station interiors with closed circuit television. Provide telephone connections with the control center so that patrons can report criminal activities.

- A. Reference: FEIS, Page 3-109,-110
- B. Implementation: All Station Contracts
- C. Status: Bus and vehicle traffic is situated on the periphery of the station sites while pedestrian activity occurs on the interior of the station sites.

Stations have been designed with large open spaces and straight corridors that provide no place for criminals to hide. Station interiors are well lighted and are linked to the control center by telephones and television surveillance.

- D. Future Action: None Needed

Mitigation Measure SS4. Provide station supervisors with a central command post so they can supervise and control the station through direct observation and use of modern communications.

- A. Reference: FEIS, Page 3-110
- B. Implementation: All Station Contracts
- C. Status: Central command post is provided for roving supervisors use, as required. For Contract A-141, Drawing No. A-006 shows a Staff Security Room with communications facilities on the mezzanine level. Other stations have similar facilities.
- D. Future Action: None Needed

Mitigation Measure SS5. Design station to have safe pedestrian access to entrances.

- A. Reference: FEIS, Page 3-109
- B. Implementation: All Station Contracts
- C. Status: Same as SS1C above
- D. Future Action: None Needed

Mitigation Measure SS6. Use vandal and graffiti resistant designs and materials.

- A. Reference: FEIS, Page 3-111
- B. Implementation: All Station Contracts

C. Status: Metro Rail Design Criteria, Volume 3, Section 13.2.4, requires the use of materials that do not encourage vandalism and that are difficult to deface, damage or remove.

D. Future Action: None Needed

Mitigation Measure SS7. Provide art works in stations to give them a more human and personalized character.

A. Reference: FEIS, Page 3-111

B. Implementation: All Station Contracts

C. Status: Under development. The Art-in-Transit Program has been established to commission major art works for each station in keeping with the station design theme. Artists were selected for all stations but several have been unable to participate in the program. These have been or will be replaced. Eight preliminary artwork designs and four final designs have been completed. There are three designs for which no preliminary artwork has been received.

D. Future Action: The District will continue to monitor the progress of the Art in Transit Program.

SUB-SURFACE CONDITIONS (SC)

In March 1985, an explosion and fire occurred near Third Street and Fairfax Avenue as a result of methane gas seeping from underground sources. This incident was investigated by a task force of the City of Los Angeles. The incident raised issues about the safety of the Metro Rail Project which were explored by an SCRTD in-house board of review, an Independent Review Board appointed by the District, and by an Independent Technical Review Committee (ITRC) appointed by the Los Angeles City Council. The incident also became the subject of Congressional concerns and prompted legislation which prohibited the District from tunneling through any ground designated as a "High Potential Risk Zone" or "Potential Risk Zone" in the June 10, 1985 City Task Force Report.

Technical reports issued by the ITRC and by the District's Independent Review Board contained recommendations to improve the overall safety of the Project. The District's Board of Directors adopted the recommendations of the ITRC on February 13, 1986. Mitigation measures SC1 through SC14 incorporate these recommendations. UMTA included the recommendations of the Independent Review Board in their August 5, 1986 "Reevaluation of the Environmental Record for the Los Angeles Metro Rail Project, Minimum Operable Segment (MOS-1)" and concurrently incorporated them by reference into the Full Funding Contract. Mitigation Measures SC15 through SC25 incorporate these recommendations.

Before these review boards had completed their reviews, the Board of Directors adopted a position regarding Metro Rail safety, entitled "Policy Statement on the Safety of the Metro Rail Project", dated September 12, 1985. Safety measures considered necessary to ensure the safe construction and operation of the Project were included and are listed in Mitigation Measures SC26 through SC34.

These specific safety design measures to deal with sub-surface gas will be incorporated into the Metro Rail Project. In addition, construction safety requirements will comply with the regulations of the State of California, Division of Occupational Safety and Health. The applicable controlling provisions are the most stringent tunnel safety orders in the country. These are the California Administrative Code, Title 8, Industrial Relations - Chapter 4 and Division of Industrial Safety - Sub-Chapter 20.

This section is an exception to the general organization of the report, where construction measures are discussed at the beginning of each category followed by operations measures. In this section the measures are discussed in the order shown in the source document.

Mitigation Measure SC1. The SCRTD will conduct additional studies and research to improve the method of locating uncharted oil and gas wells before they are encountered and ruptured by a

tunnel excavator and establish a procedure to safely plug and abandon any oil or gas well encountered.

- A. Reference: Recommendations of the City of Los Angeles, Independent Technical Review Committee, adopted by the District Board of Directors on February 13, 1986.

EA, Comment 5 and Response, Pages 11 and 12

- B. Implementation: A-141, A-146, and A-171
- C. Status: Detailed research conducted to date using all available historical records and photographs has indicated that there are no known abandoned oil wells along the MOS-1 tunnel alignment. SCRTD and its consultants are continuing their search for any data that could provide additional information on abandoned oil wells along the alignment.

The SCRTD has completed its investigation of a technology being used in oil fields to locate well casings. The technology involves the use of a magnetometer, located at the end of a probe, that is capable of detecting oil well casings with a ferrous material content. The finding indicates that this technology can be applied successfully to the Metro Rail alignment.

The District will conduct magnetometer surveys from probes installed at the tunnel headings. Technical Specifications Section 02311 (Shield Driven Tunnels) Parts 1.1.B.8, 1.2.B, 1.3.B.11-14, 1.6.A2, 1.6.I, 1.6.J, and 3.1 of Contract A-141 and A-171 implement this mitigation measure. Contract A-146 has similar material in different parts of Specification Section 02311.

The District has established procedures to safely plug and abandon any oil or gas well encountered. Specification Section 02311 (Shield Driven Tunnels), Part 3.2 implements this mitigation measure.

The District is using the magnetometer in Contract A171 and A146 at the tunnel heading. No well casings or other metallic objects have been encountered.

- D. Future Action: The District will monitor construction and will comply with the mitigation measures as appropriate to conditions.

Mitigation Measure SC2. Audible and visual warning devices will be installed on tunnel excavating machines and in the tunnels to alert employees when detectors have identified the presence of methane gas.

- A. Reference: Recommendations of the City of Los Angeles, Independent Technical Review Committee, adopted by the District Board of Directors on February.
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: The requirements for audible and visual warning devices are incorporated in Section 2.8.1 of a draft SCRTD Construction Safety and Security Manual, dated December 15, 1986 which refers to Sections 7984 and 7985 of Title 8 of the California Administrative Code. This draft was finalized in March 1987.

Contractors are required to install gas sensing monitors at eight locations on the tunnelling machines. Contractors for Contracts A146 and A171 have installed audible and visual warning devices on tunneling machines. Before tunnel construction commences, the contractor will be required to demonstrate that the warning devices function properly. The Construction Manager and District staff will enforce the use of the devices.

- D. Future Action: The proper use of the devices will be monitored from the time construction begins until it is completed. The District's Construction Manager is fully aware of this requirement and it has prepared procedures to ensure compliance.

Mitigation Measure SC3. The SCRTD will provide all its available methane gas documentation and interpretations by qualified experts to those bidding on the construction contracts involving tunneling or station construction, and the SCRTD will include in bid documents the requirements that the contractor provide all employees involved in underground construction work with at least eight hours of training in dealing with the hazards created by methane gas, safety precautions and emergency procedures to be followed when working underground, prior to those employees commencing underground work. In addition, periodic emergency drills and simulated rescues will be staged to reinforce the training.

- A. Reference: Same as SC2A above

Report of the Independent Review Board, entitled "Design, Construction, and Operation in Gaseous Areas," dated October 31, 1985.

- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: The Project contract documents contain a six page section entitled "Information Available to Bidders." This information lists all available methane gas documentation and reports interpreting the documents.

The SCRTD has developed a Construction Safety and Security Manual, which covers the training of employees involved in underground construction. Section 2.8.3 of the manual contains the requirement that a minimum of 8 hours of training is to be provided to all employees involved in tunneling operations classified as "Gassy" or "Extra Hazardous." As of March 25, 1988, the A146 and A171 contractors have trained 79 people in tunneling in gassy ground.

Section 6.4.5.B of the Construction Safety and Security Manual requires emergency response drills to be conducted every three months during construction to reinforce the training.

The Construction Safety and Security Manual was reviewed and concurred in by Cal-OSHA and the use of the manual is a contract requirement. District staff and the Construction Manager will monitor its application during construction.

- D. Future Action: The District will determine the extent and frequency of emergency drills and will monitor construction and training for emergency drills.

Mitigation Measure SC4. Any tunnel excavating machine used to excavate the tunnels will be equipped with an enclosed cab and/or self contained oxygen supply for the machine operator. In addition, all other workers in the immediate vicinity of the face will have, at all times and in immediate proximity of their working location, self-contained "self rescuers" with an independent oxygen supply. Catalytic type "self rescuers" will not be relied upon since they are not effective in a methane environment.

- A. Reference: Same as SC2A above

Report of the Independent Review Board, entitled "Design, Construction, and Operation in Gaseous Areas," dated October 31, 1985.

- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: Specification Section 01545 (Worksite Safety Requirements), Part 3.2 refers the contractors to CAL/OSHA Tunnel Safety Orders, which require the use of self-contained oxygen breathing units for equipment operators and all others within 100 feet of the tunnel face.

Equipment operators and others working within 100 feet of the tunnel face for Contracts A146 and A171 are equipped with self-contained oxygen breathing units.

- D. Future Action: The District will monitor construction and will spot check for compliance.

Mitigation Measure SC5. The SCR TD will undertake additional study to determine the effects that the geological environment surrounding the tunnel route will have on the amount of water and gas likely to penetrate the tunnels. A more thorough study of the characteristics of the oil and gas reservoirs in the vicinity of the route will also be undertaken.

- A. Reference: Same as SC2A above
- B. Implementation: Not applicable to the construction contract segments. Included in the contract with Engineering-Science for subsurface conditions investigation.
- C. Status: The SCR TD has completed its investigation of gas and water conditions along the alignment before construction. As part of this investigation the District has installed an extensive network of probes to measure the concentration and pressure of gas in the soil along the alignments. This effort included evaluation of data from probes, analysis of all existing and new data by a reservoir engineer and a reservoir geologist, and analysis of all data by District and consultant specialists. As part of this detailed review and analysis of all pertinent data, the effects of the geological environment around the tunnel on the flow of water and gas were evaluated.

The District's geotechnical consultants, Engineering Science, produced the CORE Study "Sub-surface Conditions Report" in May 1986. The

report concluded that sub-surface facilities could be constructed safely using standard precautions and gas mitigation measures.

The Construction Manager's Environmental Monitoring Section has been monitoring gas probes during construction of A146 and A171. They have not detected any build-up of gas ahead of the tunnels and have not detected any methane gas in the tunnels during construction.

See also SC11C, SC15C, SC17C, and GE1C below.

- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure SC6. The SCRTD will review its decision not to provide some automatic mechanism to "back-up" the control room operators activation of emergency ventilation fans. An automatic system will be designed for the control room so that if the alarm should warn of increasing levels of methane gas and the appropriate actions required of a human operator do not occur within a specific period of time, a pre-programmed computerized sequence of events, known as an Emergency Gas Operating Procedure, will be initiated to activate the required fans, blowers, exhaust systems, etc.

- A. Reference: Same as SC2A above
- B. Implementation: A-640 (Communications)
- C. Status: SCRTD has completed its review of the Metro Rail emergency operations when gas is detected and has determined that the communications controller will need a short time to ascertain that the prescribed emergency fan activation regimen is correct considering all events that may be taking place.

Accordingly, the Metro Rail communications system Specification Section TP 9.2.9.E has been changed to provide that the computer recommended Emergency Gas Operating Procedure will be activated automatically if no action is taken by the communications controller in 30 seconds.

- D. Future Action: None Needed

Mitigation Measure SC7. The SCRTD will assemble its own review panel to examine if its construction designs incorporate sufficient planning to accommodate adequately the special needs of the handicapped patron to use emergency accesses with as

little assistance from employees or other patrons as can reasonably be expected.

- A. Reference: Same as SC2A above
- B. Implementation: This measure does not apply to the construction contracts. It is handled in operations planning.
- C. Status: SCRTD has carried out an extensive review of the emergency exiting requirements of the handicapped. This review has involved the general public and the handicapped. The special needs of the handicapped have been, and will continue to be given particular attention in the design and operation of Metro Rail. Most of the design features that address emergency exiting benefit both the able bodied and handicapped patrons. Examples are:
 - o The vehicle floor is designed to give one hour fire separation to allow additional time to evacuate handicapped patrons in a fire emergency.
 - o Tunnels and stations are of Class I construction which means they contain almost no combustible materials.
 - o All stations will have elevator access from street level to mezzanine and mezzanine to train platform. The elevators are designed for exclusive use by handicapped patrons.
 - o Emergency ventilation will bring fresh air into the tunnels from the direction that evacuees should walk to reach safety. Fumes and smoke will be exhausted in the opposite direction.

The Fire/Life Safety Committee sets the standards and has the final approval of all safety exiting related issues including accommodations for the handicapped.

The review of emergency exiting provisions for the Metro Rail System is an ongoing process under the general aegis of the Metro Rail Fire/Life Safety Committee. This Committee will continue to review and approve all designs affecting such provisions. At an appropriate time prior to the start-up of the system, all emergency procedures and provisions will be

thoroughly tested for revenue operations readiness.

- D. Future Action: The District will continue to monitor project development and construction.

Mitigation Measure SC8. The SCRTRD will re-evaluate its gas probe and monitoring system for train operations so as to ensure that the system will: 1) locate probes in such underground locations as stations, tunnels, cross passages, etc. where methane and hydrogen sulfide gases are likely to collect (in addition to those to be located in the exhaust ducts); 2) locate probes so that reasonably adequate diagnostic data can be generated to help locate the source of a gas intrusion should it occur.

- A. Reference: Same as SC2A above
- B. Implementation: A-640 (Communications)
- C. Status: Initially gas probes were to be located in the exhaust ducts. This meant that gas intruding into the tunnel at any point would not be detected until it reached the ventilation exhaust ducts. It did not allow for reasonably accurate location of the source of gas intrusion. SCRTRD has revised Section TP11 and 18 of the contract drawings to increase the number of gas probes from 30 to 76 with 41 placed in the tunnel, midway between stations. Others are in exhaust shafts, equipment rooms, and in other isolated locations. The number of central gas analyzers was increased from five to twelve. These figures include sensors installed in the Light Rail System structures at 7th and Flower.

Probes were placed to reduce the transmission time of the samples to the analyzers and to sample air from the perimeter of the structures where gas intrusions could occur. The increased number of probes provides more detail and allows greater accuracy in indicating the source of the gas intrusion. The response time for a sensor to detect and register a change in gas concentration is 17 minutes maximum and 11 minutes average.

To supplement the coverage of the automatic gas monitoring system the District will provide for manual gas measurement as required. As the beginning of revenue operations approaches, the District will prepare a plan for training personnel and operating the system. This plan will specify that when the automatic gas monitoring system detects gas at a steady or rising level, even though the level is below the action limit, monitoring personnel will use hand held gas detectors to check the areas near the

probes.

- D. Future Action: The District will test the gas sampling system before accepting it for operations and will prepare and implement the training and operating plan.

Mitigation Measure SC9. The SCRTD will assign a certified engineering-geologist to be stationed at or near the working face of the tunnel at all times to inspect and log tunnel geology so as to obtain accurate information and interpretation in a timely manner about geologic conditions encountered such as methane pockets, ground water, and changes in geologic conditions exposed during tunnel construction.

- A. Reference: Same as SC2A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: A report entitled "Procedures for Mapping Faults and Modifying Mined Tunnel Linings in MOS-1," dated November 13, 1987, required that engineering and geotechnical personnel be assigned to the jobsites to accurately document geologic conditions and to ensure that proper construction procedures are followed.

The District has developed a trained staff to monitor geologic conditions affecting construction, to insure compliance with the specifications.

- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure SC10. The SCRTD will develop a contingency plan that will establish the criteria against which (geologic) faults encountered during construction will be judged as potentially active or inactive and establish a procedure whereby the concrete tunnel lining will be replaced by specially designed steel lining when a fault classified as active is encountered.

- A. Reference: Same as SC2A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: SCRTD has developed a design for potentially active fault crossings. The District developed a contingency plan, entitled "Procedures for Mapping Faults and Modifying Mined Tunnel Linings in MOS-1," dated November 13, 1987, for

any unknown faults that may be encountered within MOS-1. This contingency plan includes criteria and a range of construction options which include specially reinforced cast-in-place concrete tunnel liner or an inner liner of welded 3/4 inch steel plates for tunnels where pre-cast concrete liner segments were planned.

Prior to active tunnel construction the District will implement the plan and assign appropriate personnel to deal with the situation.

- D. Future Action: The District will monitor construction to insure compliance.

- Mitigation Measure SC11. The SCRTD will better define the ground-water environment which Metro Rail will traverse by preparing a detailed profile along the tunnel alignments illustrating the position of the water levels. Estimates will be made of water inflow rates and these will be compared with the capacities of pumping units to be installed in the tunnels. Excavation plans and tunnel walkway plans will also be examined to ensure that they will remain useful to evacuate patrons and employees should excessive inflow occur.

- A. Reference: Same as SC2A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: Groundwater conditions along MOS-1 had been studied in detail during the design process and have been recorded in the geological reports prepared by Converse Consultants, U.S. Geological Survey Map MF-866, and gas monitoring reports prepared by Engineering Science in 1983 and 1985. Additional pump tests were initiated in March 1986, to verify previous tests and supplement existing data.

The list of geotechnical reports that address the groundwater environment is as follows:

- o Converse Consultants, Inc.:
- August 29, 1983: Report of Man-Size Auger Boring.
- September, 1983: Geotechnical Report, Metro Rail Project, Design Unit A-135 (with others).

- October, 1983 : (a) Geotechnical Report, Metro Rail Project, Design Unit A-170 (with others).
 - October, 1983 : (b) Geotechnical Report, Metro Rail Project, Design Unit A-165 (with others).
 - October, 1983 : (c) Geotechnical Report, Metro Rail Project, Design Unit A-140 (with others).
 - June, 1984 : Supplemental Geotechnical Investigation Metro Rail Project, MacArthur Park Lake (with others).
 - February, 1985 : Design Unit A-140 Geotechnical Information, Stations 178 through 199 (letter from MRTC).
 - November, 1986 : Report on Union Station Area Aquifer Pump Tests for the Metro Rail Project.
- o Geotechnical Investigation Report, Volume I and II; Converse, Ward, Davis, Dixon, November 1981.

Current designs provide for water and gas-resistant membranes or coatings on the interior of tunnel linings and the exterior of station walls. Therefore, little or no water is expected to penetrate the stations or tunnels under operating conditions.

If a catastrophic seismic event were to occur, the postulated worst case scenario would involve a tunnel break of one foot wide around the entire tunnel circumference. Under this scenario, emergency evacuation would not be impaired by an inflow of groundwater. At typical flow rates through alluvium, the available tunnel storage capacity below the level of the safety walk would require approximately ten hours to fill.

Pump test and additional groundwater measurements have been made to determine the quantity and quality of the groundwater. The findings indicate that no design modifications are required to successfully operate the system. For construction however, the January 1987 permit from the Regional Water Quality Control Board required an extensive plan of monitoring and treatment of the water that will be discharged from the dewatering activities of the excavations for the Project. The District has prepared the necessary plans and specifications to comply with the permit. See also SC5C above and GE1C below.

- D. Future Action: Implement the plans and specifications for all construction areas that require dewatering.

Mitigation Measure SC12. The SCRTD and its consultants will obtain a copy of the U.S.G.S. Professional Paper 1365(sic, should be 1360) and verify the adequacy of the MOS-1 structural seismic design. Additional consideration of fault displacement and related damage to the tunnel will also be analyzed.

- A. Reference: Same as SC2A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: SCRTD and its consultants reviewed in detail all available literature including U.S.G.S. Professional Paper 1360, "Evaluating Earthquake Hazards in the Los Angeles Region." Selection of earthquake design values for the Metro Rail project involved consideration of several factors, including:
- o The design values are not the maximum ground acceleration (spike or peak) values, but rather represent the effective values for the design earthquake.
 - o Attenuation of peak ground acceleration occurs and must be considered in selecting the design value.
 - o There is a very small probability of exceeding the 0.6 g design acceleration during the life of the SCRTD structures.

A comparison of the SCRTD design values with those postulated in U.S.G.S. Professional Paper 1360 results in the following tabulation.

	SCRTD Maximum Design Earthquake <u>(MDE)</u>	USGS Postulated Earthquake
Richter Magnitude	6.5 - 7.0	6.5
Max. Design Ground Acceleration	0.60 g	0.42 g
Max. Design Ground Velocity	3.2 ft/sec	3.3 ft/sec
Max. Design Ground Displacement	3.3 ft	2.3 ft

The SCRTD design values represent a conservative and appropriate earthquake design approach that addresses all the relevant conditions.

Fault crossings were analyzed in detail, including numerical analysis of flexibility of various tunnel structures and dynamic laboratory tests on models prepared for the District by the California Institute of Technology. From these analyses, it was concluded that fabricated steel linings, because of their ductility, were the appropriate linings for the alignment in the vicinity of identified faults.

See also SC10C above.

- D. Future Action: The District will monitor construction for evidence of (geologic) fault crossing.

Mitigation Measure SC13. The SCRTD will review its plans for back-up power supplies and utilize fixed or mobile generators to supply emergency power for the ventilation and de-watering pumps in critical areas.

- A. Reference: Same as SC2A above

Report of the Independent Review Board, entitled "Design, Construction, and Operation in Gaseous Areas," dated October 31, 1985.

- B. Implementation: A-630 (Sub-Station Equipment) and A-631 (Traction Power Installation)

- C. Status: SCRTD has completed a review of the need for additional back-up power. The review consid-

ered various system requirements arising from a severe earthquake which could cause damage ranging from area-wide blackouts to street blockage and tunnel ruptures.

Design decisions were made to: 1) provide a fixed generator in the yard to back-up the DWP power-feed to the tunnel cable and 2) prepare for the addition of a second fixed generator at Wilshire/Alvarado in the event of a fault being found during the Metro Rail tunneling work. The District considered a mobile generator but rejected this option.

The design re-work of the system was completed in February 1987. The system selected did not involve the Department of Water and Power. Contracts A-630 (Substation Equipment) and A-631 (Traction Power Installation) provide switching equipment and a fixed generator for back-up power for ventilation fans and dewatering pumps. Specification Section 16622 (Stand-by Engine-Generator Set) of Contract A-631 provides for the purchase and installation of a 1,000 KW fixed emergency generator.

D. Future Action: None Needed

Mitigation Measure SC14. Re-examine the use of membrane clamps, grout holes and grout pipes to insure that the membrane surrounding the tunnel lining will be properly sealed and closed off after grouting.

A. Reference: Same as SC2A above

B. Implementation: Contracts A-141, A-146, and A-171

C. Status: The construction drawings contain detailed sketches governing the installation and sealing of grout holes through the membrane. The grouting design details have been reexamined by SCRTD and consultants to insure proper constructibility. Drawing SS088B of Contract A-146 shows typical details of membrane installation and grout pipes.

The present design details are adequate to provide for the proper seals.

D. Future Action: None Needed

THIS CONCLUDES THE MITIGATION MEASURES RECOMMENDED BY THE ITRC

Mitigation measures recommended by the District's Independent Board of Review in their October 31, 1985 Report on "Design, Construction, and Operation in Gaseous Areas" are shown below in SC15 through SC25.

Mitigation Measure SC15. The District will have petroleum geologists and engineers make a further study of existing subsurface gas data.

- A. Reference: Report of the Independent Review Board, entitled "Design, Construction, and Operation in Gaseous Areas," dated October 31, 1985.
- B. Contract Segment: All Contracts
- C. Implementation: District contracted with the firm of Engineering-Science to evaluate existing gas data and to collect and analyze data from existing and from additionally installed gas probes. Their analysis team included petroleum geologists, petroleum engineers, and risk assessors. It produced the CORE Study "Subsurface Conditions Report," dated May 1986, which evaluated subsurface gas conditions along Metro Rail alignments.
- D. Future Action: None Needed

Mitigation Measure SC16. The District will monitor existing gas probes and the ventilation air in the tunnel for gas both before and during construction.

- A. Reference: Same as SC15A above
- B. Implementation: All Contracts
- C. Status: Section 2.8.1 of the District Construction Safety and Security Manual requires automatic and manual gas monitoring for the heading and the return air in the tunnel.
- D. Future Action: The District will continue to monitor the construction and insure compliance.

Mitigation Measure SC17. A separate group, responsible to the construction manager, will collect, reduce, and interpret gas data.

- A. Reference: Same as SC15A above
- B. Implementation: All Contracts
- C. Status: Section 3.1.2.K(7) of the May 1986 Scope of Work of the Construction Manager's contract requires the Environmental Monitoring Section

to collect, reduce, and interpret gas data.

This group is now active and is detecting and identifying hazardous gases, liquids, dusts, vapors and other materials encountered on the work sites.

No methane gas has been detected during tunneling for A146 and A171.

- D. **Future Action:** Monitor the organization of the Environmental Monitoring Section.

Mitigation Measure SC18. Continue and ensure ongoing coordination with the local fire departments. Invite key personnel underground during construction to familiarize them with the tunnel.

- A. **Reference:** Same as SC15A above
- B. **Implementation:** All Contracts
- C. **Status:** Section 2.6 of Volume 1 of the System Design Criteria and Standards establishes system fire/life safety procedures. Section 2.6.3 sets up an Emergency Preparedness Plan which requires coordination with local fire departments listed in Section 2.6.4. Section 2.6.9 requires training, exercises, drills, and critiques to prepare the District and participating agencies for emergencies. The District held a 40 hour training session in September for approximately 20 Los Angeles City and County Fire Department personnel. In November 1987, one of the tunnel contractors held the first of a series of 20 hour emergency underground rescue team training sessions. The session included ten potential team members and two LA Fire Department Battalion Chiefs as observers.

Several meetings have been held with the battalion chiefs and the assistant chief of the LAFD responsible for fighting fires in the Downtown area. The meetings covered coordination of underground rescue procedures, breathing apparatus, fittings on underground air and water lines, and location of Metro Rail tunnels in case of emergency rescue.

Standby underground rescue teams have made two familiarization visits to the tunnel locations and 210 LA City firefighters and 25 LA Sheriff's Search and Rescue personnel have visited tunnel sites.

- D. Future Action: The District will establish the form and frequency of familiarization meetings and will schedule, coordinate, and monitor the visits of local fire department personnel to construction sites.

Mitigation Measure SC19. Drill horizontal probe holes in advance of the tunnel to drain gas-bearing zones ahead of the working face.

- A. Reference: Same as SC15A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: Technical Specification Section 02311 (Shield Driven Tunnels), Part 3.1.A and E require drilling exploratory holes ahead of the tunnel face, monitoring for gas at the collar of the holes during drilling, and testing the holes for gas. The District's Construction Manager will oversee the work.
- D. Future Action: The District's construction manager monitors the work during construction and has found no gas in tunnels for A146 or A171.

Mitigation Measure SC20. Implement a detailed ventilation plan similar to that required by MSHA.

- A. Reference: Same as SC15A above
- B. Implementation: All Contracts
- C. Status: Technical Specifications Section 01518 (Temporary Ventilation) establishes a plan for ventilation during construction of the Project. See also Mitigation Measures SC6, SC13, SC24, SC25, SC26, SC27, SC35, SC37, and SC38.
- D. Future Action: Monitor construction to determine how well the ventilation system works.

Mitigation Measure SC21. Analyze the applicability of using underground coal mine electrical equipment as outlined in Parts 18 and 75 of Title 30, Code of Federal Regulations.

- A. Reference: Same as SC15A above
- B. Implementation: All Contracts
- C. Status: The District determined that there was no essential difference between the electrical equipment outlined in Parts 18 and 75 of Title 30, Code of Federal Regulations and that required in the Electrical Safety Orders and Tunnel Safety Orders of the State of California. The equipment required in the State of California Regulations will be used.
- D. Future Action: The District will monitor construction to insure that installed equipment meets the Cal OSHA standards.

Mitigation Measure SC22. Contact the Washington Metro Area Transit Authority (WMATA) and ascertain what success they had with gas monitoring during operations.

- A. Reference: Same as SC15A above
- B. Implementation: All Contracts
- C. Status: According to a conversation with the Manager of WMATA's Office of Safety and Fire Protection, they monitor continuously for combustible vapors in their underground structures. In the ten years of operations, they have never detected any such vapors in their underground structures.
- D. Future Action None Needed

Mitigation Measure SC23. Locate all the gas probes and abandon them in a safe manner.

- A. Reference: Same as SC15A above
- B. Implementation: 1986 Contract with Engineering-Science for the evaluation of Subsurface Conditions along Candidate Alignments of the Metro Rail Project.
- C. Status: The contractor, Engineering-Science, that installed the probes, is responsible for backfilling the borings with sand and cement slurry according to permit Number A-86-51-0172 issued by the L.A. Department of Public Works, Bureau of Engineering on February 18, 1986.

The probe bores will be filled in after there is no further need to monitor the probes for gas.

Although tunneling has passed 22 of 28 probe holes on the alignment of Contract A171, these probes remain valuable sources of information and will be retained until the end of subway construction.

- D. Future Action: The District will monitor construction to insure all probes are properly abandoned.

Mitigation Measure SC24. Ensure that the underplatform exhaust (UPE) system is turned on if a train becomes stalled in a tunnel.

- A. Reference: Same as SC15A above
- B. Implementation: This measure would be implemented through operational procedures, not the construction contracts.
- C. Status: The Final Report on the Environmental Control System, dated August 23, 1985 governs the operation of the ventilation system for the Project. The primary purpose of the underplatform exhaust system is to control the temperature of the station. In warm weather the fans will exhaust the hot air from under the train when the train comes into the station. If the station temperature exceeds a set limit, the fans will operate to exhaust the hot air. In cooler weather the fans are turned off and the heat from train operations is allowed to warm the station. The UPE fans are used as part of the emergency ventilation system to provide needed ventilation during non-revenue hours and to exhaust smoke and gases as needed. In the case of a stalled train there would be no reason to operate the UPE unless the train was on fire.
- D. Future Action: None Needed

Mitigation Measure SC25. Ensure that high and low points in the tunnel alignment are either monitored for accumulation of gas or are adequately ventilated.

- A. Reference: Same as SC15A above
- B. Implementation: All Contracts
- C. Status: The District has determined that gas layering and collection occur at air flow rates of two

feet per minute or less. Revenue train operations or operation of the ventilation system during non-revenue hours (typically 1:00 to 5:00 AM) will provide airflow of over 20 times this level to dissipate intruding gases from either high or low points in the tunnels and move them to probe locations where they can be analyzed. See also the status of SC8 above.

D. Future Action: None Needed

THIS CONCLUDES THE MITIGATION MEASURES RECOMMENDED BY THE
INDEPENDENT REVIEW BOARD

Safety measures adopted by the District's Board of Directors in a September 12, 1985 "Policy Statement on the Safety of the Metro Rail Project" are shown below in SC26 through SC38.

Mitigation Measure SC26. Provide natural ventilation, ventilation created by train movements and under-platform exhaust systems that will operate continuously during revenue service.

- A. Reference: District's Policy Statement on the Safety of the Metro Rail
- B. Implementation Contracts A-141, A-146, and A-171
- C. Status: The Metro Rail Project has an extensive ventilation system consisting of natural ventilation, air exchange created by train movements and under-platform exhaust systems.
- D. Future Action: None Needed

Mitigation Measure SC27. Provide an emergency ventilation system of fans and controls that can bring in fresh air and exhaust gases when required.

- A. Reference: Same as SC26A above.
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: The standard ventilation system is augmented by an emergency ventilation system capable of exhausting gas, smoke and fumes from any conceivable emergency.
- D. Future Action: None Needed

Mitigation Measure SC28. Install steel tunnel liners to prevent gas infiltration in areas identified as having the potential for high gas concentrations and pressure.

- A. Reference: Same as SC26A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: Technical Specification Sections 02311 (Shield Driven Tunnels) and 02324 (Fabricated Steel Segmented Tunnel Liners) establish procedures for providing and installing steel tunnel liners in cases where high gas concentrations and pressures are encountered. Based on subsurface explorations to date, the District does not expect to encounter areas of high gas concentration or pressure that would warrant use of steel tunnel liners. Nevertheless, the procedures are available if needed.

- D. Future Action: Monitor during construction for high gas pressures. Install steel tunnel liners if needed.

Mitigation Measure SC29. Install gas barrier membranes in all concrete tunnel sections and in the stations.

- A. Reference: Same as SC26A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: Technical Specification Section 07101 (Hydrocarbon-Resistant Membrane for Cast-In-Place Concrete) describes installation of High Density Polyethylene (HDPE) membrane in stations and on cast-in-place concrete tunnel liners. Section 07121 (Hydrocarbon-Resistant Coating) describes installation of HDPE on prefabricated steel or precast concrete segments to be used as tunnel liners. These barriers will be used on all tunnel segments and stations in MOS-1 to prevent the inflow of gas into the system.
- D. Future Action: None Needed

Mitigation Measure SC30. Comply with Title 24, Part 3 (Electrical Regulations) and other special orders as may be issued by the Division of Industrial Safety (the Division).

- A. Reference: District September 12, 1985 "Policy Statement on the Safety of the Metro Rail Project"
- B. Implementation: All Tunnelling Contracts
- C. Status: Title 24, Part 3 (Electrical Regulations) has been superseded by Title 8, Subchapter 5 (Electrical Safety Orders of the State of California. Technical Specifications Section 01545 (Worksite Safety Requirements) requires contractors to follow provisions of SCRFD's "Construction Safety and Security Manual." This manual, Section 2.8.1 (Operation of Gassy and Extra Hazardous Tunnels) covers this measure.
- D. Future Action: None Needed

Mitigation Measure SC31. Smoking and other sources of ignition will be prohibited.

- A. Reference: Same as SC30A above
- B. Implementation: All Contracts

- C. Status: Included in Contract. Section 2.8.1 of Metro Rail "Construction Safety and Security Manual" prohibits smoking and other sources of ignition.
- D. Future Action: The District will monitor construction to insure compliance.

Mitigation Measure SC32. Welding, cutting, and other spark-producing operations shall only be done in atmospheres containing less than twenty percent LEL (lower explosive limit) and under the direct supervision of qualified persons.

- A. Reference: Same as SC30A above
- B. Implementation: All Contracts
- C. Status: Section 2.8.1 of Metro Rail "Construction Safety and Security Manual" covers this measure
- D. Future Action: The District will monitor construction to insure compliance.

Mitigation Measure SC33. Automatic and manual gas monitoring equipment shall be provided for the heading and return air of tunnels using mechanical excavators. The monitor shall shut down the equipment under specific defined conditions.

- A. Reference: Same as SC30A above
- B. Implementation: All tunnel segments
- C. Status: Same as SC32C above. See also Status of SC2 above.
- D. Future Action: The District will monitor construction to insure compliance.

Mitigation Measure SC34. Records of gas tests and air flow measurements shall be available at the surface and to the California Division of Industrial Safety.

- A. Reference: Same as SC30A above
- B. Implementation:
- C. Status: Same as SC32C above.
- D. Future Action: None Needed

Mitigation Measure SC35. Ventilation systems shall exhaust gas or vapors, shall have explosion relief mechanisms, and shall be fireproof.

- A. Reference: Same as SC30A above
- B. Implementation: All tunnel segments
- C. Status: Same as SC32C above
- D. Future Action: None Needed

Mitigation Measure SC36. Refuge chambers or alternate escape routes shall be provided and equipped with equipment acceptable to the California Division of Industrial Safety. Workers shall be provided with emergency rescue equipment and trained in its use.

- A. Reference: Same as SC30A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: Same as SC32C above
- D. Future Action: None Needed

Mitigation Measure SC37. The main ventilation flow shall be reversible.

- A. Reference: Same as SC30A above
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: Contract Special Condition 4 requires that Cal-OSHA provisions of tunneling in gassy ground be adhered to during construction.

Article 12 of Subchapter 20 (Tunnel Safety Orders) of Title 8 of the C.A.C. requires the main ventilation flow to be reversible.

- D. Future Action: The District will monitor the installation of the ventilation system during construction to insure it is reversible.

Mitigation Measure SC38. Fresh air shall be delivered in adequate quantities to all underground work areas. The supply shall be adequate to prevent hazardous or harmful accumulations of dust, fumes, vapors or gases, and shall not be less than 200 cubic feet per man per minute of a velocity of 60 feet per minute.

- A. Reference: Same as SC30A above
- B. Implementation: Contracts A-141, A-146, and A-171

C. Status: Technical Specifications Section 01518 (Temporary Ventilation) Part 3.2B specifies the volume of fresh air that must be delivered to a tunnel face during excavation. It requires compliance with C.A.C., Title 8 requirements with respect to minimum air velocity and man count/diesel horsepower. Section 8437, Article 12, Subchapter 20 of Title 8 of the C.A.C. meets the above measure.

During ventilation tests on Contract A171, the contractor was able to exceed the required ventilation level of 100,000 CFM by 23,000 CFM.

D. Future Action: The District will monitor construction to insure compliance.

THIS CONCLUDES THE SAFETY MEASURES LISTED IN THE POLICY STATEMENT ON THE SAFETY OF THE METRO RAIL PROJECT

Mitigation Measure SC39. The District will coordinate final design and construction with the California OSHA, who have responsibility for compliance with state orders on safety of subsurface tunneling through hazardous material.

- A. Reference: FEIS, Page 3-189
- B. Implementation: All tunnel segments
- C. Status: The District has coordinated with the Mining and Tunneling Unit, California Division of Occupational Safety and Health, for several years. This unit approved all issues of tunneling safety, including the District's Construction Safety and Security Manual. Private sector safety is under the jurisdiction of federal OSHA while public sector safety is state responsibility.
- D. Future Action: The District will continue coordination during construction with federal OSHA. This agency has been invited to participate in introductory meetings and Pre-Job Conferences on the tunnel project.

Mitigation Measure SC40. Where needed, collection wells will be sunk ahead of the tunnel excavation machines so gas can be pumped out.

- A. Reference: FEIS, Page 3-188
EA, Comment 5 and Response, Pages 11 and 12
- B. Implementation: Contracts A-141, A-146, and A-171
- C. Status: If ventilation, as required in Technical Specification Section 01518, is not adequate to dilute and remove the influx of gas, arrangements can be made on short notice to drill vertical degassing wells ahead of the tunnel's advancing face. As of March 25, 1988, monitors have not detected any gas in the tunnels for Contracts A146 or A171
- D. Future Action: The District will monitor gas reports during construction to decide if collection wells are needed.

Mitigation Measure SC41. Install conduit seals, collars on any penetrations, and waterstops in joints.

- A. Reference: EA, Comment 5 and Response, Pages 11 and 12

- B. Implementation: All contracts
- C. Status: Technical Specification Sections 02311 (Shield Driven Tunnels), 02322 (Precast Concrete Tunnel Liners) and 02324 (Fabricated Steel Segmented Tunnel Liners) include provisions for installing and sealing tunnel liners to produce a water and gas tight liner. The District determined that water stops would not be necessary in structures protected by HDPE membrane. Conduit seals are included in Standard Drawings SS-020B (Waterproofing Details) and MS-002C (Pipe Hanger & Support Details).
- D. Future Action: None Needed

AESTHETICS (A)

Mitigation Measure A1. At the main yard south of Union Station, relocate the buildings at the property line or use a landscaped berm with a continuous planting of trees to reach a height of 30 to 40 feet to reinforce the spatial definition of Santa Fe Avenue.

- A. Reference: FEIS, Page 3-123
- B. Implementation: A-118
- C. Status: Drawings L-002, L-003, L-004, and L-005 of an early version of Contract A-112 show plantings of camphor trees, red iron bark, Mexican fan palm, and brisbane box trees along Santa Fe Avenue. These drawings will be repackaged in Contract A-118 at a later date.
- D. Future Action: Prepare Contract A-118

Mitigation Measure A2. At the Civic Center Station, replace trees along the south side of the station entrance.

- A. Reference: FEIS, Page 3-123
- B. Implementation: A-141
- C. Status: Drawings L-001 and L-002 of Contract A-141 requires trees disturbed by the construction at the Civic Center Station, to be relocated. The District has determined it is not practical to relocate the mature trees at the station site. A specification for size and type of replacement tree will be developed.
- D. Future Action: Issue the required specification to the A-141 Contractor by change notice.

NOISE AND VIBRATION (NV)

The District has developed a comprehensive set of noise and vibration design criteria, based on a review of federal and American Public Transit Association guidelines, local guidelines, and industry practice. The "Technical Report on Noise and Vibration" (1983), prepared for the FEIS, contains detailed descriptions and explanations of specific noise and vibration standards.

Construction Measures.

Construction noise and vibration impacts are mitigated by the performance standards and design criteria established for the project. Conformance to these standards (including all applicable local regulations and codes) will be monitored by SCRTD. These performance standards will be made a part of contract requirements for all applicable contractors. Contractors must meet these noise criteria and may do so by using the measures identified below for mitigating construction noise and impacts.

Mitigation Measure NV1. Use of alternative construction procedures such as:

- a) Tunnel Boring Machines instead of blasting for tunnel excavation.
- b) Welding instead of riveting.
- c) Mix concrete off-site instead of on-site.
- d) Prefabricated structures instead of cast-in-place.
 - A. Reference: FEIS, Pages 3-180, 181
COF, October 25, 1984, Pages 4 and 5
 - B. Implementation: All segments
 - C. Status: General Technical Specifications Section 01566 (Pollution Controls), Parts 3.1.E.1a & b incorporate these measures.
 - D. Future Action: The District will monitor during construction to insure compliance.

Mitigation Measure NV2. Using modified construction equipment to dampen noise such as:

- a) Electric instead of diesel powered equipment.
- b) Hydraulic tools instead of pneumatic impact tools.
- c) Drilled piles or vibratory pile drivers instead of impact pile drivers.

d) "Time-delay" charges instead of "instantaneous" charges, where drill and blast techniques must be used and TBM is impractical.

A. Reference: FEIS, Pages 3-180, 181

COF, October 25, 1984, Pages 4 and 5

B. Implementation: All segments

C. Status: General Technical Specifications Section 01566 (Pollution Controls), Parts 3.1.E.1a and 1c incorporate these measures. During Final Design, SCRTD decided to specifically prohibit blasting during the construction of MOS-1.

D. Future Action: The District will monitor construction to insure compliance.

Mitigation Measure NV3. Maximize the physical separation, to the extent feasible, between noise generators and noise receptors. These include but are not limited to the following:

a) Selection of truck routes for muck disposal to minimize impact on sensitive land uses.

b) Providing enclosures for stationary items of equipment and barriers around particularly noisy areas of the site or around the entire site.

A. Reference: FEIS, Pages 3-180, 181

COF, October 25, 1984, Pages 4 and 5

B. Implementation: All segments

C. Status: General Technical Specifications Section 01566 (Pollution Controls), Parts 3.1.E.1d and 3.1.E.2, incorporate these measures.

D. Future Action: The District will monitor construction to insure compliance.

Mitigation Measure NV4. Minimize noise-intrusive impacts during the most noise sensitive hours. Some key techniques that could be used are:

a) Plan noisier operations during times of heaviest ambient levels.

b) Avoid peaks and impulse noise.

c) Turn off idling equipment.

A. Reference: FEIS, Pages 3-180, 181

COF, October 25, 1984, Pages 4 and 5

B. Implementation: All segments

C. Status: General Technical Specifications Section 01566 (Pollution Controls), Parts 3.1.E.1.e, incorporates these measures.

D. Future Action: The District will monitor construction and insure compliance.

Operations Measures

Mitigation Measure NV5. Use continuous welded rail instead of jointed rail on the steel wheel/rail interface.

A. Reference: FEIS, Pages 3-133, 134

COF, September 13, 1984, Pages 5, 6, 7, and 8

B. Implementation: A-610 (Trackwork)

C. Status: Technical Specifications Section 02450, (General Track Construction), Part 3.3 requires the installation of Continuous Welded Rail (CWR) throughout the system.

D. Future Action: None Needed

Mitigation Measure NV6. Specify rail vehicles with light weight trucks rather than heavy weight trucks in order to provide minimum unsprung weight.

A. Reference: FEIS, Pages 133, 134

COF, September 13, 1984, Pages 5, 6, 7, and 8

B. Implementation: A-650 (Passenger Vehicles)

C. Status: Section 11.2.2.G of the Technical Provisions of Contract A-650 requires that the unsprung weight be minimized. The Technical Provisions also require in Section 11.4.1.A that the natural frequency of the primary suspension shall not exceed 10 Hz.

D. Future Action: None Needed

Mitigation Measure NV7. Use special grinding (truing) equipment to ensure the smoothness of wheel/rail interaction.

A. Reference: FEIS, Pages 3-133, 134

COF, September 13, 1984, Pages 5, 6, 7,
and 8

B. Implementation: A-610 (Trackwork)

C. Status: Technical Specifications Section 02450 (General Track Construction), Part 3.3.J calls for grinding of installed CWR to initial smoothness.

The Draft System Maintenance Plan requires periodic grinding of rails and wheels to insure smoothness.

D. Future Action: The District will monitor construction and system testing to insure that criteria are met.

Mitigation Measure NV8. During final design, a building by building analysis will be conducted along the alignment of MOS-1. This will examine actual usage and the sensitive receptor nature of each building. Any one or a combination of mitigation measures will be used as needed to meet the Project noise and vibration criteria.

A. Reference: EA,

B. Implementation: A-610 (Trackwork)

C. Status: This analysis has been completed. The mitigation measures shown in NV5-NV7 below were selected to meet the noise criteria for the Project.

D. Future Action: None Needed

Mitigation Measure NV9. Use Resilient Rail Fasteners (RRF) instead of Fixed Rail Fasteners as a track fixation method.

A. Reference: FEIS, Pages 3-133, 134

COF, September 13, 1984, Pages 5, 6, 7,
and 8

B. Implementation: A-610 (Trackwork)

C. Status: RRF will be used for all underground track. This measure is not needed or used for outdoor tracks in the rail yard.

D. Future Action: None Needed

Mitigation Measure NV10. Use Resiliently Supported Ties (RST) where Resilient Rail Fasteners are inadequate to satisfy applicable noise standards and criteria.

A. Reference: Same as NV9A above

B. Implementation: A-610 (Trackwork)

C. Status: The District's noise and vibration consultant determined in a letter dated November 2, 1984, that the use of Resilient Rail Fasteners and Floating Slab Trackbed provided an adequate range of noise and vibration mitigation measures. Therefore, Resilient Supported Ties were not necessary.

D. Future Action: None Needed

Mitigation Measure NV11. Provide more effective noise mitigation with Floating Slab Trackbed (FST) construction where necessary to meet applicable noise standards and criteria.

A. Reference: Same as NV9A above

B. Implementation: A-175, A-610 (Trackwork)

C. Status: Floating Slab Trackbed is planned for tracks from Station 235+00 to Station 258+84. This includes a massive, poured-in-place FST at the crossover adjacent to the Wilshire/ Alvarado Station from Station 255+45 to Station 258+84. This measure is shown in drawings T-157 and T-158. For Contract A-175, drawing SS-030C, Sheet Nr. 110 requires an additional elastomeric pad insulation be applied on the outside of the crossover box at the point of closest approach to a nearby apartment building.

D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure NV12. Fan and Vent shafts will be designed to minimize noise intrusion by inclusion of the following mitigation measures.

a) Cellular glass and mineral fiber applied to the wall and ceiling surfaces of the shafts.

b) Standard duct attenuators contract specifications requiring certified maximum sound power levels for the fans.

A. Reference: Same as NV9A above

B. Implementation: All Station Finish Contracts, A-740
(Ventilation Equipment Procurement),
A-745 (Air Handling Equipment)

C. Status: a) District staff and consultants have reached agreement on applying cellular glass and mineral fiber to the walls and ceilings of ventilation shafts. The acoustical treatments to be given the ventilation shafts for contracts are as follows:

Contract A147, Drawing A310

Contract A167, Drawings S127 and S128

b) Technical Specifications Section 15242 (Vibration Isolation Devices) requires installation of vibration isolation devices as indicated.

Technical Specifications Section 15920 (Sound Attenuators) covers furnishing and installing sound attenuators where indicated in the system's duct work.

Noise and vibration reduction measures are stipulated in the following specification sections of Contract A-740:

- o Section 15865-Article 2.1-F limits the noise and vibration produced by ventilation equipment
- o Section 15865-Article 2.3 specifies the sound attenuators to be used on the ventilation equipment
- o Section 15865-Article 2.4 specifies flexible connections to limit the transmission of equipment vibration to the attached ductwork
- o Contract Drawing Sheet 35 shows the resilient pad for this equipment to reduce vibration transmission

Noise and vibration reduction measures are stipulated in the following specification sections of Contract A-745:

- o Section 15850-Article 2.6 requires the supply of vibration isolation devices
- o Section 15850-Article 2.9 requires the supply of flexible connections

- D. Future Action: The District will complete the study of the feasibility of applying insulation to the walls and ceilings of shafts and modify the Project design as appropriate. Contract drawings and technical specifications will reflect the decisions.

Mitigation Measure NV13. Ancillary facilities, including power sub-stations and emergency power generation equipment, will be modified to minimize noise and vibration using the following specific mitigation measures:

- a) Below ground location of power transformers.
- b) Total enclosure of noise source.
- c) Absorption material embedded in the facility.
- d) Barrier walls surrounding the source.
- e) Sound attenuators on fans and ducts.
- f) Special mufflers.

A. Reference: Same as NV9A above

B. Implementation: All Station and yard contracts

C. Status: a) Power transformers at all stations are located underground in transformer rooms. These underground rooms effectively prevent any significant levels of noise or vibration from reaching surrounding areas. The transformer in the train yard is above ground, but the area is industrial with no sensitive receptors nearby.

b) Noise generating mechanical equipment is located in underground equipment rooms at stations. This prevents significant levels of noise or vibration from reaching surrounding areas. Design for auxiliary generators in the shops and Rail Control Center has been completed and is contained in Technical Specification Section 16622 of Contract A-630. These auxiliary, emergency generators are located outdoors. One is in the rail yard, an industrial area away from any sensitive noise receptors. Another, near the Rail Control Center, is enclosed by a noise barrier wall.

c) System Design Criteria, Volume III, Section 2 (Acoustics) sets allowable noise levels at and around stations, and specifies use of acoustical treatments to reach these levels.

Technical Specifications Sections 09512 (Acoustical Cellular Glass Panel) and 09513 (Acoustical Aluminum Panels) covers furnishing and installing sound absorptive panels where indicated in designs.

d) Barrier walls surrounding the source have not been needed for mechanical equipment in open areas in the train yard because the noise levels do not exceed the criteria allowed for this industrial area.

e) Same as NV12C above

f) The design of emergency generators for the yard and Rail Control Center is complete. Because the generators are located outdoors in an industrial area special mufflers were not needed.

D. Future Action: None Needed

AIR QUALITY (AQ)

Mitigation Measure AQ1. Providing secure facilities at stations for cycle and motorcycle parking.

- A. Reference: FEIS, Page 3-145
COF, October 25, 1984, Pages 22-24,
Finding #11
- B. Implementation: A-136, A-147, A-157, A-167, A-187
- C. Status: Parking facilities for cycles are shown in the following drawings for the indicated contracts: Drawing A008, Contract A-136; Drawing A002, Contract A-187. Motorcycles may park in regular automobile spaces. For Contracts A-147, A-157, and A-167 in Downtown L. A., bicycle racks are not feasible because of lack of space. Entrances are in busy sidewalks or inside commercial buildings. Since Downtown is a destination, and bicycles are not allowed on trains, there is little need for bicycle storage at Downtown stations.
- D. Future Action: None Needed

Mitigation Measure AQ2. Improved feeder bus service to stations.

- A. Reference: FEIS, Page 3-145
EA, Page 37,38
COF, October 25, 1984, Pages 22-24,
Finding #11
- B. Implementation: Will apply to riding public near station areas
- C. Status: SCRTD Planning will arrange to change the feeder bus routes at the start of rail operations. Proposed revisions were initially defined in the 1983 Milestone 9 (Supporting Services Plan) and in Section 3.1.1.4 of the EA. They have been further refined in the SRTP Rail Plan (FY89 through 91).
- D. Future Action: The District will coordinate and implement the revised feeder bus service as the start of rail operations nears.

Mitigation Measure AQ3. Conducting public information programs to promote voluntary trip reductions and publicize feeder bus service.

- A. Reference: FEIS, Page 3-145
COF, October 25, 1984, Pages 22-24,
Finding #11
- B. Implementation: Will apply to riding public near
station areas
- C. Status: The District has developed a draft change to
the MOS-1 Construction Community Relations Work
Plan which incorporates the goals of promoting
voluntary trip reductions and using public
feeder bus service. A final version is
expected in June 1988.
- D. Future Action: The District will coordinate with its
internal departments to promote the use
of feeder buses when the beginning of
rail operations is near.

South Coast Air Quality Management District Rules and Regulations apply to the proposed project and will govern construction operations. SCRTD has responsibility for the enforcement of these criteria. Standards for both amount and duration of fugitive dust emissions will be written into all construction contracts. SCRTD will monitor all construction sites for compliance.

The detailed descriptions and explanations of specific impact mitigation measures are contained in the South Coast Air Quality Management District (SCAQMD) Rules and Regulations (Rule #403, "Limitation on Fugitive Dust Emissions"). The key features of the mitigation options described therein are as follows:

Mitigation Measure AQ4. A person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source.

- A. Reference: FEIS, Pages 3-182, 183
- B. Implementation: All Demolition, Grading, Excavation,
and Tunneling Contracts.
- C. Status: Technical Specifications Section 01566, Part
3.3A.1 contains this measure

- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure AQ5. A person shall take every reasonable precaution to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land and solid waste disposal operations.

- A. Reference: FEIS, Pages 3-182, 183
- B. Implementation: Same as AQ4B above.
- C. Status: Technical Specifications Section 01566, Part 3.3.A.2 contains this measure.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure AQ6. A person shall not cause or allow particulate matter to exceed 100 mg/m³ when determined as the difference between upwind and downwind samples collected on high volume samplers at the property line for a minimum of five hours.

- A. Reference: FEIS, Pages 3-182, 183
- B. Implementation: Same as AQ4B above
- C. Status: Technical Specifications Section 01566, Part 3.3.A.3 contains this measure.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure AQ7. A person shall take every reasonable precaution to prevent visible particulate matter from being deposited upon public roadways as a direct result of their operations. Reasonable precautions shall include, but are not limited to, the removal of particulate matter from equipment prior to movement to paved streets or the prompt removal of any material from paved streets onto which such material has been deposited.

- A. Reference: FEIS, Pages 3-182, 183
- B. Implementation: Same as AQ4B above.
- C. Status: Technical Specifications Section 01566, Part 3.3.A.4 contains this measure.
- D. Future Action: The District will monitor construction and insure compliance.

To implement these regulations, SCRTD will require contractors to take the following steps regarding trucks used to transport materials and debris to and from construction sites:

Mitigation Measure AQ8. Establish regular cycles and location for washing the trucks.

- A. Reference: FEIS, Pages 3-182, 183
- B. Implementation: Same as AQ4B above.
- C. Status: Technical Specifications Section 01566, Part 3.3.B.3 contains this measure.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure AQ9. Tarp loads of debris leaving sites.

- A. Reference: FEIS, Pages 3-182, 183
- B. Implementation: Same as AQ4B above.
- C. Status: Technical Specifications Section 01566, Part 3.3.B.1 contains this measure.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure AQ10. Water down and sweep the streets which have heavy volumes of construction vehicles carrying debris and excavated materials daily.

Site watering is most commonly used to suppress dust, because it is effective if done frequently and water is generally available at construction sites. Watering will receive particular attention during materials handling associated with waste removal and disposal.

- A. Reference: FEIS, Pages 3-182, 183
- B. Implementation: Same as AQ4B above.
- C. Status: Technical Specifications Section 01566, Parts 3.3.B.2 & 4 include these measures.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure AQ11. SCRTD will require all contractors to establish and maintain records of a routine maintenance program for all internal combustion engine powered vehicles and

equipment. The mitigation measures described in the Traffic section above for reducing traffic congestion will also have a positive impact on air quality.

A. Reference: FEIS, Pages 3-182, 183

B. Implementation: Same as AQ4B above.

C. Status: Technical Specifications Section 01566, Parts 3.3.B.3 and 3.3.E include these measures.

D. Future Action: The District will monitor construction and insure compliance.

ENERGY (E)

Mitigation Measure E1. Consolidate deliveries of materials where feasible. Schedule deliveries of materials to construction sites during non-rush hours.

- A. Reference: FEIS, Page 3-184
- B. Implementation: All Contract Segments
- C. Status: Consolidation of deliveries does not appear feasible. Delivery of materials during non-rush hours will be required by the Work Site Traffic Control Plans for each contract. The contractors must maintain a fixed number of traffic lanes during rush hours. No on-street parking is allowed during rush hours, therefore deliveries must be made during non-rush hours.
- D. Future Action: None Needed

Mitigation Measure E2. Make material deliveries direct to site from vendor, wherever feasible, to avoid stockpiling and double handling.

- A. Reference: FEIS, Page 3-184
- B. Implementation: All Contract Segments
- C. Status: The limited area provided to the Contractor as "Temporary Construction Easements" will necessitate direct delivery
- D. Future Action: None Needed

Mitigation Measure E3. Use emulsified asphalts instead of cut-back asphalts wherever possible when restoring roads.

- A. Reference: FEIS, Page 3-184
- B. Implementation: A-111, A-124, A-138, A-147, A-157, A-167, A-185
- C. Status: The City of Los Angeles does not allow emulsified asphalts when repaving streets.
- D. Future Action: None Needed

Mitigation Measure E4. Use slip form construction to the extent possible for curbs, gutters, traffic separators, barrier walls and concrete pavements, reducing the need for wood and steel forms.

- A. Reference: FEIS, Page 3-184

- B. Implementation: A-111, A-124, A-138, A-147, A-157, A-167, A-185
- C. Status: Specifications Section 02528, Part 1.1 refers to the Standard Specifications for Public Works Construction wherein Section 303-5 provides for slip form construction
- D. Future Action: None Needed

Mitigation Measure E5. Monitor delivery, disbursing and accounting of petroleum products.

- A. Reference: FEIS, Page 3-184
- B. Implementation: All Contract Segments
- C. Status: Contractors are expected to monitor delivery, disbursing and accounting of petroleum products. The overall efficiency of contract performance is subject to audit.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure E6. Conduct a routine maintenance program for gasoline and diesel powered equipment. Calibrate pumps and injectors for optimum fuel economy.

- A. Reference: FEIS, Page 3-184
- B. Implementation: All Contract Segments
- C. Status: Specification Section 01566, Part 3.3.E requires maintenance records of gasoline and diesel powered equipment.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure E7. During Final Design, every aspect of station design will be reviewed in order to minimize lighting, heating, ventilating and air conditioning loads.

- A. Reference: Response to Comment 83 of Comments and Responses to the EA
- B. Implementation: All Station Design and Construction Contracts
- C. Status: Station designs have been reviewed to minimize lighting, heating, ventilating, and air conditioning loads.

D. Future Action: None Needed

Mitigation Measure E8. Layout track to minimize non-revenue vehicle movements.

A. Reference: FEIS, Page 3-153

B. Implementation: A-115, A-610 (Trackwork)

C. Status: Track layout at the Yard & Shops has been designed to minimize non-revenue vehicle movements

D. Future Action: None Needed

Mitigation Measure E9. Use cold water for vehicle washing.

A. Reference: FEIS, Page 3-153

B. Implementation: A-112, A-130

C. Status: In Contract A-112, Drawing No. P052 contains piping plot for car wash building. Cold water lines are prescribed. Drawing S079, equipment layout, shows no water heaters. For Contract A-130, Specifications Section 11560, Parts 2.2, 2.5, and 2.6 require the use of recycled or cold water for washing and rinsing cars but do not require heated water.

D. Future Action: None Needed

Mitigation Measure E10. Use solar hot water preheating for hot water and steam needs in the maintenance yard.

A. Reference: FEIS, Page 3-153

B. Implementation: A-110, A-112

C. Status: District's consultants conducted a study and concluded that solar hot water pre-heating was not cost effective

D. Future Action: None Needed

Mitigation Measure E11. Design the stations to use the piston effect of the trains to exchange warm air.

A. Reference: FEIS, Page 3-153

B. **Implementation:** All Station Segments

A-135, A-147, A-157, A-165, A-175

C. **Status:** Blast Relief Shafts (BRS) have been provided in all stations to enable the piston action of the trains to evacuate warm air

D. **Future Action:** None Needed

Mitigation Measure E12. Interconnect heating and cooling with nearby new construction to help capture regenerative braking energy.

A. **Reference:** FEIS, Page 3-153

B. **Implementation:** All Station Contracts

A-135, A-147, A-157, A-165, A-170

C. **Status:** This measure was included in the FEIS as a potential mitigation, however there is no well proven application to convert regenerative braking energy to a form that could be used to power building cooling and heating systems. The regenerative braking energy would have to be converted from DC to AC current and inter-phased with the utility power to be suitable for use by conventional cooling and heating systems. This would add cost, complexity, and reliability problems that have not yet been adequately resolved. Since the Metro Rail design is based on using proven transit system technology, interconnecting the propulsion electrical system with nearby new construction is not being considered.

D. **Future Action:** None Needed.

Mitigation Measure E13. Use solar preheating for station hot water where feasible.

A. **Reference:** FEIS, Page 3-153

B. **Implementation:** A-135, A-147, A-157, A-165, A-170

C. **Status:** Same as E10C above

D. **Future Action:** None Needed

Mitigation Measure E14. Equip major facilities with separate electrical meters.

A. **Reference:** FEIS, Page 3-153

- B. Implementation: A-630 (Traction Power)
- C. Status: The Metro Rail Electrical Directive, the basis for design of all stations, provides for metering amperes and voltage on all auxiliary power in addition to metering all train propulsion energy at each station. There are individual meters for each utility service feeder. Technical Specification Section 3.5.2 contains this information.
- D. Future Action: None Needed

GEOLOGY AND HYDROLOGY (GE)

Construction Measures

Mitigation Measure GE1. To avoid the engineering and environmental problems associated with excavating or tunneling in soils below the perched or permanent water table, it will be necessary to remove water (dewatering) from these materials before and possibly during construction. This is generally done by advancing slotted pipes into the saturated soils and then pumping or allowing water to flow from the pipes, thus lowering the water table locally. Alternatively, groundwater may be removed by pumping from shallow ditches or sumps within an excavation.

When any dewatering activities occur, they will be limited to the immediate excavation area by utilizing a variety of methods such as compressed air, chemical grouting, freezing, slurry shields or earth pressure balance shields where local geologic or other constraints dictate, thus avoiding potential ground subsidence or differential settlement of adjacent structures. Moreover, by confining groundwater control activities to the immediate area of excavation, the Metro Rail Project will avoid potential adverse impacts on urban flora (trees, shrubs, etc.) caused by a lowered water table.

Wastewater discharge from excavation water removal will contain suspended solids and, in some areas, hydrocarbons. Related water quality impacts will be avoided by removing the suspended solids in siltation basins and, where necessary, removing hydrocarbons in oil/water separators. The monitoring of treated discharge water and periodic filing of water quality monitoring reports will probably be a requirement of the NPDES permit necessary for dewatering activities. This will help ensure the continued effectiveness of wastewater treatment procedures and equipment.

Surface accumulations of sediment from excavation and muck handling activities should not be allowed to reach significant volumes. As part of their contractual obligation, the Metro Rail construction contractors should be required to immediately clean up any accidentally spilled materials, including not only sediment but also vehicle fuels and lubrication fluids. In addition, the periodic cleaning of streets and sidewalks in the construction area should be required to regularly remove the more nominal, day-to-day operational spills.

- A. Reference: FEIS, Page 3-189
- B. Implementation: All excavations below the water table, both cut-and-cover at stations and tunnels along the line segments
- C. Status:

Permit Requirements

The RWQCB, transmitted tentative waste discharge requirements to the District on December 28 and 29, 1986. These included levels of permissible pollutants, treatment of water, monitoring, and sampling at various locations during the dewatering and construction operations. The District generally agreed with these requirements, but in a letter of January 8, 1987, asked for certain modifications and clarifications. This request was resolved and the RWQCB issued NPDES Permit No. CA 0059714 to the District in January 1987.

The permit includes requirements on effluent limitations, receiving water limitations, standard provisions, and monitoring and reporting requirements. Although the District will comply with all requirements of the permit, only the effluent limitations and monitoring requirements are listed here, to give an indication of the technical level of the mitigation measures.

I. Effluent Limitations

- a. Wastes discharged shall be limited to those described herein, as proposed.
- b. The discharge of effluent containing constituents in excess of the following limits is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Discharge Limitations</u>	
		<u>30-Day Average</u>	<u>Daily Maximum</u>
Suspended Solids	mg/L	50	150
	lbs/day ⁽¹⁾	16,847	50,540
Settleable Solids	ml/L	0.1	0.3
BOD ₅ (20°C)	mg/L	20	60
	lbs/day ⁽¹⁾	6,739	20,216
Oil and Grease	mg/L	10	15
	lbs/day ⁽¹⁾	3,369	5,054
Sulfides	mg/L	1.0	2.5
Phenols	mg/L	---	1.0
	lbs/day ⁽¹⁾	337	337
Pentachlorophenol	ug/L	---	30

(1) Based on a maximum flow of 40.4 mgd.

- c. The toxicity of the effluent shall be such that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test producing less than 70% survival.
- d. The wastes discharged shall not contain odor-producing constituents in concentrations that will cause nuisance.

II. Receiving Water Limitations

- a. The waste discharged shall not cause the pH of the receiving water to be less than 6.5 nor more than 8.5.
- b. The waste discharge shall not cause the dissolved oxygen of the receiving waters to be less than 5.0 mg/L.
- c. The waste discharge shall not cause the concentration of the total dissolved solids in the Los Angeles River at a representative point downstream to exceed the water quality objective (1,500 mg/L) contained in the Basin Plan.

III. Effluent Monitoring

The District will establish water sampling stations for each point of discharge at the Los Angeles River, Ballona Creek and the sulfide treatment plant.

The sampling stations will measure the rate of flow, the temperature, and the pH and will test the effluent for Sulfides, Oil and Grease, BOD₅, Suspended Solids, Settleable Solids, Phenols, Chlorinated Phenols, Pentachlorophenols, Dioxin, Turbidity, Total Dissolved Solids, Phthalates, and Toxicity. Criteria for each of these constituents are contained in the permit.

IV. Receiving Water Monitoring and Sampling

The District has forwarded to the RWQCB an "Effluent and Receiving Water Monitoring and Sampling Plan" dated March 1987. This plan gives the locations of the sampling stations on

the Los Angeles River and Ballona Creek. The plan sets out the procedures and criteria for sampling the receiving water, measuring the flow, and testing it for pH, Total Dissolved Solids, Sulfides, Phenols, Pentachlorophenols, and Phthalates.

WATER POLLUTION CONTROLS

Pollution Control Specifications 01566, Section 3.4 are included under all contract segments and contain the following directives for the construction contractor:

1. Treat wastewater from dewatering, storm run-off or any other actions of the construction operation to remove suspended particles and hydrocarbons through settling basins or hydrocarbon separators. Criteria for solids in the water are set by state and local water agencies.
2. Obtain a NPDES permit and other necessary permits from appropriate local agencies for water discharge where required. (Note: The District has obtained a NPDES, Nr. CA 0059714, and other permits required in connection with disposing of water produced during dewatering of the construction sites.)
3. Monitor wastewater discharge to insure it meets standards set by appropriate laws, codes, regulations, ordinances, and permits. Records of measurements shall be retained for inspection by the District or its designee.
4. Do not discharge pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, or other harmful wastes into or alongside rivers, streams, and impoundments, nor into channels leading thereto.
5. Control the use of lubricating oils, hydraulic fluids, greases, and other such products. Promptly clean up and properly dispose of materials contaminated by spillage or leakage of these products.

More specific instructions are contained in the Technical Specifications for contracts where dewatering must be done. For example, in Contract A141, Specification Section 02140 (Dewatering), dated March 20, 1987, requires the contractor to design, furnish, locate, install,

maintain, operate, and remove dewatering systems and water treatment plants as necessary.

Hydrogen Sulfide. During final design, additional geotechnical tests revealed that the water that would have to be removed from the excavations near Union Station was contaminated with hydrogen sulfide, a toxic, noxious gas. Estimates of the quantity of water to be discharged ran into the millions of gallons daily. The RWQCB required the District to remove the hydrogen sulfide before discharging the water into the storm sewer system. Where sulfide-contaminated groundwater is encountered, water treatment plants will be constructed and operated as part of the construction contract that will remove hydrogen sulfide from the water by treating it with hydrogen peroxide to oxidize the sulfides to sulfates. This process will remove hydrogen sulfide to the levels required by the RWQCB and will effectively eliminate the odor of the hydrogen sulfide.

The plant process design was reviewed and approved by the California Regional Water Quality Control Board (CRWQCB) and permits to construct the plant were issued by the South Coast Air Quality Management District. Proposals for the instrumentation that is necessary to accomplish the monitoring and reporting requirements of the Project NPDES permit issued by the CRWQCB were reviewed and permits for installation of the instrumentation were issued by the Los Angeles County, Department of Public Works.

Detailed design of the groundwater treatment plant and preparation of the site was continued by Kennedy/Jenks/Chilton (KJC) and is complete. Construction of the treatment plant is underway. Security fencing and lighting is in.

In addition to the \$2 million authorized in May 1987 for the procurement of materials, the RTD Board authorized \$1.8 million for the construction, installation and start-up testing of the plant facilities. This work will be performed by the District's A141 contractor on a force account basis. Further Board authorization will be required for the operation and maintenance of the plant and for procurement of the chemicals required by the treatment process.

Procurement of plant equipment is complete with most items delivered. The District has begun procurement for a plant operator.

Contract A-135 contains an optional slurry wall, which has the potential to reduce the volume of water that would be removed from the excavation and treated.

- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure GE2. Before construction, more detailed geotechnical work will be completed in the CBD to define fully the horizontal and vertical extent of loose granular soils above and below the water table. If soils subject to liquefaction or densification are found, more conservative site preparation and foundation design measures will be used.

- A. Reference: FEIS, Page 3-165
- B. Implementation: All segments
- C. Status: Converse Consultants completed specific geotechnical studies for each station in MOS-1. TAMS Consultants prepared a report on "Liquefaction Potential at Union Station", dated August 7, 1984. These studies did not reveal any loose granular soils that are subject to liquifaction or densification.

- D. Future Action: None Needed

Mitigation Measure GE3. The disposal of wastewater containing oil and gas will require a National Pollutant Discharge Elimination System (NPDES) permit. The permit will be issued by the Regional Water Quality Control Board (RWQCB) and is expected to require wastewater treatment to remove hydrocarbons before discharge. This can be done by an oil/water separator, with the separated oil removed by truck to a Class I or II-I disposal site which are presently available. Wastewater from the maintenance yard cleaning facility will be treated before disposal. Treated discharge water will be monitored and periodic water quality monitoring reports will be prepared to help ensure the continued effectiveness of wastewater treatment procedures and equipment.

- A. Reference: FEIS, Page 3-166
- B. Implementation: Completed Metro Rail System and Maintenance Yard
- C. Status The National Pollution Discharge Elimination System (NPDES) permit, issued in January 1987 by the RWQCB, defines the conditions governing

the treatment and disposal of contaminated water generated or encountered during the construction of MOS-1. See also GE1C above.

Since all underground Project facilities will include an HDPE membrane to prevent gas infiltration, the entry of ground water into the operating Project facilities will be eliminated. Discharge from the operating system will consist solely of rainwater that enters through openings and entrances, water from facility washdown and water from emergency firefighting. The RWQCB will consider the need for an NPDES permit for the operating facilities after construction, when the effectiveness of the HDPE membrane can be evaluated.

- D. Future Action: The District will monitor and treat construction discharges in accordance with the requirements of the NPDES permit. Monthly discharge monitoring reports will be submitted to the CRWQCB.

When construction of MOS-1 facilities is complete and data on operations-related discharges is available, the District will request the CRWQCB consider the necessity for an NPDES permit for operation of the system.

Mitigation Measure GE4. Design and build internal structural elements that are "life critical" (stations and tunnels) to resist strong ground motions approximating the maximum credible earthquake.

- A. Reference: FEIS, Page 3-165
- B. Implementation: All contracts
- C. Status: The District has adopted "Supplemental Criteria for Seismic Design of Underground Structures" by Metro Rail Transit Consultants dated June 1984 and Part II, Appendix A "Seismological Investigation and Design Criteria" by Converse Consultants dated May 1983. These criteria insure that the Metro Rail Project will be designed and built to withstand the Maximum Credible Earthquake, also known as the Maximum Design Earthquake. For an example of detailed seismic design see "Union Station Structural Calculations, Volumes I & II", for Construction

Contract Segment A-135, by TAMS Consultants,
November 28, 1984. See also mitigation
measures SC10 and SC12.

D. Future Action: None Needed

CONSTRUCTION (C)

Mitigation Measure C1. Survey sensitive structures adjacent to tunneling and surface excavations to identify those that require special construction stabilization techniques.

- A. Reference: FEIS, Pages 3-187, 188
- B. Implementation: A-130, A-135, A-141, A-145, A-165, A-171, A-175
- C. Status: The scope of work for each design unit required the consultant to evaluate the need to protect adjacent buildings, bridges, and other structures which are within the zone of influence and which may be affected by the construction. All buildings so identified are included in reports from the consultants and designated in the contract documents as required. For example, H. J. Degenkolb, Engineers, performed a comprehensive survey and structural analysis of sensitive structures adjacent to the Metro Rail Section A-140 and documented it in their report dated July 30, 1985. Their overall recommendation was that several buildings along the alignment be protected by compaction grouting.

SCRTD adopted these recommendations. During construction, the ground, the support systems and existing structures will be monitored with a variety of geotechnical instruments and optical surveys. If significant movements are detected, the methods of construction will be modified as needed.

- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure C2. In some areas it may be feasible to construct temporary shoring systems which, with adequate bracing, limited excavation stages, and controlled water removal, would minimize earth movements and allow excavation next to existing structures.

- A. Reference: FEIS, Page 3-187
- B. Implementation: Same as C1B above
- C. Status: Temporary shoring and bracing will be used in station excavations along with pumping out groundwater.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure C3. There will be locations where the risk and consequence of damage from earth movements will be unacceptable, and underpinning may be prudent. These include areas of poor soil conditions, deep excavation close to existing structures, and areas of major structures.

- A. Reference: FEIS, Pages 3-187, 188
- B. Implementation: A-141, A-146
- C. Status: All contract segments were evaluated by the section designers to determine where underpinning would be necessary. For example, Segment A-140 was examined in the report referenced in Mitigation Measure C1C above and underpinning was recommended for one building, the Wilshire Grand Building at 601-605 West 7th Street. Underpinning is also scheduled at the Pershing Square garage, the Court of Flags and the Archive Building. The same report indicates that compaction grouting will be used to support a 9' 3" storm drain at Macy and Alameda Streets, and may be used at several other locations.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure C4. In the event that oil or tar impregnated soil is encountered and determined to be hazardous the District will transport and dispose of it in the manner prescribed by law and appropriate regulations.

- A. Reference: Responses 31 and 85 to the comments on the EA
- B. Implementation: All tunnel and excavation contracts
- C. Status: A deposit of petroliferous material has been identified in samples taken from the alignment west of 7th/Flower Station. Tunneling for Contract A171 will reach this deposit in the near future. The Specification Section 01566 (Pollution Controls), Part 3.5 outlines the procedures to be followed for control of solid and hazardous waste. Disposal of hazardous material is governed by CFR 40, 190-399 and Section 25100 et. seq., Chapter 6.5, Division 20 of the California Health and Safety Code (Hazardous Waste Control). The handling and transportation of hazardous materials is governed by Section 66000 et. seq., Division 4, Title 22 of the California Administrative Code.

The District has coordinated with the Toxic Substances Control Division (TSCD) of the State Health Department and established preliminary procedures to be followed if the Project encounters questionable materials. The District will provide samples of the materials encountered to the TSCD, which will assess the level of contamination and will classify the material for disposal purposes. The TSCD will consider alternative methods of disposal such as hauling to Class I dumps, land farming, or incineration, and will make a final determination of the method of disposal of the spoil material. The District will assist contractors in having haul routes for hazardous materials approved by the City of Los Angeles.

- D. Future Action: The District will monitor construction and contact the appropriate agencies if any contaminated or hazardous material is encountered during excavation.

CULTURAL RESOURCES (CR)

On September 30, 1987 the Administrator of UMTA's Region IX issued a Finding Of No Significant Impact for a project that will realign MOS-1 in the vicinity of Union Station and the yard and shops. This realignment will necessitate changes in Contracts A-130, A-135 and others related to the area of realignment and may require changes to the Memorandum of Agreement for the Project. The District is in the process of determining if elements of the Memorandum of Agreement will require change because of the realignment. These changes could affect mitigation measures CR1 through CR5 below.

Mitigation Measure CR1. At Union Station the north retaining wall and north vehicular ramp will be re-constructed to match existing conditions to the maximum extent possible. This will include replication or reuse of existing balusters, parapets, balustrades, wall surface treatment, electroliers and plants on the new wall and ramp. If SCRTD and the California State Historic Preservation Officer (SHPO) agree that any original ornamental feature cannot be reused as part of this reconstruction, that feature will be stored safely for reuse elsewhere at Union Station.

A. Reference: FEIS, Page 4-25, 26, 31

FEIS, Page 4-27, (Memorandum of Agreement, Section I.A.)

B.. Implementation: A-136

C. Status: The District, in a letter dated January 8, 1984, and SHPO, in a response dated February 15, 1984, agreed on the final plans and specifications for the Union Station. These agreed on plans are included in the contract.

Since the above agreements were reached, the realignment of MOS-1 will require redesign of Union Station plans and may require renegotiation of the MOA with the signatories.

D. Future Action: The District will redesign the Union Station plans and will renegotiate the Memorandum of Agreement if necessary.

Mitigation Measure CR2. At Union Station the portion of the Mail, Baggage and Express Building to be modified for the project will be rebuilt to the first or track level.

A. Reference: Amended Memorandum of Agreement, Section I.A.2

B. Implementation: A-136

- C. Status: In a letter to the District, dated February 15, 1984, SHPO agreed with the District that full reconstruction of the REA Building would be infeasible and imprudent. This revision was incorporated in a modified MOA proposed to the Advisory Council on Historic Preservation (ACHP) on March 23, 1984 and subsequently ratified by the signatories. This change is included in the contract.

Since the above agreements were reached, the realignment of MOS-1 will require redesign of Union Station plans and may require renegotiation of the MOA with the signatories.

- D. Future Action: The District will redesign the Union Station plans and will renegotiate the Memorandum of Agreement if necessary.

Mitigation Measure CR3. For the Metro Rail Facilities constructed at Union Station design guidelines will be developed and implemented to minimize adverse effects of new construction that may be incompatible with or which may alter the setting of such properties. These guidelines will set forth recommendations regarding height (including height limits), massing, relationship between the building and property lines and other development, building setbacks, fenestration patterns, external colors, textures and materials of the new construction to ensure compatibility with historic properties. These guidelines will be developed in consultation with the California SHPO.

- A. Reference: FEIS, Page 4-29 (Sections I.A.3 and IV.A, Memorandum of Agreement)
- B. Implementation: A-135, A-136
- C. Status: These measures were coordinated with and approved by SHPO in January and February 1984. They are included in the contracts.

Since the above agreements were reached, the realignment of MOS-1 will require redesign of Union Station plans and may require renegotiation of the MOA with the signatories.

- D. Future Action: The District will redesign the Union Station plans and will renegotiate the Memorandum of Agreement if necessary.

Mitigation Measure CR4. Final plans and specifications for subway project facilities at Union Station including the north retaining wall, the north vehicular ramp and the Mail, Baggage

and Express Building, will be developed in consultation with the California SHPO.

- A. Reference: FEIS, Page 4-27 (Section I.A.4, Memorandum of Agreement)
- B. Implementation: A-135, A-136
- C. Status: These measures were coordinated with and approved by SHPO in January and February 1984. They are included in the contracts.

Since the above agreements were reached, the realignment of MOS-1 will require redesign of Union Station plans and may require renegotiation of the MOA with the signatories.

- D. Future Action: The District will redesign the Union Station plans and will renegotiate the Memorandum of Agreement if necessary.

Mitigation Measure CR5. All Union Station buildings or building elements to be substantially altered or demolished will be recorded prior to demolition or alteration so that there will be a permanent record of their present appearance. Historic American Engineering Record/Historic American Buildings Survey (HAER/HABS) will be contacted to determine what documentation is required. All documentation must be accepted by HAER/HABS prior to the demolition or alteration.

- A. Reference: FEIS, Page 4-28 (Section I.A.5, Memorandum of Agreement)
- B. Implementation: A-135, A-136
- C. Status: Recording of the Union Station elements to be demolished were accomplished according to the specifications of the National Park Service and were forwarded to them on July 27, 1984. The National Park Service accepted the records prepared on Union Station for the Historic American Buildings Survey on August 14, 1984.

Since the above recordation was accepted, the realignment of MOS-1 will require redesign of the station and further recordation according to the HAER/HABS guidelines.

- D. Future Action: The District will redesign the Union Station plans, renegotiate the Memorandum of Agreement if necessary, and record additional portions of the facility as needed.

Mitigation Measure CR6. The lobbies of the Title Guarantee and Pershing Square Buildings main office towers will remain intact, without modification for a subway station entrance. Storefronts will be modified to accommodate the new subway. Modifications will be in accordance with the "Secretary of the Interior's Standards for Rehabilitation" and the guidelines for new construction contained therein. Modifications for station entrances will be designed in consultation with the California SHPO, will be subject to review by the SHPO and, if necessary, the ACHP.

- A. Reference: FEIS, Page 4-28 (Section I.B, Memorandum of Agreement)
- B. Implementation: A-145
- C. Status: Metro Rail construction will not impact the building lobbies. Plans for the station entrance in the Title Guarantee Building were approved by the SHPO. Construction of the entrance was then deferred. The plans for the Title Guarantee Building entrance were not included in the A-145 contract documents. No station entrance is planned for the Pershing Square Building.
- D. Future Action: The District will monitor construction and insure that neither building lobby is impacted.

Mitigation Measure CR7. Provide the Los Angeles Cultural Heritage Board with pertinent correspondence, plans and specifications to keep them apprised of these consultations.

- A. Reference: FEIS, PAGE 4-27 (Sections I.A.4, I.B, II.B, IV.A, and IV.C, Memorandum of Agreement)
- B. Implementation: All Station Contracts
- C. Status: The Cultural Heritage Board has been provided with correspondence and plans about design changes to Union Station and the Title Guarantee Building.
- D. Future Action: The District will continue to provide the Cultural Heritage Board with correspondence and plans about any design changes to historic buildings along MOS-1.

Mitigation Measure CR8. As early as possible in the project design, further work will be undertaken to determine whether intact archaeological deposits exist and the significance of these deposits. This identification work will incorporate

existing information and field information derived from remote sensing with ground truthing, subsurface testing or a combination of such techniques. This Identification Study will be carried out by a professional archaeologist meeting the qualifications set forth in the proposed guidelines, 36 CFR Part 66, Appendix C and who is knowledgeable of and experienced in urban historical archaeology, especially of Southern California.

- A. Reference: FEIS, Page 4-28 (Section II.A, Memorandum of Agreement)
- B. Implementation: Union Station, Civic Center, 5th/Hill, A-130, A-135, A-141, A-145
- C. Status: An Identification Study was prepared in May 1985. It has been reviewed by SHPO, distributed to interested organizations, and was made available to proposers for Project Archaeologist services.
- D. Future Action: None Needed

Mitigation Measure CR9. The SCRTD will begin construction at the cut-and-cover location for the crossover north of the Union Station track area extending to Macy Street to allow time for archaeological testing, development of a data recovery plan, and proper recovery of any resources found.

- A. Reference: FEIS, Page 4-42
- B. Implementation: A-135, A-141
- C. Status: The tunnel shaft for A-141 construction will provide large scale examination for potential archaeological resources. Monitoring during construction by the Project Archaeologist and data recovery, if necessary, will protect any cultural resources encountered. Therefore the District has determined that an early construction start for archaeological testing is not necessary. Proposals for services of a Project Archaeologist, sought under RFP 86-27, were received October 27, 1986. The District signed the contract in March 1987.

During construction of a temporary ramp south of the north baggage handling ramp archaeologists monitored holes bored for pilings that support the ramp. They found ceramics, glass, utensils, animal bone, medicine bottles, and wood dominoes of Chinese origin that help locate Los Angeles' Old Chinatown.

- D. Future Action: The District will administer the Project Archaeologist contract as necessary during construction.

Mitigation Measure CR10. Should the Identification Study identify deposits deemed to meet the National Criteria (36 CFR Sec. 60.6) in consultation with the California SHPO, a plan for their treatment will be developed based on the findings of the Identification Study and implemented. If there is disagreement regarding whether identified deposits meet the National Register Criteria, a determination of eligibility will be requested in accordance with 36 CFR, Part 63. Should such treatment involve data recovery, the Treatment Plan will take into account the principles and recommendations set forth in Part I and III of the Advisory Council's "Treatment of Archaeological Properties: A Handbook" and will be in accordance with the proposed guidelines, 36 CFR Part 66. Other such treatment may include in-situ preservation of archaeological deposits and/or development of plans for their interpretation to the public. All work will be carried out by appropriate professionals with qualifications set forth in the proposed guidelines (36 CFR Part 66, Appendix C). The Treatment Plan will be reviewed by the SHPO and if necessary the ACHP. The plan cannot be implemented until completion of this review process.

- A. Reference: FEIS, Page 4-28 (Section II.B, Memorandum of Agreement)
- B. Implementation: A-135, A-141, A-145, A-165, A-175, and Project Archaeologist
- C. Status: A Treatment Plan has been prepared and approved by SHPO. Procedures for implementing the plan are in Contract 4344 for the services of a Project Archaeologist and in Contract Specifications 01170. The District will determine the significance of any resources found in coordination with the SHPO and the Department of the Interior. The contract for services of a Project Archaeologist was executed in March 1987.
- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure CR11. A qualified archaeologist will observe the excavation of the Civic Center stations to ensure avoidance of adverse impacts and proper recovery of any finds.



- A. Reference: FEIS, Page 4-42
Identification Study, Page 38
- B. Implementation: A-141

C. Status: The May 1985 Identification Study found archaeological monitoring is no longer needed at the Civic Center Station because about 30 feet of the hill was removed during the construction of the Hollywood Freeway in the 50's. See also measure CR13 below

D. Future Action: None Needed

Mitigation Measure CR12. A qualified archaeologist will observe the excavation of the 5th/Hill Station. If significant archaeological resources are encountered, SCRTD will implement the Treatment Plan prepared in accordance with the MOA.

A. Reference: FEIS, Page 4-42

Identification Study, Page 38

B. Implementation: A-145, Project Archaeologist

C. Status: Same as CR10C above

D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure CR13. Cut-and-cover construction at the Civic Center Station will be closely monitored by a qualified paleontologist.

A. Reference: FEIS, Pages 4-47, 48

B. Implementation: A-141, Project Archaeologist

C. Status: Contract 4344 for the services of a Project Archaeologist calls for monitoring for and recovery of any significant paleontological resources encountered. The contract was executed in March 1987.

Monitoring of the station excavation encountered a hand dug sewer tunnel and has yielded fossil shells and fish from the Fernando formation and diatomite beds from the Puente formation.

D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure CR14. Cut-and-cover excavations at 5th/Hill and 7th/Flower Stations will be spot checked by a qualified paleontologist.

A. Reference: Same as CR13A above

- B. Implementation: A-145, A-165, Project Archaeologist
- C. Status: Contract 4344 for the services of a Project Archaeologist calls for monitoring for and recovery of any significant paleontological resources encountered. The contract was executed in March 1987.

Monitoring has found a variety of fossil shells.

- D. Future Action: The District will monitor construction and insure compliance.

Mitigation Measure CR15. Cut-and-cover construction at the Wilshire/Alvarado Station will be monitored by a qualified paleontologist.

- A. Reference: Same as CR13A above
- B. Implementation: A-175, Project Archaeologist
- C. Status: Contract 4344 for the services of a Project Archaeologist calls for monitoring for and recovery of any significant paleontological resources encountered. The contract was executed in March 1987.

Monitoring of the tunnel boring machine launch shaft excavation yielded some fossil fish bones.

- D. Future Action: The District will monitor construction and insure compliance.