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GENERAL PLANNING CONSULTANT

TECHNICAL MEMORANDUM 89.4.3

METRO RAIL BEFORE-AND-AFTER STUDY:

STATISTICAL ANALYSIS AND PRESENTATION OF RESULTS

(REVISED)

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Prepared for:

Southern California Rapid Transit District

Prepared By:

Schimpeler-Corradino Associates

in conjunction with

Cordoba Corporation
The Planning Group

July, 1989

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EXECUTIVE SUMMARY

The objective of the Metro Rail Before-and-After Study is to examine the monetary benefits to property located in the vicinity of Metro Rail stations. A basic premise of the Benefit Assessment District program is that property in the vicinity of Metro Rail stations will benefit directly from the enhanced accessibility afforded by being close to Metro Rail stations. One objective of this study is to determine the extent to which property value increases are due to Metro Rail stations. Earlier Technical Memoranda have reported on benefit indicators and data sources, the research design and methodology, and the organization and structure of the data base. The purpose of this Technical Memorandum is to present the results of implementing the study methodology.

Major conclusions that can be drawn from this study are:

1) The analysis supports the contention that price escalation of properties in the vicinity of Metro Rail stations is partially the result of proximity to Metro Rail.

2) The difference in recorded post Metro Rail sale prices and predicted post Metro Rail sale prices is correlated with distance to Metro Rail stations. For the six geographic area-land use activity pairs with a regression significant at the 70% level or higher, the R^2 values range from 0.025 to 0.185. (See Executive Summary Table 1.)

3) The sale price increases calculated for these same six pairs range from $8.86 to $35.97 per square foot. The price increases due to metro Rail range from $0.28 to $6.04 per square foot. (See Executive Summary Table 1.)

4) The methodology reported on herein appears promising and shows encouraging results. While the results in some instances are not statistically significant and marginally significant in other instances, the overriding consideration is that in virtually every analysis carried out in this study, the results point in the same direction - namely, Metro Rail is responsible for at least a portion of the price increase measured for property after 1984. Low significance levels do not imply that these land uses will not be benefitted by Metro Rail. After all, the opening of Metro Rail to revenue service is scheduled for sometime in 1993. The data available for some land use types in some geographical areas provide little information on Metro Rail impact at this time. However, this situation may change as Metro Rail comes closer to operations.

The results for the geographic area-land use pairs investigated in this study are summarized in Executive Summary Table 1. In general, the results appear to best support the study objectives in the Financial area of the Central Business District and only marginally support the study objectives in the Central City area of the Central Business District.

EXECUTIVE SUMMARY TABLE 1

MAJOR FINDINGS - BEFORE AND AFTER STUDY ANALYSIS

BENEFIT ASSESSMENT DISTRICT AREA REPRESENTED		DELTA DIFFERENCE ANALYSIS				
		SLOPE	LEVEL OF SIGNIF	R SQUARED	PRICE INCREASE TOTAL * AVERAGE $/SQ FT	PRICE INCREASE PORTION ** DUE TO M.R. $/SQ FT
A1-FINANCIAL AREA						
LAND USE	TOTAL IMPROVED SPACE	-2026	70.4%	0.025	$12.77	$0.32
	OFFICE SPACE	-3940	83.7%	0.074	$9.73	$0.72
	RETAIL/RESTAURANT	-3618	86.6%	0.168	$35.97	$6.04
A1-CENTRAL CITY AREA						
LAND USE	OFFICE SPACE	-80.5	10.0%	0.00043	$22.36	$0.01
	RETAIL/RESTAURANT	-263.7	89.1%	0.0315	$8.86	$0.28
	INDUSTRIAL/WAREHOUSE	-222.0	29.0%	0.0077	$32.13	$0.24
A2-WILSHIRE/ALVARADO						
LAND USE	TOTAL IMPROVED SPACE	-278.3	79.2%	0.068	$26.87	$1.82
	OFFICE SPACE	-432.5	87.6%	0.185	$11.11	$2.05
	RETAIL/RESTAURANT	-142.4	36.0%	0.017	$40.40	$0.69

* This column represents the average sale price increase, for the indicated group of properties, between the Pre-Metro Rail and Post-Metro Rail time frames.

** This column represents the portion of the sale price increase due to the proximity to Metro Rail stations.

The basic methodology employed in this study is summarized briefly:

1) Regression analysis was used to develop an equation to estimate property values in the pre-Metro Rail time frame from 1976 through the end of 1983. A large number of variables judged to influence property values were included in the data base.

2) The equations developed in step 1 were used to predict the sale price of properties sold in the post-Metro Rail time frame from 1984. This predicted sale price is termed the "as if Metro Rail had not occurred" sale price.

3) The difference between the recorded post-Metro Rail sale price and the predicted post-Metro Rail sale price is termed the Delta value.

4) A regression analysis was carried out with the Delta value as the dependent variable and the distance to the nearest Metro Rail station as the independent variable. The value of R^2 for this regression is indicative of the impact that station proximity has on Delta property values. The increase in property value due to Metro Rail is proportional to the variability in Delta value explained by the distance to Metro Rail stations.

This methodology was developed and adopted for several reasons:

1) Property values are influenced by a wide variety of variables which suggested a multivariate analysis be performed.

2) Many studies of this type call for a comparable control area which is extremely difficult to define. This methodology does not require a control area.

3) The impact of transit improvements may be comparatively small and vary over time. A regression analysis as used in this study should distinguish the impact of Metro Rail from other influencing factors.

The data base used in this study is quite extensive but has several limitations that require care in using it. Special precautions that were employed in this study are detailed in the text and relate to issues such as: properties with multiple land uses; limiting the number of variables; variables with many missing values; and variables which vary over several orders of magnitude.

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APPENDIX C

TECHNICAL MEMORANDUM 88.4.5, METRO RAIL BEFORE-AND-AFTER STUDY: RESEARCH DESIGN, METHODOLOGY, VARIABLES AND DATA COLLECTION PLAN

1.0 INTRODUCTION

The objectives of the Metro Rail Before-and-After Study are to examine the monetary benefits to property located in the vicinity of Metro Rail stations and to isolate the benefits directly attributable to the Metro Rail system. The study also is intended to identify benefits which may be linked to particular events associated with the development of the rail system (e.g., commencement of construction, commencement of operations, etc.). The study will attempt to advance the state of the art in benefit measurement through the analysis of benefits that occur over time in the vicinity of Metro Rail stations. This knowledge will be useful in understanding the process by which benefits are derived and, hopefully, will advance development of a methodology to evaluate land use impacts of transit systems in the United States.

The following tasks constitute the Before-and-After Study:

1) Identify Indicators of Benefit and Determine Area of Coverage
2) Identify Potential Sources of Data
3) Evaluate Useability of Data
4) Refine Indicators and Areas of Coverage
5) Design Data Base and Analysis Methodologies
6) Compile Data Base and Establish Update Procedures
7) Analyze Data

Tasks 1 through 6 of the Study have been accomplished prior to the development of this Technical Memorandum. The results of Tasks 1, 2 and 3 are contained in Technical Memorandum 88.4.1, Metro Rail Before-and-After Study: Analysis of Potential Monetary Benefit Indicators, Identification of Potential Data Sources and Evaluation of Data Useability (see Appendix B). The results of Tasks 4 and 5 of the Study are contained in Technical Memorandum 88.4.5, Metro Rail Before-and-After Study: Research Design, Methodology, Variables and Data Collection Plan (see Appendix C). The data sources were refined in these tasks and the most promising sources to carry out the methodology were identified. The results of Task 6 of this study are contained in Technical Memorandum 88.4.7 Metro Rail Before-and-After Study: Data Base Development, Organization and Structure (see Appendix D). The development of the data base requisite to the before-and-after study is presented in this document which includes details on the structure, format and updating procedures related to the data base.

This Technical Memorandum presents the results of Task 7 of the Before-and-After Study. The purpose of Task 7 is to implement the methodology outlined in Task 5 utilizing the data base collected and organized in Task 6.

The sections which follow present a brief outline of the procedure, the statistical analyses performed, a set of conclusions and a set of recommendations for further study.

2.0 ANALYSIS METHODOLOGY

A brief overview of the problems associated with measuring transit-related benefits and the development of a methodology for measuring these benefits are presented in this section. A complete description of the research problem, research design and methodology is included in Technical Memorandum 88.4.5, Metro Rail Before-and-After Study: Research Design, Methodology, Variables and Data Collection Plan.

2.1 RESEARCH PROBLEM

The ability to accurately estimate direct monetary benefits of transportation systems, transit stations in particular, has proven elusive. Property values in the areas around transit stations are influenced by a wide range of factors, most of which have not been adequately quantified. Special problems associated with measuring this influence include:

1) Difficulty in selecting control areas that are comparable. Station locations generally are based on a set of somewhat unique characteristics that make the site acceptable from environmental, patronage, and other aspects. These conditions often may not be replicated elsewhere in the urban area.

2) The impact of the transit improvement may be comparatively small in relation to other influencing factors.

3) The impact of the transit improvement may vary over time as the transit system develops from the planning stages through various patronage levels.

2.2 RESEARCH DESIGN

The area to be studied includes properties located within the benefit assessment districts established for the Minimum Operable Segment-1 of Metro Rail. Two districts were established, one for the four downtown Los Angeles stations (Union Station, Civic Center, 5th/Hill, and 7th/Flower) and one at the Wilshire/Alvarado station.

The approach adopted for this study investigates the impacts on property values by comparing two different conditions: (1) "after with metro Rail" sale prices and (2) "after as if metro Rail had not occurred" sale prices. Both "before Metro Rail" and "after with Metro Rail" sale prices are actual sale prices as recorded for individual properties. Data on pre-Metro Rail sale prices are used to develop a sale price model representative of the pre-Metro Rail time period. The pre-Metro Rail sale price model is applied to post-Metro Rail sales data to predict "after as if Metro Rail had not occurred" sale prices. These predicted sale prices are assumed reflective of the continuation of pre-Metro Rail trends and factors for any property. The observed difference between this predicted sale value and the actual post-Metro Rail sale value is the impact value which is referred to in this report as the delta value. Earlier reports referred to this difference as the "residual" impact value or "residual" difference. In reference to this difference, the term "residual" is eliminated to avoid confusion with standard nomenclature associated with the statistical analysis used in this study.

The delta value is assumed to be made up of several components: a portion is attributable to the impact of Metro Rail; and a portion is due to trends and factors which differ from the pre-Metro Rail time period. This approach does not require that differences in sale prices be observed for linked sales data only. A linked sale refers to a pre- and post-Metro Rail sale of the same piece of property. Linked sales were not used in this study for two reasons: the number of cases available for analysis would be very few; and the use of linked sales has not been effective in other studies such as the BART system in San Francisco. (See Appendix C, pages C-5 through C-11.)

The research design is summarized in the following steps:

1) A set of multiple regression equations is developed to estimate property values based upon pre-Metro Rail property sales. The intent is to develop separate pre-Metro Rail baseline equations for major land uses such as office and retail/restaurant in different study area locations such as the Financial District, Chinatown, or Central City East. The equations capture, to some extent at least, significant pre-Metro Rail trends and factors which influence sale price. Only sales completed prior to Metro Rail are included in this step. Thus, these equations are used to estimate the future price of properties "as if Metro Rail had not occurred." (See Appendix A for a brief introduction to regression analysis.)

2) Data on post-Metro Rail property sales are collected to provide the "after with Metro Rail" condition for the property.

3) The difference between the predicted price of properties "as if Metro Rail had not occurred" and the actual sales price "with Metro Rail" are determined. This difference is referred to as the delta value.

4) A bivariate analysis is carried out with the delta value as the dependent variable and distance from the nearest Metro Rail station as the independent variable. The delta value may consist of several components:

    a) changes due to the introduction of Metro Rail;
    b) changes due to trends and factors not included in the pre-Metro Rail baseline equations;
    c) error in estimation due to changes in the influence of variables in the baseline equations.

The existence of a correlation between delta value and distance from a Metro Rail station may be considered indicative of the influence of the transit facility on property values. Should the relationship between delta value and distance to Metro Rail be significant at some level, it may be concluded that the portion of the delta value explained by the distance to Metro Rail is reflective of direct monetary benefits to property owners.

This methodology was developed and adopted for several reasons:

1) Property values are influenced by a variety of variables. The impact of any given variable may vary over time and over sections of an urban area, especially in a city as large and diverse as Los Angeles. This suggested that a multivariate analysis might be appropriate.

2) Many studies of this type rely on control areas to provide validation of the study hypotheses. Although this technique was considered for this study, the idea was dropped because no area could be defined to adequately replicate conditions in the study area. This stems from the fact that downtown Los Angeles is simultaneously:

   a) a government center,
   b) a center of international finance,
   c) a manufacturing center (garment industry),
   d) a distribution center (flowers, produce),
   e) a transportation center (freeways, intercity rail, transit), and
   f) a redevelopment area.

3) The impact of transit improvements may be comparatively small and vary over time. A regression analysis as used in this study should distinguish the impact of Metro Rail from other influencing factors.

2.3 STUDY METHODOLOGY

The methodology employed for the study effort is described in this section.

2.3.1 Review of the Data

The data base prepared for the Before-and-After Study contains data on 149 variables for 1180 cases. A case consists of all available data relative to a property in the study area for which a sale is recorded in 1978 or later. (See Appendix D, page D-17.) Some 236 cases are included for Benefit Assessment District A2, the Wilshire/Alvarado station area. Some 944 cases are included for Benefit Assessment District A1, the 4-station downtown area of Los Angeles. Benefit Assessment District A1 is divided into four Community Redevelopment Agency (CRA) areas (Central Business District, Chinatown, Little Tokyo, Bunker Hill) and the non-CRA area west of the Harbor Freeway. The Central Business District (CBD) is subdivided further into eight subareas: Central City East; Civic Center; Broadway; Spring Street; Main Street; Financial Core; South Park; and Central Library.

The proposal for this study suggested a pre-Metro Rail equation be developed for each geographic area--land use pair such as office space in the Civic Center and retail/restaurant space in South Park. However, a number of geographic area-land use pairs are characterized by only a few cases, not enough cases to achieve useful results. (See Appendix A, page A-10 for a discussion of cases.) For example, the number of pre-Metro Rail cases for properties in the CBD which include office space land use are as follows:

Central City East:	0
Civic Center:	1
Broadway:	22
Spring Street:	10
Main Street:	7
Financial Core:	24
South Park:	11
Central Library:	0

Thus, only Broadway and the Financial Core may have sufficient cases while Spring Street and South Park are somewhat marginal. Of course, it is true that only a finite number of cases (recorded sales) exist in any given area. The number of cases included in this analysis is limited by the number of recorded sales included in the data base.

Consequently, the bulk of the analyses are carried out for three geographical areas:

1) The financial area of Benefit Assessment District A1 which consists of properties in the Bunker Hill CRA area and those in the Financial Core and South Park CRA subareas within the CBD. (See Appendix D, pages D-60 to D-62.)

2) The "central city area" of Benefit Assessment District A1 which consists of properties in the Chinatown and Little Tokyo CRA areas and those in the Central City East, Civic Center, Broadway, Spring Street, and Main Street subareas within the CBD.

3) The Wilshire/Alvarado station area, Benefit Assessment District A2.

These geographic areas were selected because the land uses within each area are comparable. The financial area is characterized by a number of modern, high-rise office buildings and banks, expensive shops and restaurants, and luxury hotels. The "central city area" is characterized by a number of vacant or partially utilized buildings, less expensive shops and restaurants, and several resident-hotels.

Some land use classifications are represented by less than 20 cases in the entire data base (government, residential, non-profit, residential hotels, and exempt improvements). Land uses such as service, hotels, industrial and vacant land are represented by about 60 cases. Thus, the analyses were carried out for three land use categories: office space; retail/restaurant space; and total improved space on the property.

There are certain problems related to the data that required further research or correction:

1) Multiple Use Properties - Some properties in the office use category may have less than 10% of the improved space devoted to office space. This could result in a distorted view of office land use if many properties had this characteristic. Preliminary research showed that little impact is observed if

the analysis of office space is carried out on properties with 60% or more office space of the total improved space. This problem was solved by careful selection of cases to ensure that each included case is representative of the group.

2) Number of Variables - When a large number of variables (over 80 for this data base) are analyzed for many cases, the calculation of the correlation matrix may require excessive time on a personal computer (more than 1 hour in some instances). The number of variables considered in any analysis should be kept to a reasonable level. Certain variables such as absolute change and percent change from one year to the next for various market indicators are unlikely candidates for regression models. Market indicators include variables such as Gross National Product, Consumer Price Index, Prime Interest Rate, and employment in various categories such as government and service. There are 26 variables in the data base which describe change or percent change from 1 year to the next. All of these could be eliminated with no loss from an analytical standpoint because ratio and percentage variables of this type are seldom used in regression analyses. The inclusion of variables such as Prime Interest Rate, Foreign Exchange Rate, and Unemployment Rate is discouraged as well. Of course, it may be desirable to maintain these data in the data base but they should not be included in a regression analysis. Some of these variables have great impact in the financing of a purchase rather than on the purchase price.

3) Zero Values - Variables with extraordinary numbers of zero values require special treatment. These variables tend to have very low or missing correlations and will be eliminated from consideration by the regression procedures if all values are zero in a particular data subset. In some instances, it is more appropriate to eliminate cases from the analysis when a variable is non-zero for only a few cases. In this event, the variable may enter the regression at a very high significance level but the R^2 value increases only slightly. A pre-Metro Rail equation may be developed which includes a variable represented by one or two cases and then is applied to post-Metro Rail cases. The predicted sale prices of properties with non-zero values for the variable in question may be distorted due to an unrepresentative equation developed for the pre-Metro Rail case. Variables with large numbers of zero values are restricted to those itemizing square feet of various land uses. When a data set is selected, a variable with only a few non-zero values was eliminated. This decision was based on the judgment of the analyst.

4) Missing Values - Some variables have large numbers of missing values. If the variable is a regression variable, the missing values may cause the entire case to be deleted from consideration. Variables with large numbers of missing values should have these values resolved or should be considered for omission from the process. Identifier or descriptive variables that will never be regression candidates should always have an entry in the field, albeit a

dummy entry. This is important in selecting the cases to be included in a particular procedure for the SPSS/PC+ statistical package used in this study. (SPSS/PC+ is a registered trademark of SPSS Inc.) Blank fields are not treated consistently in applying some of the logical operators in the selection of cases. Variables with large numbers of missing values were eliminated from the analysis.

5) Variable Range - The range in sale price for property extends from several thousand dollars to almost $500 million. Moreover, the distribution of sale price is highly skewed to the right. For example, sale prices in the downtown area range from $116 (perhaps a keystroke error) to $496,900,000 with a mean of $5,744,218. About 88% of the properties sold for $5,000,000 or less. Only 6 of 933 valid sales are in the range from $150,000,000 to $500,000,000. The contribution to the sum of squares of these six properties is more than half the total sum of squares. Thus, a regression that does reasonably well in explaining these six cases will have a high R^2 even while doing a terrible job of explaining lower priced cases. These lower priced cases have comparatively high residual values. Some research was carried out to determine if restricting the sale price range would be helpful. The results of restricting the range to sale prices extending from $1,000,000 to $50,000,000 are reported in Section 3. A great deal more research must be done on variables with ranges covering several orders of magnitude, especially when skewed to the right. Logarithmic transformations on certain variables may prove desirable but a few trials in this study did not improve the situation. Fortunately, the high priced properties are restricted to the Financial Core subarea of the CBD. The impact of these extreme prices are discussed in Chapter 3.1.

2.3.2 Pre-Metro Rail Equations

The purpose of this step is to develop a set of equations which identify the variables influencing property values prior to Metro Rail. These same equations will be used to calculate post-Metro Rail property values for the "as if Metro Rail had not occurred" condition. The procedure involves the selection of cases representing pre-1984 sales of property with a specific geographic area - land use combination. The units of analysis are individual parcels within the study area which have a recorded sale during the pre-Metro Rail years from 1978 through 1983 inclusive or during the post-Metro Rail years of 1984 and beyond.

An assumption of this study is that the influence of the transit system on property value begins when the final route is selected. Although Metro Rail planning started in 1975 and alternatives analysis began in 1977, the final route alignment was announced in 1983 as well as the first appropriation of funds for MOS-1 construction. It is likely that uncertainties associated with planning and alternatives analysis would preclude Metro Rail influence in the real estate market, at least through 1983. The final route and funding decisions of 1983 provide a solid benchmark for fixing the pre-Metro Rail time frame, at least for MOS-1

station areas. Preliminary analysis of sales data availability suggests that valid sales data points are available from the year 1978.

The procedure used to develop equations for this study is linear regression. Linear regression is a statistical technique used to determine the best values for the coefficients of one or more independent variables expressed as a function of a dependent variable. In a simple linear relationship of form $y = a + bx$, y is the dependent variable and x is the independent variable. Data is collected through observations of y and x. Regression analysis is used to calculate the best values of a and b according to a set of statistical criteria selected by the analyst. The coefficient of x is b, the slope of the straight line. The slope represents the expected change in y when the value of x increases by 1 unit. The intercept is a which represents the value of y when x equals zero. A more detailed description of regression analysis is included in Appendix A of this report.

The equations are derived through use of the multiple regression technique as included in the SPSS/PC+ statistical package. Sale price is the dependent variable. The regression yields an equation of the form:

$$y = b_0 + b_1x_1 + b_2x_2 + \ldots + b_nx_n + m$$

where y = Sale Price, the Dependent Variable
x = Independent Variable
b = Regression Coefficient
n = Number of Variables Included
m = Error Term

If there are a large number of independent variables, groups of them may be highly related. Factor analysis is a technique for statistically grouping highly related variables. The procedure consists of selecting one from each group for the regression analysis. However, the data included in this study appear to be ill-suited for a successful factor analysis. The Kaiser-Meyer-Olkin (KMO) statistic is an index for comparing magnitudes of observed correlation coefficients to the magnitudes of the partial correlation coefficients. If variables share common factors the partial correlation coefficients should be small between pairs of variables and the KMO statistic will be close to 1.0. If the partial correlation coefficients are high, the correlations between variable pairs cannot be explained by other variables and the KMO statistic will be low. A KMO statistic of 0.8 is very good while 0.6 is mediocre and anything below 0.5 is not acceptable. Several runs on these data produced KMO statistics at the 0.4 level. Consequently, the use of factor analysis in this study was dropped. This had little, if any, impact on the study results. Refer to SPSS/PC+ Advanced Statistics V2.0, SPSS Inc., Chapter 2.4 for additional discussion of the KMO statistic.

The regression analysis procedure includes several statistical checks to assure significant results and avoid problems. These checks include the analysis of variance and F-test for the significance of regression, t-tests for the significance of the regression coefficients, and the analysis of residuals for normal distribution. All of the analyses reported herein have significant regressions and regression coefficients at the 95% level. The exception is in the

development of the delta value relationship in which case the significance level is listed in the text.

Several sets of residuals were tested for normality. The Kolmogorov-Smirnov Goodness of Fit Test was applied to test the Null Hypothesis (H) that the residuals are normally distributed. (See Appendix A on Regression Analysis which includes a discussion of residuals.) The alternative H is that the residuals are not normally distributed. If one can reject the Null H and accept the alternate H at the one percent significance level, the alternate H is said to be highly significant while at the 5 percent significance level, the alternate H is said to be significant. In most applications of the Kolmogorov-Smirnov Test, one hopes that the Null H cannot be rejected at a high significance level. The higher the significance level, the more confident one is that the assumed distribution function correctly describes the observed data. However, the normality assumption is not especially stringent. Almost all statistical methods based on the normal distribution are quite robust in that reasonable conclusions may be drawn even if the normality assumption is satisfied approximately. A one percent significance level is probably satisfactory for assumptions related to the normal distribution.

2.3.3 Post-Metro Rail Equations

The development of post-Metro Rail regression equations is not part of the procedure as outlined for this study. They were developed at the suggestion of an SCRTD staff member and are included for information purposes only. The rationale for this step is that if distance to Metro Rail stations influences the sale price of properties, the distance may show up as significant in a regression model.

In this analysis, the distance to Metro Rail stations is forced to enter the regression model as the first independent variable to determine its significance level and slope. However, the stepwise regression method was used to add or delete variables. In most instances, the distance variable was deleted in the second step but, in several instances, reentered the regression model at a subsequent step. (See Appendix A for a discussion of various regression methods such as stepwise.) The results of this analysis are reported in Chapter 3.

2.3.4 Analysis of Delta Differences

The residual property value must be determined for each case with a recorded sale in the post-Metro Rail years. The following steps are employed:

1) list of the actual sale price of a property;
2) estimate the sale price "as if Metro Rail had not occurred" using the pre-Metro Rail equations described above;
3) subtract the estimated sale price from the actual sale price to obtain the delta difference in property value.

A bivariate analysis is performed to regress the delta difference in property value as a function of the distance to the nearest Metro Rail station. If distance does have an impact

on property value, one would expect property values to decrease as the distance from a Metro Rail station increases. Thus, the slope associated with distance should be negative in this instance. Slope refers to the coefficient of an independent variable in a linear relationship of the form $y = a + bx$. "b" is the slope (coefficient) of x and represents the change in the value of the dependent variable, y, for a unit change in x. "a" is the intercept or the value of y when x is zero.

The R^2 statistic from the simple bivariate regression is indicative of the impact that station proximity has on delta property values. For instance, if the R^2 value is 0.5, it may be concluded that no more than 50 percent of the delta value is due to Metro Rail. By extension, it can be concluded that any direct monetary benefit due to Metro Rail is proportional to the variability in the delta values explained by the distance to Metro Rail stations.

3.0 DATA ANALYSIS

The Before-and-After Study data base has been developed in a format compatible with SPSS/PC+. The SPSS/PC+ Multiple Regression function will be used to carry out the multivariate statistical analysis of the data. The procedure begins by loading the appropriate data base and selecting the subset of cases in a particular geographic area and land use combination. The selection is carried out using algebraic and logical "Select if" statements in the SPSS function library.

A multiple regression analysis is performed on these cases with sale price as the dependent variable. The regression function produces an equation and a set of evaluative statistics for the regression (see Appendix A for additional discussion):

1) The coefficient of determination (R^2) is the primary measure of goodness of fit. R^2 indicates the amount of variation in the dependent variable that is explained by the relationship between the dependent and independent variables. R^2 varies from 0.0, which indicates that no linear relationship exists, to 1.0 which indicates a perfect linear relationship. Obviously the closer R^2 is to 1.0, the better. However, when an independent variable enters the regression model at a probability level of 0.05 or less (see item 2 below), the linear relationship between the dependent and independent variable is significant. R^2 is a measure of how much variability in the dependent variable is accounted for by the independent variable.

2) The F-test tests the hypothesis that there is no linear relationship between the dependent and independent variables. When this hypothesis can be rejected, confidence can be placed in the linear relationship represented by the regression model. SPSS/PC+ constructs an analysis of variance (ANOVA) table and partitions the total sum of squares into a sum of squares for regression and a sum of squares for residuals. The sum of squares for regression is divided by the degrees of freedom for regression which is equal to the number of independent variables included in the regression model. The result of this division is termed "the mean square for regression." The sum of squares for residuals is divided by the degrees of freedom for residuals which is equal to the number of cases minus 1 minus the number of independent variables in the regression. This result is termed "the mean square for residuals." The F statistic is equal to the mean square for regression divided by the mean square for residuals. In this context, residual refers to the vertical deviation between the observed value and the value predicted by the regression. If these residuals are small, the mean square for residuals is also small and the F statistic is large. Thus, a large F statistic implies that a linear relationship exists and the hypothesis of no linear relationship can be rejected. In fact, SPSS/PC+ calculates the probability of observing a given F value if no linear relationship exists. The hypothesis of no linear relationship is rejected whenever this probability is 0.05 or less. SPSS/PC+ checks the F statistic at each stage of model development. It should be kept in mind that the analysis selects the significance levels at

which hypotheses are accepted or rejected or for which confidence intervals are constructed. In certain instances, the analyst may use the standard 95% levels but in other instances will use 99% levels and in other applications will use 80% or 90% significance levels. Often in analyses involving socioeconomic data as in this study, the analyst may select 80% or 90% significance levels. The important factor is the inclusion of the significance level in the reporting document so that an appropriate interpretation of the results will be made.

3) The t-test also tests the hypothesis that there is no linear relationship. However, the test is on the hypothesis that the coefficient of the independent variable (the slope of the regression line) is zero. The t statistic is calculated as the coefficient divided by the standard error of the coefficient for each variable in the model. The same logic used in the F-test is applied to the t-test concerning rejection of the hypothesis that no linear relationship exists. SPSS/PC+ checks the t statistic at each stage of model development.

3.1 FINANCIAL AREA OF BENEFIT ASSESSMENT DISTRICT A-1

The financial area of Benefit Assessment District A-1 includes the Bunker Hill CRA area and the Financial Core, South Park, and Central Library CRA subareas within the CBD. Statistical analyses were carried out for total improved space, office space and restaurant/retail space..

3.1.1 Total Improved Space

The total improved space for a given parcel is calculated as the total square feet of space in the following use categories: office; hotel; retail/restaurant; service; industrial and warehouse; parking garage; government; residential; non-profit; vacant by code; and residential hotel. The latter five land use categories are zero for almost all included cases. The normal procedure is to select the cases included in a particular land use category, in a particular area, and in a particular time frame. Thus, select cases with total improved space greater than zero, a location in the Financial area of A1, and a recorded sale prior to 1984. The pre-Metro Rail equation is developed for this data set. The subset including cases with a recorded sale during 1984 or later is used in the post-Metro Rail and delta difference analyses.

However, each of these data subsets include cases with non-zero values for government and residential hotel land uses as well as for service and industrial/warehouse land uses. There are generally only one or two of such land use cases. Such cases are eliminated from the data subset if such land uses are more than 20% of total improved space. Thus, the only uses included in the analysis are total improved space, office space, parking garage space, hotel space, and retail/restaurant space.

A few properties in the financial area have very high sale prices as discussed in Chapter 2.3.1 (item [5] on page 6). The three or four very high priced properties that may be included in a data set result in a sale price distribution that is highly skewed to the right.

This results in a much higher total sum of squares than would be observed for a data set covering that same range in sale prices but which was more normally distributed. A regression line that is in the vicinity of these data points will have a high value of regression sum of squares. Even though the vertical deviations (the residuals) between the actual data points and the regression line are substantial, the magnitude of the residual sum of squares may be small in comparison to the regression sum of squares. The result is a significant regression with a high R^2 but an equation which does a very poor job from a prediction standpoint. One means of improving this situation is to delete the cases with very high and very low sale prices from the data set to the analyzed, i.e. impose a limit of the range in sale prices to be included in an analysis. The following limitations on sale price range were analyzed in this study:

1) no limitation on sale price
2) sale prices less than $50,000,000
3) sale prices greater than $1,000,000 and less than $50,000,000.

The impact of these limitations is illustrated in the following sections related to the financial area.

3.1.1.1 No Sale Price Limitations

Pre-Metro Rail Equation (51 cases)

Sale Price = - 922,600 + 127.4 (office space) + 58.3 (hotel space)

R^2 = 0.944

Post-Metro Rail Equation (66 cases)

Metro Rail Distance: slope = -20,900
R^2 = 0.030
Significant at 84% level

Sale Price = - 6,718,100 + 132 (office space) + 50.4 (total space) + 43.2 (garage space)

R^2 = 0.960

Delta

Delta Value = 15,175,000 - 5420 (Metro Rail Distance)

R^2 = 0.012
95% Confidence Interval = - 17,700 to 6900
Significant at 62% level

Average price increase = $32.26/square foot

Increase due to Metro Rail = $0.39/square foot

The following comments apply to the statistics listed above but, in general, are applicable to the statistics reported in the sections which follow. In the pre-Metro Rail equation, a total of 51 cases were available for analysis. The procedure is to calculate the F-statistic associated with each independent variable and to select the variable with the highest F-statistic as the first variable to enter the regression. This is equivalent to selecting the variable with the lowest probability associated with the F-statistic, i.e. the higher the F-statistic, the lower is the probability of observing such a high value. The default probability value is 0.05. In the pre-Metro Rail equation above, the first variable entered is square feet of office space. Then all F-statistics are recalculated and the variable with the lowest probability associated with the F-statistic enters the regression. In this case, the square feet of hotel space is selected. The process continues until none of the remaining variables has a probability of F to enter less than or equal to 0.05. In this instance, none of the remaining variables have a probability of F to enter less than 0.05 and the process ends.

The post-Metro Rail equation is presented for information only. The 3 statistics listed for Metro Rail distance refer to the regression of distance to Metro Rail station on sale price:

1) slope = -20,900. This is the slope (coefficient of the independent variable) which defines the change in the value of the dependent variable for each unit increase in the independent variable.

2) R^2 = 0.03. This the amount of the variability in sale price which is explained by the distance to Metro Rail.

3) Significant at 84% level. This implies that the probability is 0.16 (100%-84%) of observing the F-statistic calculated for this regression. Although this is not a probability of 0.05 or less, probabilities of 0.2 to 0.3 or less associated with an F-statistic may be considered acceptable when working with socioeconomic data of this type.

The third set of statistics is related to the regression of Metro Rail distance on the Delta values. The Delta value is defined as the difference between the post Metro Rail sale price as recorded for a property and the predicted sale price for that property using the pre-Metro Rail equation. The statistics are described as follows:

1) Delta Value = 15,175,000-5420* (Metro Rail Distance). From the standpoint of the study effort, the important factor is the sign of the coefficient of Metro Rail distance. A negative sign implies that the value of property tends to decrease as the distance to a Metro Rail station increases.

2) R^2 = 0.012. This implies that 1.2% of the Delta difference in property value is due to the impact of Metro Rail.

3) 95% Confidence Interval = -17,700 to 6,900. This implies that one is 95% confident that the true coefficient of Metro Rail distance is within the range from -17,700 to +6,900.

4) Significant at 62% level. This implies that the probability is 0.38 of observing the F-statistic calculated for this regression.

5) Average price increase = $32.26/square foot. This value is calculated for the post-Metro Rail cases by summing the Delta values for all included cases and dividing by the summation of total square feet of improved space for all included cases. A positive sign for the summation of Delta values is indicative of an increase in property value.

6) Increase due to Metro Rail = $0.39/square foot. This is calculated by multiplying the average price increase by the value of R^2. The amount of the price increase due to Metro Rail is assumed proportional to the variability in the Delta value explained by the distance to Metro Rail stations.

3.1.1.2 Sale Price Less Than $50,000,000

Pre-Metro Rail Equation (44 cases)

Sale Price = -1,131,400 +83 (office space) + 27.5 (total space)

R^2 = 0.854

Post-Metro Rail Equation (55 cases)

Metro Rail Distance: slope = -5320
R^2 = 0.129
Significant at 99.3% level.

Sale Price = 264,000 + 57.8 (office space) + 41.7 (total space)

R^2 = 0.646

Delta

Delta Value = 2,758,000 - 1353 (Metro Rail Distance)

R^2 = 0.022
95% Confidence Interval = - 3830 to 1120
Significant at 72.2% level.

Average Price Increase = $11.64/square foot
Increase due to Metro Rail = $.26/square foot

3.1.1.3 Sale Price Greater than $1,000,000 and Less than $50,000,000

Pre-Metro Rail Equation (34 cases)

Sale Price = -479,100 + 112.3 (total space)

R^2 = 0.82

Post-Metro Rail Equation (45 cases)

Metro Rail Distance: slope = -5470
R^2 = 0.08
Significant at 94.0% level.

Sale Price = 839,700 + 51.8 (office space) + 44.4 (total space)

R^2 = 0.603

Delta

Delta Value = 3,512,000 - 2026 (Metro Rail Distance)

R^2 = 0.025
95% Confidence Interval = - 5900 to 1830
Significant at 70.4% level

Average Price Increase = $12.77/square foot
Increase Due to Metro Rail = $0.32/square foot

3.1.1.4 Summary

The results of these three analyses show that as the sale price extremes, especially the high side, are eliminated, the coefficients of determination (R^2) for both the Pre- and Post-Metro Rail equations decrease. The decrease is from 0.944 to 0.82 for the Pre-Metro Rail cases and from 0.96 to 0.603 for the Post-Metro Rail cases. However, there is a distinct improvement in measuring the impact of distance to Metro Rail as the extreme sale price cases are eliminated. In the post-Metro Rail cases, the slope and significance level of sale price regressed on distance to Metro Rail changes from -20,900 and 84% to -5320 and 99.3% when the cases with sale prices over $50,000,000 are eliminated.

When the extremes are eliminated, the average price increase ranges from $11.64 to $12.77 per square foot. Multiplication by the appropriate R^2 value yields increases due to Metro Rail ranging from $0.26 to $0.32 per square foot of total improved area. Notice that the 95% Confidence Interval for the coefficient of Metro Rail distance narrows a great deal and significance level rises as well.

3.1.2 Office Space

The office space subset defined in this analysis consists of all parcels with office space area greater than 60% of the total improved area. This insured that office space is the predominant land use considered in the analysis. The comments in Section 3.1.1 for total improved space apply to office space as well.

3.1.2.1 No Sale Price Limitations

Pre-Metro Rail Equation (34 cases)

Sale Price = -2,971,500 + 129.6 (office space)

R^2 = 0.938

Post-Metro Rail Equation (37 cases)

Metro Rail Distance: Slope = -18,000
R^2 = 0.016
Significant at 54.7% level

Sale Price = -11,618,500 + 206.4 (office space) - 211.7 (hotel space)

R^2 = 0.986

Delta

Delta Value = 17,344,000 - 6230 (Metro Rail Distance)

R^2 = 0.013
95% Confidence Interval - 25,000 to 12,600
Significant at 49.4%

Average Price Increase = $33.03/square foot
Increase due to Metro Rail = $0.43/square foot

3.1.2.2 Sale Price Less Than $50,000,000

Pre-Metro Rail Equation (29 cases)

Sale Price = -2,380,000 + 102.2 (total space)

R^2 = 0.844

Post-Metro Rail Equation (31 cases)

Metro Rail Distance: slope = -5900
R^2 = 0.138
Significant at 96.0% level.

Sale Price = 3,743,700 + 99.6 (office space) - 3208 (Metro Rail Distance)

R^2 = 0.627

Delta

Delta Value = 3,555,000 - 2330 (Metro Rail Distance)

R^2 = 0.047
95% Confidence Interval = -6310 to 1650
Significant at 75.9% level.

Average Price Increase = $9.87/square foot
Increase due to Metro Rail = $0.46/square foot

3.1.2.3 Sale Price Greater than $1,000,000 and Less than $50,000,000

Pre-Metro Rail Equation (27 cases)

Sale Price = -2,441,400 + 102.4 (total space)

R^2 = 0.838

Post-Metro Rail Equation (28 cases)

Metro Rail Distance: Slope = -4270
R^2 = 0.044
Significant at 71.8% level

Sale Price = 311,450 + 104.0 (office space)

R^2 = 0.54

Delta

Delta Value = 4,593,000 - 3940 (Metro Rail Distance)

R^2 = 0.074
95% Confidence Interval = -9600 to 1700
Significant at 83.7% level

Average Price Increase = $9.73/square foot
Increase due to Metro Rail = $0.72/square foot

3.1.2.4 Summary

The results of these three analyses have the same implications as those for total improved space. As the extreme cost cases are eliminated, the R^2 values for the pre-Metro Rail cases decrease from 0.938 to 0.838 and from 0.986 to 0.54 for the post-Metro Rail cases. However, the slope and significance levels of sale price regressed on distance to Metro Rail in the post-Metro Rail cases changes from -18,000 and 54.7% to -5900 and 96.0% when the cases with sale prices over $50,000,000 are eliminated.

In this instance, there are only 2 cases with a sale price less than $1,000,000 so that minimal impact is observed when these two cases are deleted. (See Section 3.1.2.3.) When the extremes are eliminated, the average price increase ranges from $9.87 to $9.73 per square foot. Multiplication by the appropriate R^2 value yields increases due to Metro Rail ranging from $0.46 to $0.72 per square foot.

3.1.3 Retail/Restaurant Space

The retail/restaurant space subset defined in this analysis consists of all parcels with retail/restaurant space greater than zero. The comments in Section 3.1.1 for total improved space apply to retail/restaurant space as well.

3.1.3.1 No Sale Price Restrictions

Pre-Metro Rail Equation (20 cases)

Sale Price = -1,359,600 + 100.6 (total improved space)

R^2 = 0.986

Post-Metro Rail Equation (27 cases)

Metro Rail Distance: Slope = -19,900
R^2 = 0.119
Significant at 92.2% level

Sale Price = -4,375,000 + 139.4 (total improved space)

R^2 = -.985

Delta

Delta Value = 6,073,900 - 3922 (Metro Rail Distance)

R^2 = 0.050
95% Confidence Interval -10,900 to 3100
Significant at 74.0% level

Average Price Increase = $16.38/square foot
Increase due to Metro Rail = $0.82/square foot

3.1.3.2 Sale Price Less than $50,000,000

Pre-Metro Rail Equation (14 cases)

Sale Price = 550,100 + 46.1 (office space)

R^2 = 0.713

Post-Metro Rail Equation (25 cases)

Metro Rail Distance: Slope = -4030
R^2 = 0.187
Significant at 96.9% level

Sale Price = - 6,587,000 + 71 (office space) + 2670 (GNP) - 2704 (freeway off ramp distance) + 123 (transit boardings)

R^2 = 0.920

Delta

Delta Value = 4,492,200 - 2147

R^2 = 0.142
95% Confidence Interval = -4400 to 300
Significant at 93.7% level

Average Price Increase = $32.76/square foot
Increase due to Metro Rail = $4.65/square foot

3.1.3.3 Sale Price Greater than $1,000,000 and Less Than $50,000,000

Pre-Metro Rail Equation (6 cases)

No analysis.

Post-Metro Rail Equation (21 cases)

Metro Rail Equation: Slope = -6260
R^2 = 0.210
Significant at 92.5% level

Sale Price = 11,352,400 + 69 (office space) - 4865 (freeway off ramp distance)

R^2 = 0.869

Delta

Delta Value = 6,709,600 - 3618 (Metro Rail distance)

R^2 = 0.168
95% Conference Interval = -8200 to 1000
Significant at 88.6% level
(Use Pre-Metro Rail Equation of Section 3.1.3.2)

Average Price Increase = $35.97/square foot
Increase Due to Metro Rail = $6.04/square foot

3.1.3.4 Summary

The results of the analyses are similar to earlier results. As extreme cost cases are eliminated, the R^2 values for the pre-Metro Rail cases decrease from 0.986 to 0.713 and from 0.985 to 0.869 for the post-Metro Rail cases. However, the slope and significance levels of sale price regressed on distance to Metro Rail in the post-Metro Rail cases changes from -19,900 and 92.2% to -4030 and 96.9% when the cases with sale prices over $50,000,000 are eliminated.

When the extremes are eliminated, the average price increase ranges from $16.38 to $35.97 per square foot. Multiplication by the appropriate R^2 value yields increases due to Metro Rail ranging from $0.82 to $6.04 per square foot.

3.2 CENTRAL CITY AREA OF BENEFIT ASSESSMENT DISTRICT A1

The Central City Area of Benefit Assessment District A1 includes the Chinatown and Little Tokyo CRA areas and the Central City East, Civic Center, Broadway, Spring Street, and Main Street CRA subareas within the CBD. Statistical analyses were carried out for retail/restaurant space, industrial and warehouse space, and for office space.

3.2.1 Retail/Restaurant

The retail/restaurant space subset defined in this analysis consisted of parcels with retail/restaurant space and no other land uses on the parcel.

Pre-Metro Rail Equation (35 cases)

Sale Price = -44,100 + 10.0 (transit alights) + 21.7 (retail/restaurant space)

R^2 = 0.332

Post-Metro Rail Equation (83 cases)

Metro Rail Distance: Slope = -912
R^2 = 0.168
Significant at 99.9% level

Sale Price = - 58,100 - 61.88 (Metro Rail Distance) + 18.4 (retail/restaurant space) - 58,100 (industrial employment)

R^2 = 0.627

Delta

Delta Value = 785,257 - 263.7 (Metro Rail distance)

R^2 = 0.0315
95% Confidence Interval - 590 to 60
Significant at 89.1% level.

Average Price Increase = $8.86/square foot
Increase due to Metro Rail = $0.28/square foot

3.2.2 Industrial/Warehouse Space

The industrial/warehouse space subset defined in this analysis consisted of parcels predominantly in industrial uses with a few parcels including some retail/restaurant space.

Pre-Metro Rail Equation (13 cases)

Sale Price = 100,540 + 32.5 (total improved space) - 30.8 (industrial/warehouse space)

R^2 = 0.880

Post-Metro Rail Equation (20 cases)

Metro Rail Distance: Slope = -217
R^2 = 0.0067
Significant at 27% level

Sale Price = 509,300 + 903.6 (total improved space) - 888.2 (industrial/warehouse space)

R^2 = 0.795

Delta

Delta Value = 1,435,800 - 222 (Metro Rail distance)

R^2 = 0.0077
95% Confidence Interval - 1470 to 1020
Significant at 29% level.

Average Price Increase = $32.13/square foot
Increase due to Metro Rail = $0.24/square foot

3.2.3 Office Space

The office space subset defined in this analysis consisted of parcels with office space making up 60% or more of the total improved space. Most of the parcels included some retail/restaurant space.

Pre-Metro Rail Equation (23 cases)

Sale Price = -535,640 + 6.1 (total improved space) + 99,057 (prime interest rate)

R^2 = 0.507

Post-Metro Rail Equation (23 cases)

Metro Rail Distance: Slope = 38.1
R^2 = 0.00008
Significant at 5% level.

Sale Price = -717,260 + 21.0 (total improved space) + 2012 (crimes)

R^2 = 0.351

Delta

Delta Value = 1,851,700 - 80.5 (Metro Rail distance)

R^2 = 0.00043
95% Confidence Interval - 1390 to 1230
Significant at 10% level

Average Price Increase = $22.36/square foot
Increase due to Metro Rail = $0.01/square foot

3.2.4 Summary

Of the three land use categories in the Central City Area of the CBD, only retail/restaurant space has results that may be considered significant. The pre- and post-Metro Rail equations have only moderate R^2 values (0.332 and 0.627 respectively). However, the distance to Metro Rail stations is more than 99% significant in the post-Metro Rail equations and 89% significant in the Residual equations.

In the cases involving industrial land uses, the pre- and post- Metro Rail equations have high R^2 values of 0.880 and 0.795 respectively but the distance to Metro Rail stations is significant at less than 30%. The increase in average prices is $8.86/square foot for retail/restaurant space and $31.13/square foot for industrial space. The increases due to Metro Rail are estimated at $0.28/square foot for retail space and $0.24/square foot for industrial space.

These very low significance levels do not imply that these land use spaces will not be benefitted by Metro Rail. At this time, the data relative to sale prices do not reflect an impact due to Metro Rail. After all, the opening of Metro Rail to revenue service is scheduled for sometime in 1993. The available data for office space provides little information on Metro Rail impact at this time. However, this situation may change as Metro Rail comes closer to operation.

3.3 WILSHIRE/ALVARADO STATION AREA

The Wilshire/Alvarado Station Area consists of Benefit Assessment District A2. Statistical analyses were carried out for total improved space, office space, and retail/restaurant space. The only other land use with enough cases to attempt an analysis is vacant land, however, the results were inconclusive and are not reported.

3.3.1 Total Improved Space

The cases included in this analysis involved parcels with total improved space greater than zero provided that the following land uses are equal to zero: hotel; service; vacant land; garage; industrial; residential hotel; and residential. Thus, the land uses associated with a given parcel are limited to office, parking lot, and retail/restaurant. This limitation applied to both the pre- and post-Metro Rail Analyses.

Pre-Metro Rail (44 cases)

Sale Price = 1,208,900 + 26.6 (office space) + 15.9 (total improved space) - 937,048 (foreign exchange rate)

R^2 = 0.930

Post-Metro Rail (25 cases)

Metro Rail Distance: Slope = -394
R^2 = 0.082
Significant at 83.6% level

Sale Price = -238,600 + 52.7 (total improved space) + 31.3 (parcel size)

R^2 = 0.834

Delta

Delta Value = 7,771,740 - 278.3 (Metro Rail distance)

R^2 = 0.068
95% Confidence Interval - 720 to 170
Significant at 79.2% level.

Average Price Increase = $26.87/square foot
Increase due to Metro Rail = $1.82/square foot

3.3.2 Office Space

The cases included in this analysis involved parcels with office space greater than zero. The only land uses associated with a given parcel are office space, parking lot space, and retail/restaurant space. This limitation applied to both the pre- and post-Metro Rail analyses.

Pre-Metro Rail (24 cases)

Sale Price = 1,060,100 + 43.96 (office space) - 1,408,854 (foreign exchange rate) + 158.3 (freeway off ramp distance)

R^2 = 0.962

Post-Metro Rail (14 cases)

Metro Rail Distance: Slope = -830
R^2 = 0.378
Significant at 98.1% level

Sale Price = -65,000 + 62.7 (total improved space)

R^2 = 0.832

Delta

Delta Value = 872,700 - 432.5 (Metro Rail distance)

R^2 = 0.185
95% Confidence Interval = -1000 to 140
Significant at 87.6% level

Average Price Increase = $11.11/square foot
Increase due to Metro Rail = $2.05/square foot

3.3.3 Retail/Restaurant Space

The cases included in this analysis involved parcels with retail/restaurant space greater than zero. Some of these parcels included non-zero values of office and parking lot land use while all other land uses have zero values. This limitation applies to both the pre- and post-Metro Rail analyses.

Pre-Metro Rail (33 cases)

Sale Price = -58,400 + 38.2 (office space) + 32.9 (parcel size) - 24.9 (parking lot space)

R^2 = 0.934

Post-Metro Rail (15 cases)

Metro Rail Distance: Slope = -335
R^2 = 0.037
Significant at 50.7% level

Sale Price = 50,750 + 60.1 (total improved space) + 43.1 (parking lot space)

R^2 = 0.884

Delta

Delta Value = 752,040 - 142.4 (Metro Rail Distance)

R^2 = 0.017
95% Confidence Interval - 790 to 500
Significant at 36% level

Average Price Increase = $40.4/square foot
Increase due to Metro Rail = $0.69/square foot

3.3.4 Summary

The analysis for total improved space in the Wilshire/Alvarado station area yielded pre- and post-Metro Rail models with high R^2 values of 0.93 and 0.83 respectively. The distance to Metro Rail stations is significant at the 79% level for the Delta value analysis. The increase in price that may be attributed to Metro Rail is $1.82 per square foot.

The results for office space showed R^2 values of 0.96 and 0.83 for the pre- and post-Metro Rail analyses respectively. The distance to Metro Rail stations is significant at the 98% level for the Delta value analysis. The increase in price that may be attributed to Metro Rail is $2.05 per square foot.

The results for retail/restaurant space are also impressive with R^2 values of 0.93 and 0.88 for the pre- and post-Metro Rail analyses respectively. However, the distance to Metro Rail stations is significant at the 36% level for the Delta value analysis. The increase in price attributed to Metro Rail is about $0.69 per square foot.

4.0 CONCLUSIONS AND COMMENTS

4.1 CONCLUSIONS

Several general conclusions may be drawn from this study:

1. The analysis of Delta values supports the contention that price escalation of properties in the vicinity of Metro Rail stations is partially the result of such proximity to Metro Rail.

2. The distance to Metro Rail stations is correlated with Delta values for the geographic area - land use activity pairs investigated in this study. For the six geographic area - land use activity pairs with a regression significant at the 70% level of higher, the R^2 values range from 0.025 to 0.185. (See Table 1.)

3. The sale price increases for these same six pairs range from $8.86 to $35.97 per square foot of total space. The price increases due to Metro Rail range from $0.28 to $6.04 per square foot. (See Table 1.)

4. The methodology reported on herein appears promising and shows encouraging results. While the results in some instances are not statistically significant and marginally significant in other instances, the overriding consideration is that in virtually every analysis carried out in this study, the results point in the same direction - namely, Metro Rail is responsible for at least a portion of the price increases measured for property sales after 1984.

4.2 COMMENTS

Several general comments are made relative to the conduct of the study.

1. Land use activity in the areas is quite diverse. Consider retail/restaurant space:

   a) Financial Area. Most of the retail/restaurant spaces are part of larger complexes. Thus, the data is a mix of 100% retail/restaurant space and parcels with 15% or less retail/restaurant space.

   b) Central City Area. Almost all of the cases are 100% retail/restaurant spaces with no other involved land uses.

   c) Wilshire/Alvarado Area. The retail/restaurant spaces vary from 10% to 100% of retail/restaurant space but about 40% of the cases include parking lot space.

TABLE 1

BENEFIT ASSESSMENT DISTRICTS FOR MOS-1 METRO RAIL SEGMENT
BEFORE AND AFTER STUDY COMPARISONS

BENEFIT ASSESSMENT DISTRICT AREA REPRESENTED		PRE METRO RAIL ANALYSIS		DELTA DIFFERENCE ANALYSIS				
		EQUATION	R SQUARED	SLOPE	LEVEL OF SIGNIF	R SQUARED	PRICE INCREASE AVERAGE $/SQ FT *	PRICE INCREASE DUE TO M.R. $/SQ FT **
A1-FINANCIAL AREA								
LAND USE	TOTAL IMPROVED SPACE	= -479,100 + 112.3*TOTAL SPACE	0.820	-2026	70.4%	0.025	$12.77	$0.32
	OFFICE SPACE	= -2,441,400 + 102.4*TOTAL SPACE	0.838	-3940	83.7%	0.074	$9.73	$0.72
	RETAIL/RESTAURANT	= 550,100 + 46.1*OFFICE SPACE	0.713	-3618	88.6%	0.168	$35.97	$6.04
A1-CENTRAL CITY AREA								
LAND USE	OFFICE SPACE	= -535,600 + 6.1*TOTAL SPACE + 99,057*PRIME INTEREST RATE	0.507	-80.5	10.0%	0.00043	$22.36	$0.01
	RETAIL/RESTAURANT	= -44,100 + 10*ALIGHTS + 21.7*RETAIL SPACE	0.332	-263.7	89.1%	0.0315	$8.86	$0.28
	INDUSTRIAL/WAREHOUSE	= 100,500 + 32.5*TOTAL SPACE - 30.8*INDUSTRIAL SPACE	0.880	-222.0	29.0%	0.0077	$32.13	$0.24
A2-WILSHIRE/ALVARADO								
LAND USE	TOTAL IMPROVED SPACE	= 1,208,900 + 26.6*OFFICE SPACE + 15.9*TOTAL SPACE	0.930	-278.3	79.2%	0.068	$26.87	$1.82
	OFFICE SPACE	= 1,060,100 + 44.0*OFFICE SPACE - 1,408,854*FOREIGN EXC RATE + 158.3*FREEWAY OFF RAMP DISTANCE	0.962	-432.5	87.6%	0.185	$11.11	$2.05
	RETAIL/RESTAURANT	= - 58,400 + 38.2*OFFICE SPACE + 32.9*PARCEL SIZE - 24.9*PARKING LOT SPACE	0.934	-142.4	36.0%	0.017	$40.40	$0.69

* This column represents the average sale price increase, for the indicated group of properties, between the Pre-Metro Rail and Post-Metro Rail time frames.

** This column represents the portion of the sale price increase due to the proximity of Metro Rail stations

The diversity implies that one must be careful in selecting the cases to be included in an analysis.

2. The same selection rules must apply to both the Pre- and Post-Metro Rail analysis. As an example, if there are 7 or 8 cases including parking garages in the pre- case group but none in the post- case group (or vice versa), little will be accomplished by including cases with parking garages in either analysis. In fact, the results may provide a distorted picture of Metro Rail impacts.

3. The data base has many missing data points in the cases. In some instances, the missing data results in the loss of half the available cases. However, the missing data is concentrated in a group of variables. These variables were not included in the analyses. These missing data should be included if available or the variable should be eliminated.

4. The data base includes a number of variables related to percent change from one year ago and the absolute change from one year ago for various economic indices. Such data is generally of little value in a regression analysis and should be considered for elimination from the data base. Other variables appear to be more involved with financing a purchase rather than with the purchase price.

5. Research should be performed on refining the list of variables to be included in the overall data base, on determining the most appropriate sale price ranges on which to conduct a regression, and a more precise definition of cases to be included in the regression. The selection of cases used in this analysis is rational and can be duplicated easily. A detailed investigation of outliers in the residual analysis could be very productive in refining and improving the pre-Metro Rail equations which are very critical to this procedure.

6. A process to measure the benefits associated with infrastructure development is a goal of many agencies. The continued development of this promising methodology is recommended.

APPENDIX A

REGRESSION ANALYSIS

APPENDIX A

REGRESSION ANALYSIS

The following discussion serves as a brief introduction to regression analysis.

A.1 DATA

Many samples of data are collected for univariate problems, i.e. the data refer to only one characteristic for a given observation. Statistics is a science concerned with the evaluation of a sample of data with the intention of making inferences relative to the parameters of the population from which the sample was taken and to test hypotheses about populations. As an example, one could collect a sample of automobile speeds, estimate the mean speed of the sample, and make inferences related to the mean speed of the population of auto speeds from which the sample was taken. Similarly, one could collect a sample of truck speeds and test the hypothesis that there is no difference between the mean speeds of automobiles and trucks.

The numerical values observed for each data point may be plotted on a scale as shown in Figure A-1(a). Each numeric value is termed a random variable and may be either a discrete random variable or a continuous random variable. Discrete refers to an outcome described by an integer such as the number of people in a passing automobile. If one observed the numbers of people in 50 passing cars, one could count the number of times one person was observed in a car and calculate the probability of observing one person by dividing the number by 50. The probabilities could be calculated for observing 1, 2, 3, 4 and 5 persons in a car and plotted on a histogram. A functional relationship which mathematically describes the histogram is called a probability distribution function. Probability functions associated with discrete random variables include the binomial, hypergeometric, Poisson and geometric distributions. Such distributions are useful in applications such as quality control and queuing theory. An example of a Poisson distribution is shown in Figure A-1(d).

Continuous random variables refer to outcomes observed over a continuum such as time, electric power consumption, or the price paid for real property. In a manner similar to that for discrete variables, one could calculate the probability of observing values within a given interval and plotting a histogram. A functional relationship which mathematically describes the histogram is called a probability density function. In reality, a function with certain attributes is selected and its "fit" with observed data is determined. Probability density functions associated with continuous random variables include the normal, uniform, beta, Weibull and exponential density functions. Important sampling distributions are the t, F, and chi-square distributions. Each of these distributions has particular application to phenomena characterized by the distributions. The typical bell shaped curve associated with the normal distribution is illustrated in Figure A-1(b). Figure A-1(c) shows a density function skewed toward one end of the domain of definition.

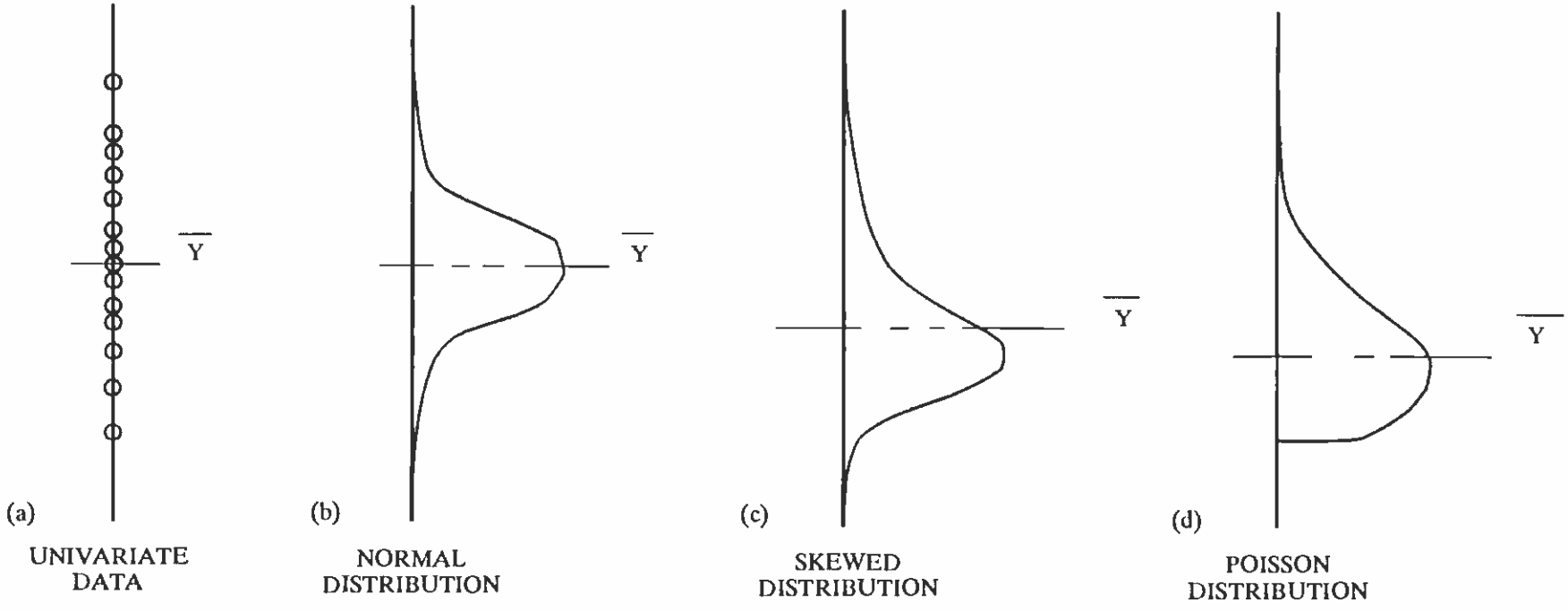


FIGURE A-1

UNIVARIATE DATA AND REPRESENTATIVE DISTRIBUTIONS

A.2 DESCRIPTIVE MEASURES

A probability density function has an associated measure of its center, the mean, and of its spread, the variance. The Greek μ and σ^2 are used to indicate the theoretical mean and variance of the density function while $\bar{y}$ and s^2 indicate the mean and variance of a set of observed data. The mean of a sample is defined as the sum of the observed y values divided by n, the sample size. The variance of n observations of y is defined as the average of their squared deviations from their mean, $\bar{y}$. The actual devisor is n-1 rather than n. Note that the sum of all deviations about $\bar{y}$ is zero and that a single y has no deviation. Thus, at least two observations are required to calculate deviations about the mean. Division by n-1 accounts for the degree of freedom used in calculating the mean. The numerator of the variance, the sum of squares of deviations about the mean, is termed the total sum of squares for y.

The standard deviation of y is defined as the square root of the variance. The mean and the standard deviation are the parameters which define the normal distribution. For a normally distributed random variable, the following distribution values apply:

1) 68.26% of the observations are within plus or minus 1 standard deviation of the mean.
2) 95.00% of the observations are within plus or minus 1.96 standard deviations of the mean.
3) 99.00% of the observations are within plus of minus 2.57 standard deviations of the mean.

The numbers of standard deviations in these 3 examples are termed the normal deviates and are symbolized by z. Tables of normal deviates are found in many textbooks.

The mean of a random sample taken from a normally distributed population is a random variable whose distribution has the mean μ and variance σ^2 divided by n. Thus, a sample of size n has mean $\bar{y}$ and standard deviation s while the distribution of sample means has mean $\bar{y}$ and standard deviation s divided by the square root of n. The standard deviation of sample means is usually referred to as the standard error of the mean.

A.3 ESTIMATION AND HYPOTHESES

The standardized mean is the statistic employed in developing interval estimates of population parameters and in testing hypotheses related to the parameters. The standardized mean is the difference between the sample mean, $\bar{y}$, and the population mean, μ, divided by the standard error of the mean. This statistic is distributed as the standard normal distribution for large values of n, the sample size. In the general case, the

value of σ is unknown and the sample standard deviation is used. For small values of n (less than 30), this statistic is distributed as t with n-1 degrees of freedom. When n = 30 or more, the statistic is approximately normally distributed and set equal to z, the normal deviate:

$$z = \frac{\bar{y} - \mu}{s/\sqrt{n}}$$

Some algebraic manipulation enables one to set up a confidence interval for μ. For large n, a 95% confidence interval for μ is given by :

$$\bar{y} \pm 1.96 s/\sqrt{n}$$

As an example, consider a sample of size 100 with a mean of 21.6 and a standard deviation of 5.1. A 95% confidence interval on the population mean is given by:

$$21.6 \pm 1.96 * 5.1/10,$$

and constitutes the interval from 20.6 to 22.6. It cannot be known with certainty if the population mean is included in this interval or not. However, the method used to construct the interval is 95 percent reliable and can be expected to work 95 percent of the time.

Many problems in analysis are concerned with more than merely the value of a parameter. A decision is sought as to whether the value exceeds a certain number, is less than a certain number, etc. The question is whether these statements (hypotheses) are true or false. In the above example, one could test the hypothesis that the population mean is equal to 21 against the alternative hypothesis that the population mean is not equal to 21. For these data, the hypothesis cannot be rejected and one is 95% confident that the population mean lies in the interval 20.6 to 22.6 which includes 21. On the other hand, one could test the hypothesis that the population mean is equal to 20.5. In this case the hypothesis can be rejected and one is 95% confident that the population mean represented by the sample is different from 20.5. The difference is said to be significant at the 95% level. One could test the hypothesis at the 99% confidence level by substituting the normal deviate, z = 2.57, in the above example. This produces an acceptance interval of 20.3 to 22.9 and the hypothesis cannot be rejected.

The fact that the hypothesis can be accepted or rejected at different significant levels illustrates that errors can be made in testing hypotheses. A true hypothesis can be rejected and a false one accepted. The analyst must assess the risks associated with these errors and devise a sampling program and testing procedure to minimize the risks and achieve appropriate results. Note that the sample size is an important factor. The larger the sample size, the smaller the standard error of the mean, and the smaller the interval involved in hypothesis testing.

A.4 REGRESSION ANALYSIS

In many problems, one is concerned with making predictions about certain operations or processes. This implies the development of a formula which relates the dependent variable (whose value one wants to predict) to one or more independent variables. A set of observations on y, the dependent variable, is plotted on a univariate scale in Figure 2(a). This distribution of y values is characterized by a mean, a variance, and a total sum of squares. For each y value, a value of x_1, is recorded. A plot of y versus x_1, is shown in Figure A-2(b). This plot indicates that some linear association between y and x_1, exists and that more information on the variability of y is available than provided by the univariate data set.

The analysis used to gain this additional information is regression analysis. The relationship of interest is between x and the mean of the distribution of the y's and is referred to as the regression of y on x. A linear relationship between y and x is expressed as:

$$y = a + bx$$

where:

y is the dependent variable,
x is the independent variable,
a is the intercept, the value of y when x is zero, and
b is the slope of the regression line, the change in y per unit change in x.

The problem is expressed as follows: there are n paired observations (x_i, y_i) for which a linear regression of y on x is assumed and the equation of the line which provides the best fit to the observed data is to be determined. Suppose y is predicted by the equation:

$$y'_i = a + bx_i$$

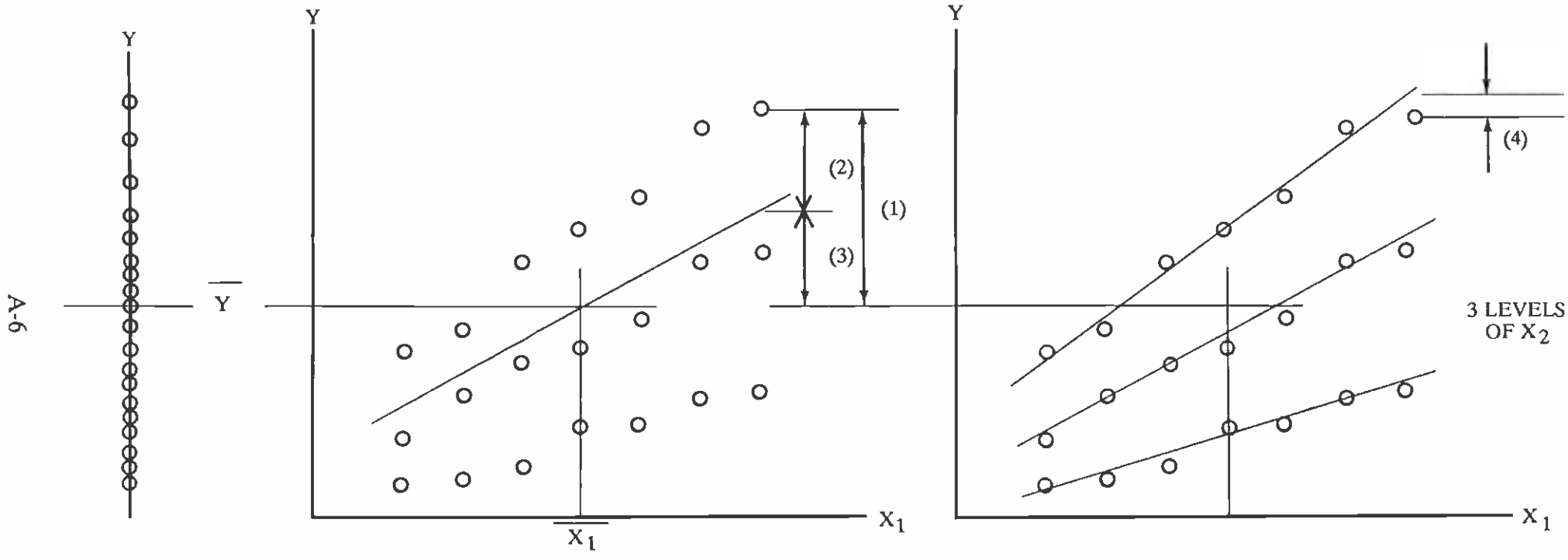
where a and b are constants and estimates of population parameters alpha and beta respectively. Obviously, the predicted value of y will seldom be equal to the observed value of y and the difference is m_i, the error term:

$$y_i - y'_i = m_i$$

The methodology consists of calculating a and b so as to minimize the error term. In this context, the sum of m_i over i = 1 to n can be made to equal zero by any of an infinite number of lines which pass through $\bar{y}$ because all positive and negative values cancel out. Thus, the sum of squares of the m_i is minimized instead.

The expression for the error term is:

$$m_i = y_i - y'_i$$



2(a) UNIVARIATE DATA

2(b) REGRESSION OF Y ON X_1

2(c) REGRESSION OF Y ON X_1 AND X_2

FIGURE A-2

ILLUSTRATION OF REGRESSION

and the expression for the predicted y is:

$$y'_i = a + bx_i$$

Substitution of the second expression into the first yields:

$$m_i = y_i - (a + bx_i)$$

This expression is squared, summed over i from 1 to n, and minimized. In Figure A-2(b) the following distances are observed:

(1) the deviation of the observed y from $\bar{y}$,
(2) the deviation of the predicted y from $\bar{y}$ (the amount of the deviation "explained" by the regression line),
(3) the deviation of the observed y from the predicted y, the error term.

The procedure is equivalent to minimizing the sum of squares of the vertical distances represented by (3) for all observations in the sample.

A condition under which the sum of squares expression is minimized is that the partial derivatives with respect to a and b are equal to zero. Completion of this step yields the normal equations:

$$SUM(y_i) = an + bSUM(x_i)$$

$$SUM(x_i*y_i) = aSUM(x_i) + bSUM(x_i^2)$$

in which summation is over i = 1 to n. For n paired observations of y and x, these equations are solved simultaneously for a and b. From a statistical standpoint, the method of least squares as outlined here provides the most reliable estimators of a and b because the least square estimators have the smallest variance.

Further study of Figure A-2(b) indicates that data on a second independent variable may provide even more information on the variability of the y's. In this instance, data is collected for n-tuples of observations for y and each independent variable included. The procedure is the same. A linear model of the form:

$$y = a + b_1x_1 + b_2x_2$$

is assumed. An expression for the error term is formulated, squared and summed. Partial derivatives with respect to a, b_1, and b_2 are taken and equated to zero. The resulting set of 3 normal equations is solved simultaneously for the least square estimates of a, b_1, and b_2. The result is illustrated in Figure A-2(c) which shows a family of 3 lines, each showing the relationship between y and x_1 for 3 different levels of x_2. Note the reduction in the error term from distance (3) in Figure A-2(b) to distance (4) in Figure A-2(c). Thus, a

very substantive portion of the variability in the y's is explained by the additional information provided by x_1 and x_2.

In the example data illustrated in Figure A-2, the values of x_1 and x_2 appear to be selected at certain predetermined levels. Data coding procedures are available for reducing the amount of computation required for fixed values of the x's. In the general case, however, the x's as well as the y's are samples of random variables. If this were the case, the data in Figure A-2 would not look quite so obvious with respect to the 3 levels of x_2 although the information provided by x_2 could be just as valuable. For this reason, the statement above that Figure A-2(c) shows a family of 3 lines is not strictly correct. The correct interpretation is that of a surface and must be visualized in 3 dimensions. For 3 or more independent variables, the interpretation is very difficult because visualization must be in 4 or more dimensions.

A.5 SOME REGRESSION STATISTICS

The least squares procedure provides estimates of population parameters such as the intercept and the slopes associated with each independent variable. In order to make inferences about population parameters, the major requirements are the standard errors of the statistics. The population variance of the errors is not known but must be estimated. The error term is defined as the difference between the observed and predicted values of y. This error term is referred to as the residual. The estimate of the population variance of the errors is the sum of squares of residuals divided by n-p-1 where p is the number of independent variables in the estimating equation. In every case, the number of degrees of freedom is reduced by 1 due to the estimate of $\bar{y}$ (as explained earlier) and by 1 for each estimated slope for the independent variables. The positive square root of the estimated population of errors variance is the standard error of the estimate or alternately, the standard deviation of the residuals.

The standard errors for the intercept and slopes are calculated in terms of the standard error of the estimate. Then, confidence intervals can be calculated and hypotheses tested just as described in Section A.3. Recall that 95% confidence means that if a large number of samples are taken from a population and 95% confidence intervals are calculated for each sample, 95% of the confidence intervals will include the unknown population parameter.

The total sum of squares for y is partitioned into two components, the regression sum of squares and the residual sum of squares. This procedure is referenced to Figure A-2(b). The total sum of squares refers to the squares of deviations represented by distance (1). The regression sum of squares refers to the squares of deviations represented by distance (2). The residual sum of squares refers to the squares of deviations represented by distance (3). The mean square for regression is calculated by dividing the sum of squares for regression by p, the degrees of freedom for regression. The mean square for residuals is calculated by dividing the sum of squares for residuals by n-p-1, the degrees of freedom for residuals. The ratio of the mean square for regression to the mean square for residuals is distributed as the F-statistic with p and n-p-1 degrees of freedom. The probability of

observing this value of F is calculated. If the F-statistic is large, the probability associated with F is small and a hypothesis of no linear relationship is rejected. If the F-statistic is small, the probability will be large and the hypothesis may be accepted. Most often, the probability level for acceptance/rejection is set at 0.05 for 95% confidence in the result. In this context, the probability level is called the significance level.

A common measure for the goodness of fit of a linear model is the coefficient of determination, R^2. R^2 is the proportion of the variability in the dependent variable explained by the linear model:

$$R^2 = \frac{\text{Regression Sum of Squares}}{\text{Total Sum of Squares}}$$

An assumption in regression analysis is that the residuals (difference between observed and predicted y's) are random variables which are normally and independently distributed with a mean of 0 and a common variance described above as the population of errors variance. The normality assumption is tested by application of the Chi Square Goodness of Fit test or the more powerful Kolmogorov Smirnov Goodness of Fit test. The Null Hypothesis is that the observed distribution of residuals is normal while the alternate hypothesis is that the distribution of residuals is not normal. In applications such as this, one is more concerned with showing that the observed and theoretical distributions are the same rather than that they are different. In order to show a difference, one wants the confidence level to be quite high, say 95% or 99%. For a goodness of fit test, one wants the confidence level to be quite low to show that no difference exists. However, in applications involving the normal distribution, acceptance of the Null Hypothesis would be satisfactory even at a very high confidence level as 99%.

When there are several independent variables in a regression analysis, there must be a procedure for entering the first independent variable, for entering subsequent independent variables, and for terminating the procedure. In the procedure, the F-test for the hypothesis that the coefficient of the entering variable is zero is calculated and the probability of observing such an F value is determined. The first variable to enter the equation is the one with the smallest probability associated with the F-statistic, called the probability to enter. The analyst must set a default value of probability to enter, say 0.05. After the first variable has entered, all the F-statistics must be recalculated because of the change in degrees of freedom associated with the regression and the residual sum of squares.

In effect, there are 3 general procedures for selecting variables:

1) Forward Selection. After the first variable is selected, the process continues until all variables not yet in the equation have probabilities in excess of 0.05, the default value.

2) Backward Elimination. The first step in backward selection is to include all independent variables in the model and sequentially remove them. The first variable to be removed is the one with the lowest F value or highest probability associated with the F-statistic called the probability to remove, say 0.10. The process continues until all variables remaining in the equation have probabilities less than or equal to 0.10.

3) Stepwise Selection. Stepwise selection is the most common method used. The procedure begins exactly as forward selection to the point where two variables are in the equation. The variables in the model are examined for removal as in backward elimination. If none can be removed, the variables not in the model are examined for possible entry. The process continues until no variables can be removed and none can be entered. After each variable entry or removal, the F-statistics must be recalculated.

Another source of concern is the number of observations to have in an analysis, i.e. the number of related n-tuples of observed data. This is a difficult question to answer. In general, the more data the better but the costs of acquiring and analyzing data can far outweigh the benefits of the added information. In order to provide confidence intervals or test hypotheses for a statistic, it is required to estimate the standard error of the statistic which is the standard deviation divided by the square root of n. Thus, four times the samples are required to halve the standard error of the statistic. The determination of sample size is thus a function of several factors:

1. The risk associated with making a Type I error (rejecting a true hypothesis) or a Type II error (accepting a false hypothesis).

2. The precision that may be required such as measurements within plus or minus 1% of the population mean.

3. The desired magnitude of the standard error of the statistic.

In many cases, pilot studies are performed in order to resolve some of these issues.

In closing this discussion, two pitfalls are presented. This report has focused on linear regression. In instances, the strength of a linear relationship may be questioned although strong nonlinear relationships may exist. The second and more important point is that a significant linear relationship does not necessarily imply that a causal relationship exists between the random variables. Two variables may appear related because of their causal relationship to a third variable. For example, candy sales may be highly related to the crime rate only because both are functions of population.

APPENDIX B

TECHNICAL MEMORANDUM 88.4.1

METRO RAIL BEFORE-AND-AFTER STUDY:

ANALYSIS OF POTENTIAL MONETARY BENEFIT INDICATORS, IDENTIFICATION OF POTENTIAL DATA SOURCES AND EVALUATION OF DATA USEABILITY

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TECHNICAL MEMORANDUM 88.4.1

METRO RAIL BEFORE-AND-AFTER STUDY: ANALYSIS OF POTENTIAL MONETARY BENEFIT INDICATORS, IDENTIFICATION OF POTENTIAL DATA SOURCES AND EVALUATION OF DATA USEABILITY

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TABLE OF CONTENTS

1. PURPOSE

1.1 INTRODUCTION

The purpose of the Los Angeles Metro Rail Before-and-After Study is to examine monetary benefits which accrue over time to owners of property located in the vicinity of Metro Rail stations. The study will attempt to isolate, to the extent possible, the benefits which are directly attributable to the Metro Rail system.

Observation of land use and economic impacts in other cities with modern rail transit systems illustrates that certain monetary benefits can be expected to accrue to owners of property located in rail station areas. As such, the theory of value capture holds that it is reasonable for the public sector to recover some of those monetary benefits and use them to finance, in part, the project which is responsible for their occurrence. In 1983, the California State Legislature declared that "rail rapid transit facilities and services provide special benefits to parcels of land, and improvements thereon, in the vicinity of rail rapid transit stations" (Public Utilities Code Section 33000) and authorized the Southern California Rapid Transit District (SCRTD) to levy special benefit assessments on properties which can be expected to benefit from the Metro Rail project.

The Los Angeles Metro Rail Before-and-After Study will attempt to advance the state of the art in benefit measurement through the scientific analysis of benefits that occur over time in the vicinity of Metro Rail stations. This analysis should allow for refinement and isolation of which potential monetary benefits can reasonably be expected to occur, the degree to which they can be expected to occur, where they will occur and who can be expected to receive them.

The study will also attempt to identify factors which may allow for the prediction of benefits which can be expected to occur. The state of the art in benefit measurement does not currently allow for prediction of potential benefits on a parcel-level basis. The study will attempt to determine whether a methodology to accomplish this is possible. Because of the multitude of factors which can potentially influence the benefits received by an individual property owner and the complexity of their interactions, this outcome remains problematical. At a minimum, the study should result in greater understanding of the process by which benefits are derived, which should in turn allow for refinement of assessment formulas and boundaries for future Metro Rail benefit assessment districts.

The following tasks will be undertaken for the Before-and-After Study:

1) Identify Indicators of Benefit and Determine Area of Coverage
2) Identify Potential Sources of Data
3) Evaluate Useability of Data
4) Refine Indicators and Areas of Coverage
5) Design Data Base and Possible Analysis Methodologies
6) Compile Data Bases and Establish Update Procedures
7) Analyze Data and Develop Prototypical Case Studies

1.2 SUMMARY

This technical memorandum presents the findings of Tasks 1, 2, and 3 of the Before-and-After Study.

Task 1 was designed to accomplish the following:

- o identify potential benefit indicators;
- o determine the geographic area to be studied; and
- o consider the feasibility of potential control areas for the analysis.

A comprehensive list of the most promising benefit indicators was identified for later evaluation. The goal of this process was to generate a list of all possible benefit indicators that might be considered for future evaluation in Task 4 of the Study. Therefore, it is not expected that all the benefit indicators identified for the comprehensive list will actually be used in the study. The findings of this analysis are contained in Chapters 2 and 3 of this report.

In addition, alternative geographic boundaries for the area to be studied were considered in Task 1, including both the MOS-1 benefit assessment districts as a whole and potential sub-areas within the districts. This was considered necessary because the Central Business District in particular contains a number of distinct neighborhoods with unique demographic, economic and social patterns. As such, these various sub-units may need to considered individually. Finally, the feasibility of identifying control areas for comparison of the benefits observed in the benefit assessment districts was examined. These results are contained in Chapter 4 of this report.

Tasks 2 and 3 of the Before-and-After Study were designed to identify potential sources of data and evaluate that data for useability. This technical memorandum describes the Before-and-After Study data source identification and evaluation process and presents the results of that evaluation. The results will be used in the next step of the study to finalize the list of indicators of benefit and sources of data to be used in the Before-and-After Study.

Sources of data included available public data as well as special tabulations and paid private data sources. A comprehensive telephone and personal contact search was also conducted to collect a sample of each data set to be used in the evaluation process. Seven key characteristics were established to evaluate each data set. In addition to these basic characteristics, the characteristics unique to each data set were also identified. The methodologies and results obtained by this analysis are contained in Chapters 5, 6 and 7 of this report.

2. IDENTIFICATION OF POTENTIAL INDICATORS

2.1 MONETARY BENEFIT INDICATORS -- METHODOLOGY AND SELECTION CRITERIA

It is important from the outset to distinguish between monetary benefits and other benefits provided by the Metro Rail system. Monetary benefits are benefits which can be translated into direct monetary and financial gain to the property owner. These include, for example, increased lease rates, increased occupancy rates and increased property values. To the maximum extent possible, this study will focus on monetary benefits.

A comprehensive list of potential indicators of monetary benefit was developed using two criteria: 1) indicators of monetary benefit identified in the development of the MOS-1 benefit assessment districts and 2) other indicators which translate into direct monetary gain.

2.1.1 Indicators Used in the Establishment of MOS-1 Benefit Assessment Districts

The MOS-1 benefit assessment districts were established after an extensive community consultation and consensus building process, during which SCRTD worked with a Benefit Assessment Task Force of 33 public and private sector members. That process included a detailed examination of the legal precedents set by similar public works projects in California and other states as well as the identification of certain monetary benefits expected to accrue to landowners as a result of proximity to a Metro Rail station. These benefits were identified from the examination of land use and economic impacts of rail transit systems observed in other North American cities. The benefits identified to the Task Force were included on the list of potential indicators in order to draw on prior knowledge of potential benefits and to enhance previous work done in this area.

2.1.2 Other Monetary Benefits to Landowners

In addition to benefits identified in the process of establishing the MOS-1 benefit assessment districts, attempts were undertaken to identify other potential benefit indicators which measure actual monetary benefits to landowners. Keeping in mind the distinction between monetary benefits and other benefits of Metro Rail as described above, the available literature concerning monetary benefits was reviewed and found to be limited for the purpose of identifying potential indicators. While the research concerning the impacts of transit on urban form and location decisions, for instance, is relatively vast, the research of transit-related monetary benefits is somewhat more limited and includes the following:

1) The BART Impact Program: Land Use and Urban Development Project (1979) examined regional retail sales trends, residential property prices in six station areas, residential rents in two station areas, office rents in three areas, and commercial property prices in one area.

2) The Transit Impact Monitoring Program conducted by the Atlanta Regional Commission examined residential and commercial sales activity and land value appreciation (1979 through 1982) and provided one report (1979) which provides detailed information concerning office occupancy rates and rental rates throughout the metropolitan area. ARC also conducted attitudinal surveys of Atlanta merchants located in station areas to assess their perceptions of potential benefit of the transit system.

3) A study conducted for the Committee on Banking, Finance and Urban Affairs of the U.S. House of Representatives (1981) examined residential sales prices in two station areas and commercial sales prices in one station area of the Washington, DC Metrorail system.

4) A study by the Dade County (Florida) Department of Property Appraisal (1983) examined property values in station areas of the Miami Metro Rail system.

5) A study of the Philadelphia-Lindenwold High-Speed Line in New Jersey examined residential sales prices in the vicinity of the transit line (1972).

Additional review of the literature of land economics and development finance theory was undertaken to identify additional potential indicators. The comprehensive list was expanded to identify all possible monetary benefits which could result from Metro Rail, including potential benefits to tenants and consumers as well as property owners. This analysis was intended to generate a complete list of potential indicators for every anticipated benefit. This list will then be evaluated later in the study (Task 4) using the findings regarding data availability and other considerations of useability of data (Task 3).

2.2 POTENTIAL MONETARY BENEFIT INDICATORS

Using these criteria, eight potential indicators were identified for use in measuring monetary benefits. These eight should be effective in isolating and quantifying monetary benefits to private property owners which can be attributed to the Metro Rail project. Some indicators, such as property value increases, measure direct benefits to property owners. Other indicators, such as increases in retail sales, measure benefits to building tenants which in turn benefit property owners.

The eight indicators, and possible sub-components, are:

1) Property Values
   a) Number of sales
   b) Value of sales

2) Occupancy Rates

3) Lease Rates

4) Development/Redevelopment Activity

a) Changes in intensity of land use permitted
b) Absolute changes in land use such as changes in building usage from wholesale to retail, as well as new construction
c) Improvements to buildings which indicate an owner's willingness invest in their property for upgrading
d) Permitting activity including review activity by CRA
e) Construction activity

5) Retail Sales

6) Parking Costs

7) Non-retail Business Activity

8) Benefits to Employees and Clients

2.2.1 Property Values

Property value increases include increases of the value of the land and the value of the improvement and constitute a benefit to the property owner. Property value increases in California will likely be best measured by current sales prices. Consistent with Proposition 13, assessed values are simply increased two percent per year, and are not adjusted to reflect current market value unless the property is sold.

2.2.2 Occupancy Rates

Occupancy rate increases directly benefit property owners because they result in increased revenue without increased investment.

2.2.3 Lease Rates

Like occupancy rates, lease rate increases directly benefit property owners. Lease rates provide a very sensitive, timely measure of benefits, because they typically are re-negotiated periodically, whether or not a building is sold.

2.2.4 Development/Redevelopment Activity

Increased development/redevelopment activity generates benefits for the individual properties which are developed and generally contributes to improved property values in the surrounding areas. As the manifestation of the market response to the transit system, examination of development and redevelopment activity will measure the extent to which the Metro Rail system enhances existing markets. Development/redevelopment activity to be measured will possibly include:

- Renovation
- New construction
- Increased permitted density
- Changes in use
- Transfer of development rights
- Other Public Investment

In addition, the synergy between development activity in different areas of the Central Business District will be examined to the extent possible (e.g., to determine whether increased development in the financial district may also lead to supporting development elsewhere, such as Central City East.)

2.2.5 Retail Sales

Increased retail sales directly benefit retail tenants, and in turn should lead to increased retail lease rates.

2.2.6 Parking Costs

Parking cost decreases attributable to Metro Rail may be manifested in two ways. First, real estate development costs may be reduced because of lowered requirements to provide on-site parking. In that case, space that otherwise would be used for parking could be made available for revenue-generating activity, directly increasing the value of the development. Second, after the project becomes operational, visitors and employees who use Metro Rail will not pay parking costs.

2.2.7 Non-Retail Business Activity

Professional services as well as wholesale business activity may increase as a result of increased access because of Metro Rail service. These increases should also contribute to property values in surrounding neighborhoods.

2.2.8 Employee/Client Benefits

Employees, customers and clients will realize benefits in travel-time savings and reduced transportation costs. Economic theory states that these savings are partially passed on as benefits to business owners.

2.3 ADDITIONAL DATA WHICH ESTABLISH THE CONTEXT FOR EVALUATION OF BENEFITS

In addition to observing indicators of actual monetary benefit to property owners, it should prove useful to evaluate other economic and social conditions which could affect the monetary benefits generated by Metro Rail. It is important to recognize that factors other than Metro Rail might be responsible for observed changes in monetary benefits. For example, significant increases in unemployment might result in lowered retail sales overall, even if increased pedestrian traffic attributable to Metro Rail has a positive effect on retail sales.

It is therefore necessary to examine the collection of supporting data which may be used to control for these other factors. This should allow the monetary benefits of Metro Rail to be isolated from the impacts of other factors to the maximum practicable extent. There are many of these exogenous factors which can impact the benefits received by property owners, including:

1) Perceptions of the Metro Rail System, including quality and quantity of service, and the phase-in schedule for construction and operations;
2) Improvement in accessibility and mobility resulting from the Metro Rail system, including improvement in travel times and the extent to which Metro Rail induces commuters to use transit rather than private automobiles;
3) Station Area factors, including parking, traffic, accessibility, surrounding land use, land availability, assemblage, condition of existing structures, surrounding demographics;
4) Political factors, including neighborhood responses to development and the influence of neighborhood organizations;
5) Property owner actions, which are influenced by the property owner's financial condition, goals and business approach;
6) Public policy, including plans, zoning, growth controls, and location of public buildings;
7) Market factors, including local and regional economic conditions, and perceptions of the development community; and
8) Economic factors, including accessibility to the labor force, degree of reliance of the labor force on public transit, the location of associated and supporting firms, and cost of relocation, which can influence the rate at which firms migrate in or out of station areas.

Data which can be used to establish a context in which to evaluate conditions and to control for extraneous factors have been identified and are discussed below.

2.3.1 Potential Data Reflecting Private Sector Conditions

Economic and social conditions in the private sector establish the base of activity levels which Metro Rail is expected to affect in a positive manner. The following potential data will be used to monitor basic changes in these conditions:

- Total number of employed persons by job classification;
- The unemployment rate;
- Average disposable income;
- The consumer price index;
- The prime interest rate;
- The index of industrial production and Gross National Product.

2.3.2 Potential Data Reflecting Public Policy Conditions

Public policy changes can have dramatic effects on development and other real estate activities. Any changes in public policy must be carefully evaluated in the interpretation of monetary benefit indicators. The following data will potentially be used to track the impact of public policy:

- o Permitted land use intensity;
- o Adopted plans;
- o Changes in the Building and Safety Code;
- o Public investment (excluding Metro Rail);
- o Mandated parking requirements;
- o Assemblage of land by public agencies.

2.3.3 Potential Data Reflecting Station Area Conditions

Conditions in station areas will influence the development which can occur and thus may influence the benefits which may be received. The following data may potentially be used to evaluate the influence of station area conditions:

- o Traffic conditions;
- o Parking supply and demand;
- o Existing land use, availability and assemblage;
- o Demographics;
- o Influence of neighborhood organizations.

2.3.4 Other Information to be Considered

Other information to be considered in the analysis of monetary benefits may include:

- o Metro Rail passenger attitude surveys;
- o Political environment, particularly with regard to attitudes of elected officials regarding the location of growth;
- o Relocation costs to business as a factor in their relocation decisions.

2.4 DESCRIPTIVE INFORMATION INCLUDED FOR EACH INDICATOR

To meaningfully interpret an indicator, it is essential to have descriptive information about each observation. For this study, a data base will be created which will track each indicator according to:

- o time period of observation;
- o location of property;
- o land use at time of observation.

A potential difficulty in the collection and interpretation of data is the problem of making uniform comparisons across differing types and sources of information. For example, it is likely that different agencies will collect location information at varying degrees of disaggregation, ranging from street address to block to census track to zip code, and so forth. Time period of observation may also vary. For instance, some data may be kept for calendar year while others may be kept by fiscal year. Specific information on type of land use is similarly likely to vary. The purpose of maintaining a complete description of each indicator with regard to time period, location and land use is to enable a more accurate accounting of actual monetary benefits.

3. INDICATOR SELECTION AND EVALUATION

3.1 INITIAL CONSIDERATIONS REGARDING INDICATORS

During the research design phase, there are a number of unknowns which could affect study results. The following basic considerations will serve as guidelines for the collection and analysis of data as the study progresses.

3.1.1 Disaggregation of Data

All data will be maintained at its highest level of disaggregation. This procedure allows maximum flexibility and information from disparate data sources. During the analysis, data will be combined to conform to the study design as indicated.

3.1.2 Collection of Historic Data

Every effort will be made to collect historic data, if available. When the availability of historic data has been determined, an evaluation will be made as to study design.

3.1.3 Surrogates May Be Used for Some Potential Indicators

Some potential indicators may not be directly measurable. In that case, surrogates may be substituted for identified indicators.

3.2 EVALUATION OF INDICATORS

The following section provides a brief overview of some of the problems and pitfalls which should be avoided to the extent possible in the design of the study and the selection of benefit indicators. The data sources identified in Task 2 will be evaluated against these potential problems in Task 3 in order to evaluate the useability of data.

3.2.1 Obsolete Information

A potential data source would be judged non-usable if:

- o the information provided was too old to be a reliable representation of current reality;
- o the original concept used to develop the theory or idea has become obsolete;
- o the data collection agency operates under biased or rigid concepts.

3.2.2 Incompatible and Unorganized Information

Even when two sets of data deal with similar topics, they may fail to exhibit a "common denominator" in terms of definition, time period, location, area, etc. Information exists in a variety of forms so that it is difficult to aggregate, correlate or compare data sets for analysis purposes.

3.2.3 Information which cannot be disaggregated

Information which cannot be disaggregated sufficiently to yield specific information concerning sub-areas, sub-populations or shorter periods of time may not be useful. To minimize this problem, during the data gathering phase, this study will keep all data at its highest level of disaggregation.

3.2.4 Missing Information

An obvious type of non-usable information is missing information. Many of the previously stated reasons contribute to a scarcity of information. Two additional reasons for missing information are: (1) the potential for invasion of privacy of individuals, and (2) the cost of collecting certain kinds of information.

4. GEOGRAPHICAL AREAS FOR WHICH BENEFITS ARE TO BE MEASURED

4.1 LOCATION AND DESCRIPTION OF MOS-1 BENEFIT ASSESSMENT DISTRICTS

Initially, benefits to properties located within the benefit assessment districts for the Central Business District (A1) and Wilshire/Alvarado (A2) areas will be measured during this phase of the Before-and-After study. Figure 1 shows the boundaries of these benefit assessment districts. Walking distances from the Metro Rail station centers were the primary determinants of the proposed benefit assessment district boundaries. A set of rules regarding the inclusion or exclusion of city blocks, the consideration of barriers to walking and the adjustment of boundaries for irregular shapes was applied in concert with the walking distances to define the benefit assessment district boundaries. A half-mile walking distance for the CBD and one-third mile walking distance for the Alvarado station were used, measuring walking distances along street center lines from the center of the stations.

4.2 POTENTIAL SUB-AREAS WITHIN MOS-1 BENEFIT ASSESSMENT DISTRICTS

A number of sub-areas exist within the boundaries of the MOS-1 benefit assessment districts. These areas have distinctive patterns of demographics, business activities, employment, property values, development activities or are used for various planning purposes. To perform a meaningful analysis, it is possible that data on sub-areas should be considered separately. Potential sub-areas for further investigation are:

- o Center City East
- o Little Tokyo
- o Bunker Hill
- o Chinatown
- o Central Business District (CBD)
- o Wilshire/Alvarado

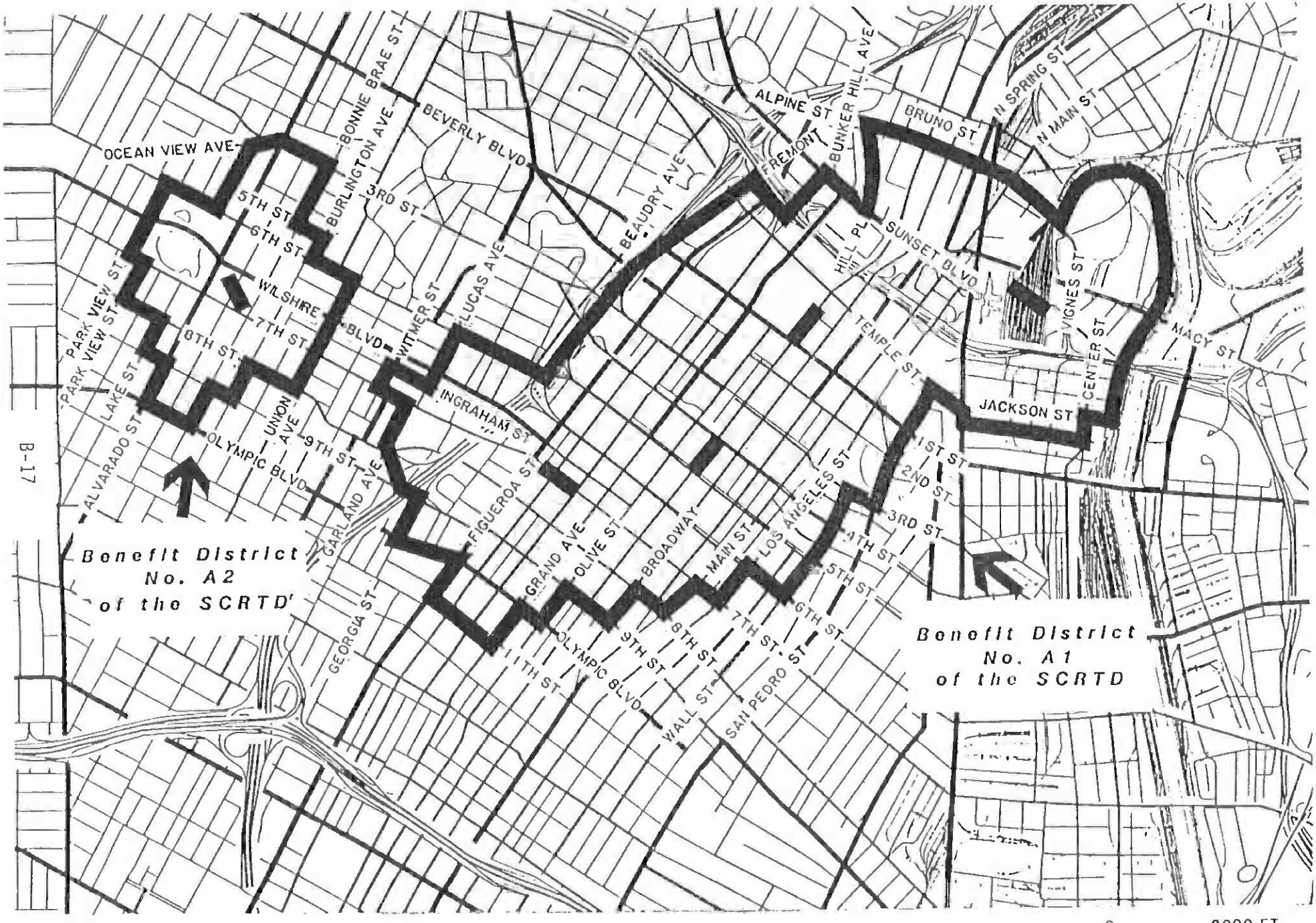
Little Tokyo, Bunker Hill, Chinatown and the CBD have been targeted as redevelopment projects by the Community Redevelopment Agency (CRA).

4.3 FEASIBILITY OF ESTABLISHING CONTROL AREAS FOR BENEFIT MEASUREMENT

The use of control areas for comparison allows for greater isolation of the monetary benefits to property owners which are attributable to Metro Rail. However, in order to be valid, a control area must be very similar to the study area in all major social, economic, transportation (excluding Metro Rail) and public policy characteristics. Specifically, the following characteristics were identified to evaluate possible control areas for the MOS-1 benefit assessment districts.

4.3.1 Accessibility

Excluding Metro Rail, a control area should have similar public and private transportation accessibility. Freeway access should be comparable, as should bus access on surface streets.



B-17

FIGURE 1

BENEFIT ASSESSMENT DISTRICTS

4.3.2 Land Use

Land use patterns in a control area should be similar to those in the study area in terms of both mix and intensity.

4.3.3 Property Values

Current property values in a control area should be at a similar level. Recent trends in property values should be changing in the same direction and at similar rates as within the benefit assessment district.

4.3.4 Lease Rates

Lease rates in a control area should be at similar levels. Recent trends in lease rates should be changing in the same direction and at similar rates as the benefit assessment district.

4.3.5 Occupancy Rates

Occupancy rates in a control area should be similar to those in the benefit assessment district. Availability by land use category (office, retail, parking, etc.) should be similar to the benefit assessment district.

4.3.6 Public Policy

The intent and execution of public policy goals in a control area should be similar. Levels of public investment and commitment to change should have a similar priority for the involved government agencies, particularly if an area has been identified for redevelopment.

4.4 ISSUES CONCERNING POTENTIAL CONTROL AREAS FOR MOS-1 BENEFIT ASSESSMENT DISTRICTS

4.4.1 Central Business District - Benefit Assessment District A1

Applying these criteria for designating control areas, it becomes apparent that the downtown Los Angeles central business district (CBD) has many unique attributes not replicated anywhere in Southern California. Although intense business activity occurs in other areas of the region (including the LAX area, Century City, downtown Long Beach), none matches the concentration, mix and diversity of activities which occur in downtown Los Angeles.

Downtown Los Angeles is a center of government. The CBD benefit assessment district includes major city, county, state and federal facilities. Los Angeles City Hall is located here, as are the offices of the County Board of Supervisors. The major Los Angeles City and County administrative offices are concentrated in this area. Municipal, state and federal court houses are all located in the CBD. Major national and local law firms are headquartered downtown.

Downtown Los Angeles is also a center of finance. Major banking and other financial activities are concentrated in downtown Los Angeles. The Security Pacific Bank and the Bank of California are headquartered here, and Bank of America, the Wells Fargo Bank, First Interstate Bank, Union Bank and Citicorp all have major office buildings in the CBD. The Pacific Stock Exchange is located here. Downtown Los Angeles is becoming a center of international finance for the Pacific Rim.

Downtown Los Angeles is also a center for cultural activity, arts, entertainment and information. The two major newspapers, the Los Angeles Times and the Herald-Examiner, are both located downtown. The Dorothy Chandler Pavilion, The Ahmanson Theater, the Mark Taper Forum, and the Los Angeles Theater Center are a few of the major cultural attractions located within the CBD benefit assessment district. Downtown Los Angeles is also the location of Chinatown, Little Tokyo, El Pueblo State Historic Park and the Broadway shopping district, all of which serve as centers of ethnic and cultural activity.

Downtown Los Angeles is also a center of commercial and retail activity. Bullock's Department Stores are headquartered here, and most major department chains in California have outlets. The CBD has the largest concentration of office space in the region. The garment district located in the CBD is the main wholesale garment center in Southern California. The CBD is also a center of wholesale and manufacturing activity in the areas of jewelry, toys, flowers, seafood and produce.

Downtown Los Angeles is also a transportation center. More major freeways intersect near downtown Los Angeles than any other area of the city. The Santa Monica, Harbor, Pasadena, Golden State, and Hollywood Freeways all serve the downtown area. Union Station serves as a major focal point for rail passenger and freight traffic.

Downtown Los Angeles is also a major focal point of government programs and investment. The Central Business District Redevelopment Project represents the largest scale of redevelopment activity and financial commitment by the Community Redevelopment Agency anywhere in the City.

In short, nowhere in Southern California, and possibly in the United States, is the synergy of economic, social and political activity of downtown Los Angeles replicated, even on a smaller scale. For this reason, the criteria outlined in Section 4.3 above are not likely to be met and the establishment of a control area for the CBD benefit assessment district would appear to be infeasible. To compensate for this, benefits may be measured as a function of distance and a correlation of distance to the nearest Metro Rail station may give evidence of a causal relationship.

4.4.2 Wilshire/Alvarado - Benefit Assessment District A2

Alternatively, it may be possible to identify a reasonable control area for the Wilshire/Alvarado benefit assessment district. The demographics, land use patterns, public policy and accessibility of the Wilshire/Alvarado area may be replicated in other areas of the City.

Investigations will be made of the Echo Park and Highland Park areas on the basis of criteria identified above. If one of these areas is judged to be similar to the Wilshire/Alvarado area, it will be recommended for use as a control area.

5. IDENTIFICATION OF DATA SOURCES

Using the list of potential indicators and geographic areas developed in Task 1, a search was initiated under Task 2 for data sources which could conceivably be used to measure the indicators. An initial list of potential data sources was identified by staff familiar with the benefit assessment program. That list was subsequently augmented by suggestions from the SCRTD Librarian. Key agencies such as the Los Angeles City Planning Department and the Community Redevelopment Agency were interviewed for in-house information and for additional information sources. Points of contact for potential data sources were initially contacted by telephone. When necessary, personal meetings were scheduled. Sources were interviewed as to all significant characteristics of data sets, peculiarities or anomalies in the collection or compilation of the data. The results of the search for data sources are contained in Chapter 7 of this document.

At the time that sources were identified, efforts were also made to collect as much data as possible. For free data sources, current information was solicited as well as information as to the historic availability of the data. This was done at this time in order to minimize the necessity of collecting additional data in later stages of the Study. However, in some cases, particularly those where fees were required, only samples were collected until such time as it is decided to actually assume the costs of the data source. Paid data sources were interviewed in-depth as to the organization and capabilities of their data base. Samples and marketing brochures were solicited whenever possible. For paid data sources which will actually be used in the Before-and-After Study after they are selected in Task 4, data collection will be completed during Task 5.

6. EVALUATION OF DATA USEABILITY

In Task 2, the availability of data for measuring potential indicators of benefit was determined and information on the identified data sources was collected. In Task 3, an evaluation of the useability of each data source was undertaken. Based on the conceptual framework for data source analysis established in Task 1 of the Before-and-After Study, eight criteria for evaluating each data source were identified. These criteria were:

1) Relevance to Established Indicators

Each data set was evaluated as to relevance to a specific indicator identified in Task One. Some data sets contained information relevant to two or more indicators. In that case, each relevant indicator was identified.

2) Level of Aggregation

For each data set the lowest level of aggregation was identified. Additionally, all potentially useful levels of aggregation were evaluated. Potentially useful levels of aggregation included census tract, zip code, SCAG zone, and CBD. Maps indicating these levels of aggregation are contained in Figures 2 through 6.

3) Reporting Frequency

The frequency and coverage period for which each data set is published was identified. For example, data may be reported monthly, quarterly, annually by fiscal year, or annually by calendar year.

4) Composition of Data

A key factor as to the reliability of a data set is the universe from which it is obtained. Composition of the data includes definition of the universe, sampling methodology, errors or omissions in recording or coding, other errors in collection, and estimation for missing or misreported data.

5) Current Availability

Any privacy limitations on the current availability of data were investigated. Information was classified as public, available for a fee, or not available without a court order.

6) Historic Availability

For each data set, the availability of historic data was noted. Any changes in the collection or reporting of data were described. An evaluation was made as to the accuracy of comparisons made over time.

7) Cost

For information available for a fee, the cost was included.

8) Description of Each Data Set

In addition to each of the basic evaluation criteria, each data set was evaluated on its own significant and unique characteristics. This analysis included a description of the purpose of the data base, collection methodology, and any peculiarities known about the data set. For data sets with a level of aggregation too gross to be useful, the availability of special tabulations was investigated.

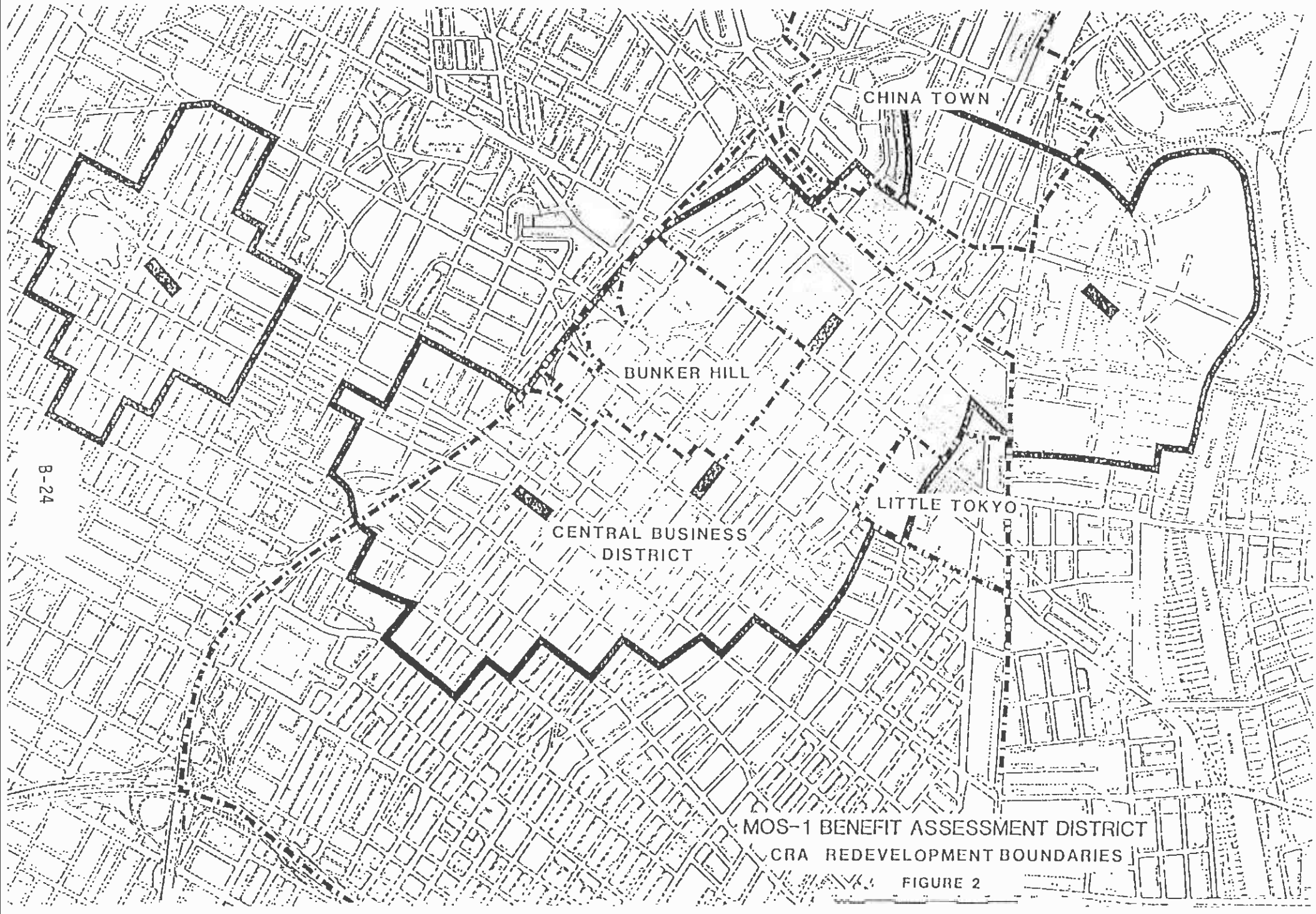
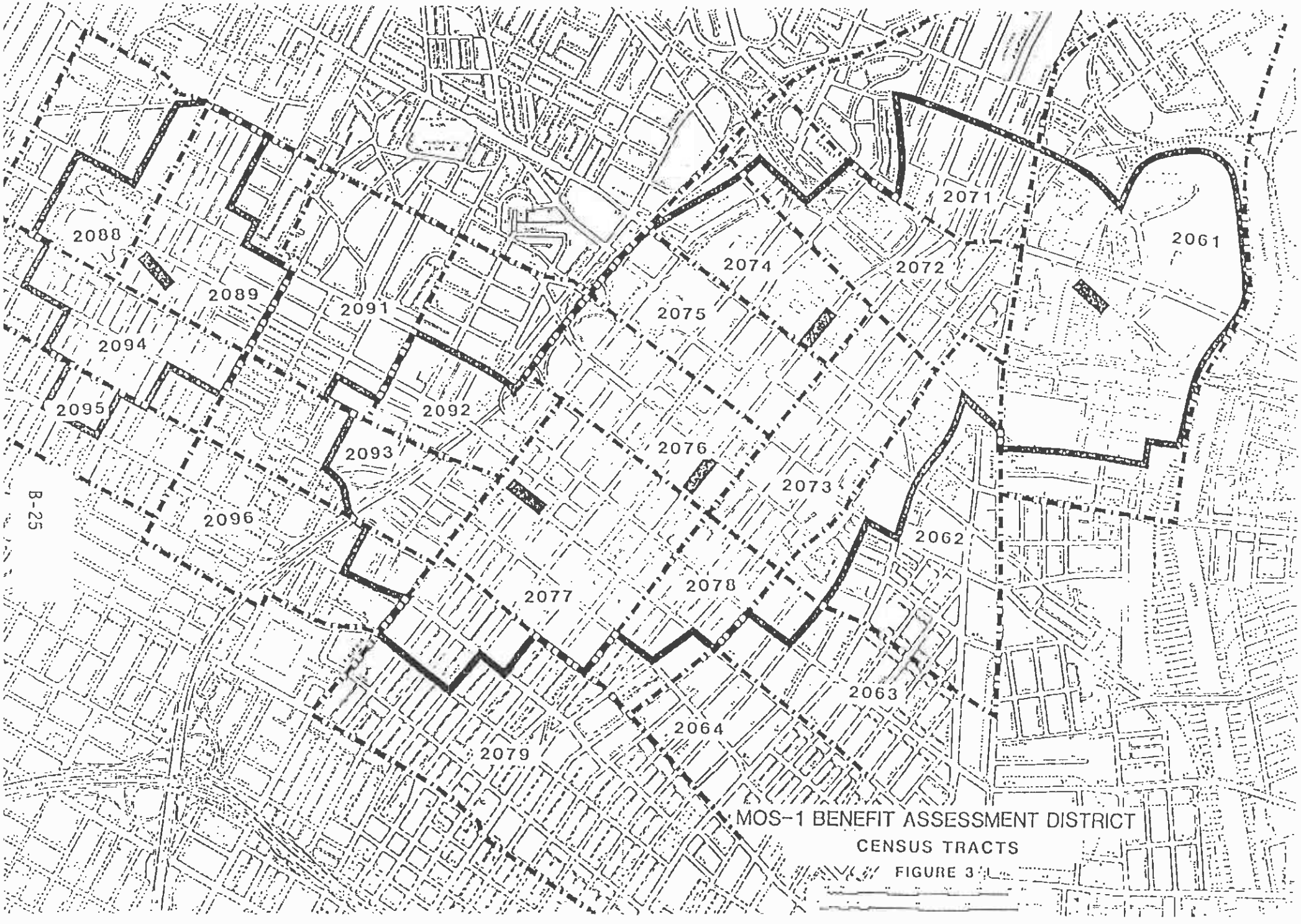

CHINA TOWN
BUNKER HILL
LITTLE TOKYO
CENTRAL BUSINESS
DISTRICT
MOS-1 BENEFIT ASSESSMENT DISTRICT
CRA REDEVELOPMENT BOUNDARIES

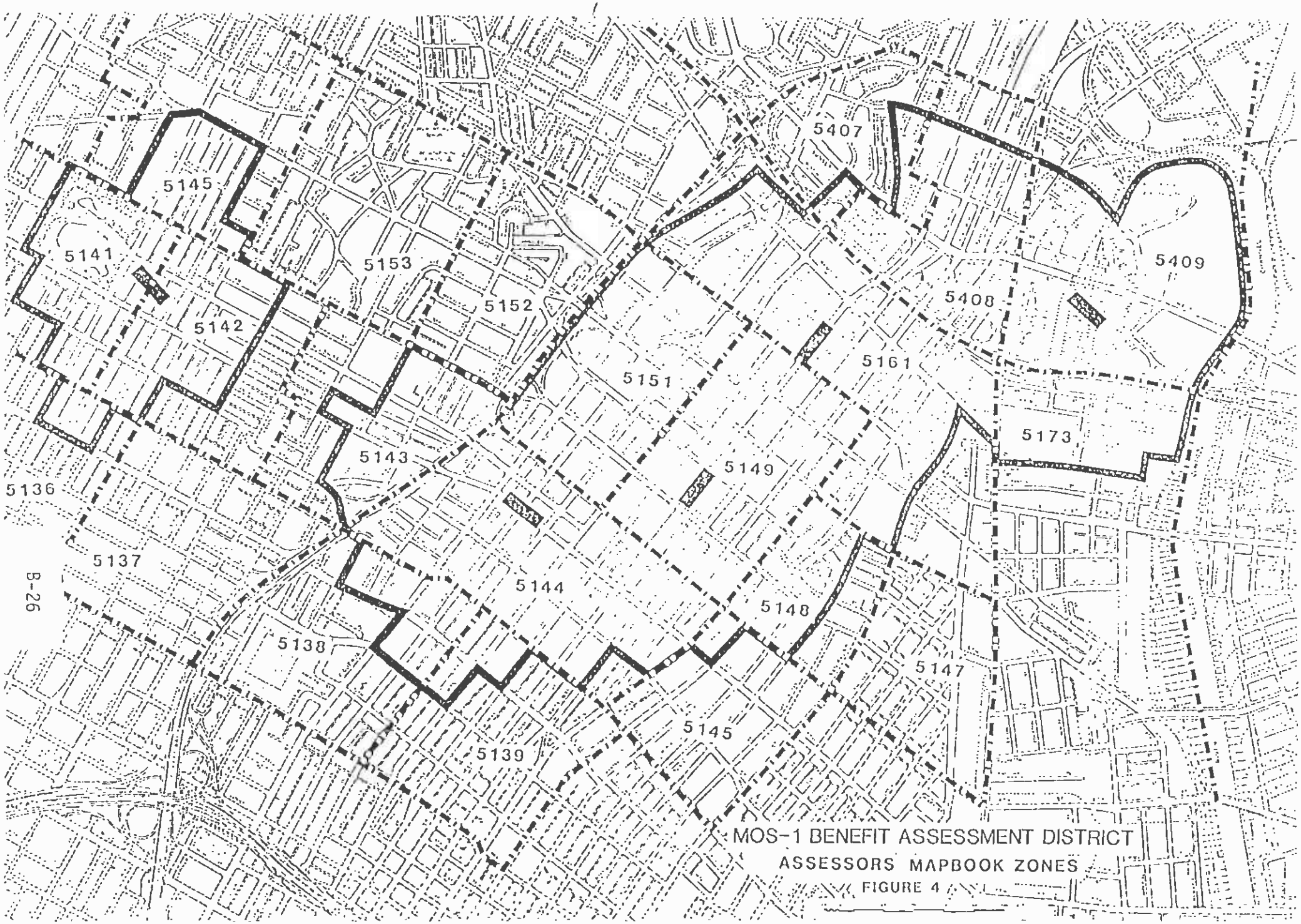
FIGURE 2



MOS-1 BENEFIT ASSESSMENT DISTRICT

CENSUS TRACTS

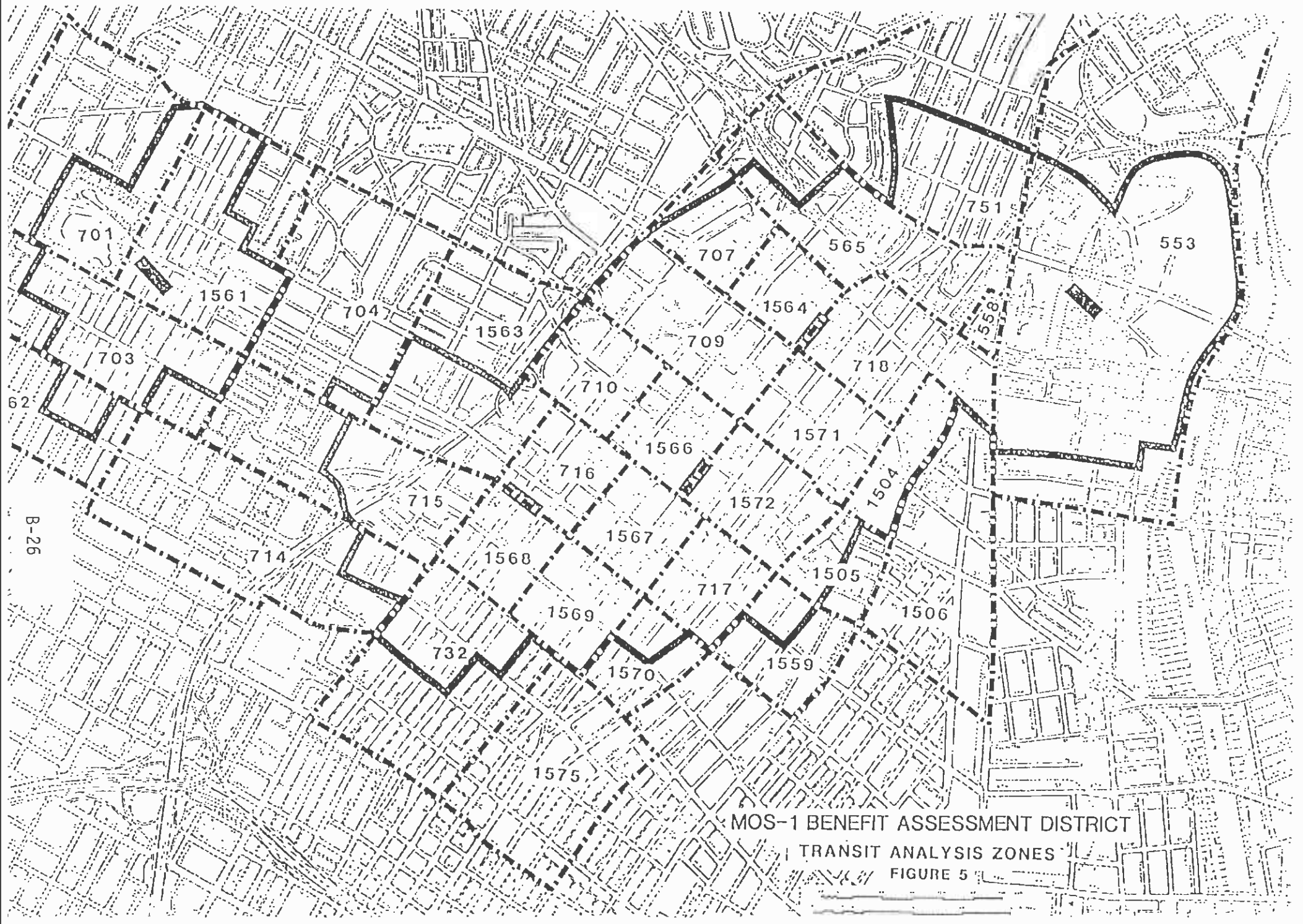
FIGURE 3



MOS-1 BENEFIT ASSESSMENT DISTRICT

ASSESSORS MAPBOOK ZONES

FIGURE 4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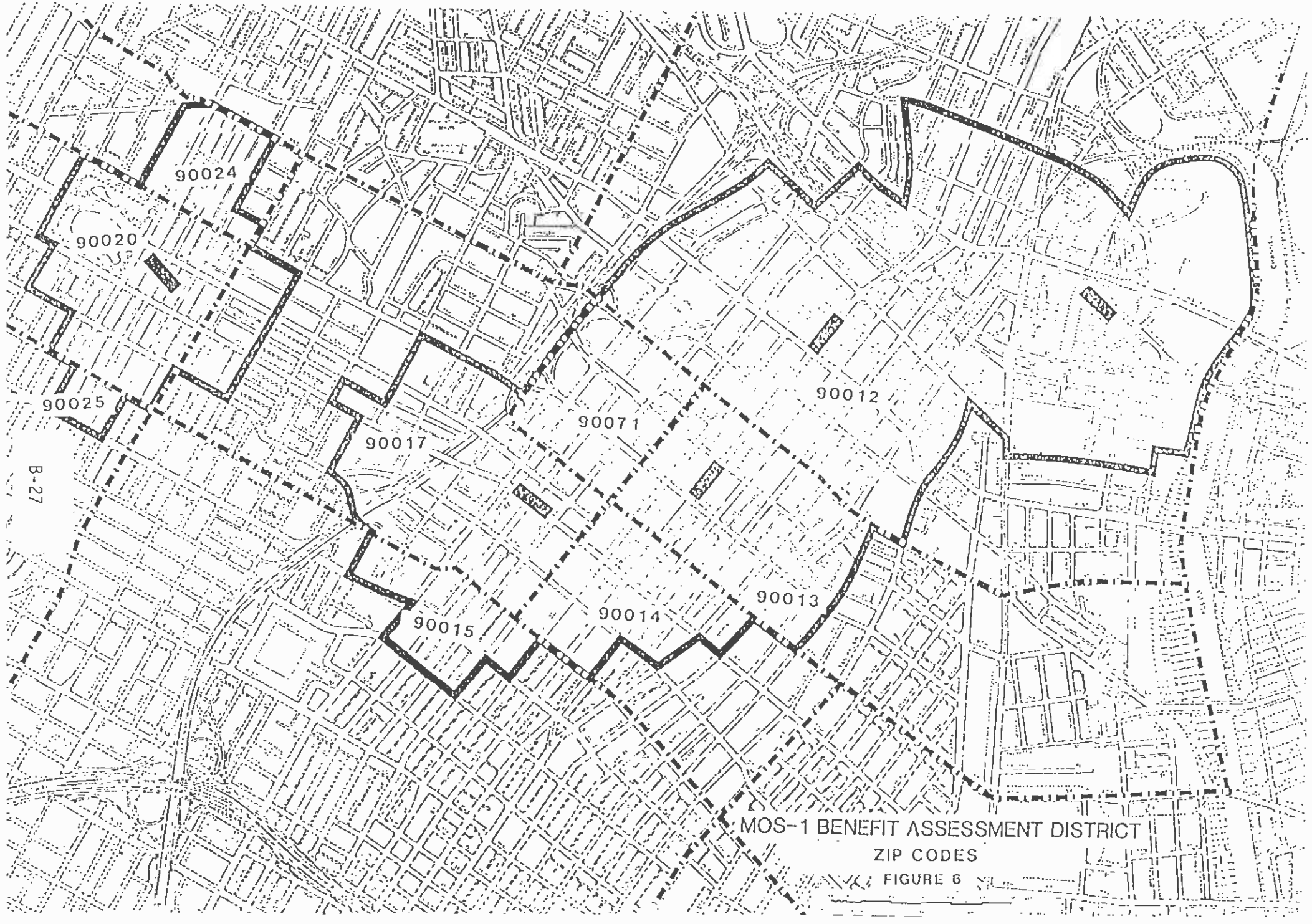
MOS-1 BENEFIT ASSESSMENT DISTRICT
TRANSIT ANALYSIS ZONES
FIGURE 5



MOS-1 BENEFIT ASSESSMENT DISTRICT

ZIP CODES

FIGURE 6

7. RESULTS OF USEABILITY ANALYSIS

The following data sets have been evaluated for useability in the Before-and-After Study. Where possible, a sample of the data is included after the evaluation.

7.1 PROPERTY VALUE

7.1.1 DAMAR Corporation

Useability:	Excellent
Relevant Indicator:	Property Value
Smallest Aggregation:	By Address
Reporting Frequency:	Annual
Composition of Data:	All California Parcels
Current Availability:	Available for a fee
Historic Availability:	10 Years
Cost:	Various Subscriptions; Approximately $250 set-up fee, $48 Monthly Charge, and $.80 per Minute for On-Line Services.
Contact:	Rachel Mascorro (800) 462-6668

Introduction

DAMAR Corporation processes real property information from county assessor's tapes. Information is available is three formats: on-line computer link, customized computer searches, and published reports. Assessor information is supplemented with field staff and user input.

Real Property Files

Contains every parcel of real estate in the State of California, showing property profile and current owner's name, address and sometimes telephone number. This is a flexible database allowing a number of choices in ways to search. It is possible to search for comparable sales for all types of property, research or inventory an area, conduct asset searches, verify vesting, identify potential investors, identify absentee owners, and locate properties of interest not presently listed for sale.

California Statewide Owner File

Allows searching at one prompt by owner's name for any property held under that name for $48 per hour.

Commercial/Industrial Sales File

Contains selected sales which have occurred on commercial or industrial properties, vacant land (except residential lots or acreage, found in the Real Property Files), and apartments of five or more units. These are enhanced comparables developed through Damar's in-house and field research and input from subscribers. Includes proprietary data items not normally available from public record, such as income and expense data, when possible. The cost is $75 per hour.

Residential Income Unit Sales File

Contains sales which have occurred on two to four units only (duplex, triplex, quadruplex). These are enhanced comparables developed through Damar's research as well as certain transactions from public record and input from subscribers. The cost is $60 per hour.

Single Family Residential Sales File

Contains sales which have occurred on single family residences, condominiums, coops, PUD's and diminimus PUD's for the past two years. These are enhanced comparables developed through Damar's research and input from subscribers as well as certain transactions from public record. Includes items not normally available from public record such as comments about built-ins, air conditioning and heat sources and other characteristics. The cost is $48 per hour.

Area Sales Analysis Profile (ASAP)

A ten-year sales trend analysis for single family residential property, based upon a specific Thomas page and grid area selected. This report contains averages, totals, percentages and medians for several categories. The subscriber is not charged for the time on line for this report. Billing is determined by the number of Thomas grids covered, as follow:

From:	1-6 grids	$ 5.00
	7 grids	7.50
	8 grids	10.00
	9 grids	12.50
	10 grids	15.00
	11 grids	17.50
	12 grids	20.00
	13 grids	22.50
	14-16 grids	25.00

Published Reports include:

- Complete property description and relevant physical characteristics data obtained through on-site field inspection.
- Principals involved in each transaction.
- Review of all recorded sale documents.

```
**********************************************************************
                DAMAR CORPORATION INFORMATION SERVICES

            INCOMNET: Industrial Commercial Information System
                  < Copyrights (C)1986 Damar Corp. >

   >> Reported data believed to be reliable but accuracy is not guaranteed. <<
**********************************************************************
17-Oct-86                                                    09:20 A

Please enter one of the following numbers,
'E' to logoff or 'M' to return to main option menu.

    1. Los Angeles CA Real Property File
    2. Orange CA Real Property File
    3. Sta Clara CA Real Property File
    4. San Diego CA Real Property File
    5. Alameda CA Real Property File
    6. San Bernardino CA Real Property File
    7. San Francisco CA Real Property File
    8. Riverside CA Real Property File
    9. Marin CA Real Property File
   10. Contra Costa CA Real Property File
   11. Sacramento CA Real Property File
   12. Ventura CA Real Property File
    E. Logoff from Incomnet
    M. Return to Main Option Menu

Enter option: 1

  ** SEARCHABLES **          ** COMMANDS **          ** SPECIAL RUNS **
OWNER                     SEARCH                  FARM    (500 MAX)
STREET                    NEW     (New Search)    LABELS (1000 MAX)
APN                       FILTER  (Filter Menu)
CITY                      OPTION  (Option Menu)
PAGE or GRID              DELETE
USE                       LIST
TRACT                     HELP
                          LOGOFF or END
                          JOBID

Select SEARCHABLE(s) and/or a COMMAND (Separate with ;): STREET;CITY;JOBID
Enter Street Name (Do not enter suffix or direction): WILSON
Enter House Number (low number for range) or RETURN to skip: 300
Enter High (Ending) number for range or Return to skip: 330
Enter City Name(s) - (if more than one, separate with comma): GLENDALE
Enter Job ID :  SAMPLE RUN

  ** FILTERS **          ** COMMANDS **
BLDAR     BEDROOMS      SEARCH
LOTAREA   BATHS         NEW     (New Search)
UNITS     POOL          MAIN    (Main Menu)
DATE      UNITNO        OPTION  (Option Menu)
PRICE     LAND          DELETE
TRDLT     TOTVAL        LIST
ZONING    RATIO         HELP
TAXCODE   ABSENTEE      LOGOFF or END

Select FILTER(s) and/or a COMMAND (Separate with ;): SEARCH
```

Real Property Sample Search

```
Job ID          : SAMPLE
Database        : Los Angeles CA Real Property File
Print Format    : SHORT
Sort Sequence   : Parcel Number ascending
County          : LOS ANGELES CA

                *** Summary of Selected Features ***

 1  City                 GLENDALE
 2  House Number               300          thru            330
 3  Street Name          WILSON

Most restrictive filtering parameter is House Number.
Ranging on 19 records.
+++++++
7 records found.


  ** PRINT FORMATS **       ** COMMANDS **
SHORT                     PRINT  (Print all)
DETAIL                    SELECT (Select records to be printed)
                          NEW    (New Search)
  ** SORTS **             MAIN   (Main Menu)
SORT OWNER                OPTION (Option Menu)
SORT STR                  DELETE
SORT APN                  HELP
SORT BLDAR                LOGOFF or END
SORT TOTVAL
SORT HOUSENO

Select PRINT FORMAT, SORT and/or a COMMAND (Separate with ;): sort houseno;print
```

Real Property Short Format

```
1)  Situs:309 E WILSON AV, GLENDALE
APN    :5642-017-039        Assd Land:      $10,800  Use :SFR
County:LOS ANGELES CA       Assd Imp :       $1,200  Date:06/27/69  Bldar:710
Map Pg:25-D4                Total Val:      $12,000  Sale:$82,000F  Rooms:/2/1
Legal  :L24 B47/GLENDALE S 50 FT OF E 50 FT OF       Doc#:577811    Story:
Owner  :BROUGHER J WHITCOMB                          Zone:C3YY      Yrblt:14/14
Mail   :209 N LOUISE ST;GLENDALE CALIF 91206                      LotArea:
-------------------------------------------------------------------------------
2)  Situs:313 -15 N WILSON AV, GLENDALE 91204
APN    :5637-008-037        Assd Land:      $87,300  Use :DUPLEX
County:LOS ANGELES CA       Assd Imp :      $22,900  Date:06/27/86  Bldar:1,936
Map Pg:25-C3                Total Val:     $110,200  Sale:$156,000F Units:2
Legal  :L35 B9/MOORE'S RESUB OF A POR OF GLENDA*     Doc#:811401    Story:
Owner  :WILLIAMS JEFFREY S                           Zone:R4*       Yrblt:23
Mail   :439 W ACACIA;GLENDALE,CA 91204                            LotArea:
-------------------------------------------------------------------------------
3)  Situs:318 W WILSON AV, GLENDALE
APN    :5637-009-048        Assd Land:      $61,700  Use :OFFICE BLDG
County:LOS ANGELES CA       Assd Imp :   $1,124,000  Date:06/01/84  Bldar:26,080
Map Pg:25-C4                Total Val:   $1,185,700  Sale:
Legal  :L41 B8/TR GLENDALE BLVD TRACT L 39 THRU      Doc#:          Story:
Owner  :EDWIN S JOHNSTON COM                         Zone:C2*       Yrblt:76/76
Mail   :1704 COLORADO BLVD;LOS ANGELES CA 90041                   LotArea:
-------------------------------------------------------------------------------
```

```
4)  Situs:319 W WILSON AV, GLENDALE 91203
APN    :5637-008-036        Assd Land:     $128,900  Use :APARTMENT
County:LOS ANGELES CA       Assd Imp :     $364,200  Date:03/19/82  Bldar:13,170
Map Pg:25-C3                Total Val:     $493,100  Sale:$110,000+ Units:18
Legal :L34 B9/MOORE'S RESUB OF A POR OF GLENDA*   Doc#:292746     Story:
Owner :BERLINER ALLEN J AND                       Zone:R4*        Yrblt:28/32
Mail  :685 CANTERBURY RD;SAN MARINO CA 91108                    LotArea:
          ------------------------------------------------------------

5)  Situs:323 W WILSON AV, GLENDALE 91203
APN    :5637-008-041        Assd Land:     $129,100  Use :RELIGIOUS
County:LOS ANGELES CA       Assd Imp :       $9,800  Date:03/19/82  Bldar:2,000
Map Pg:25-C3                Total Val:     $138,900  Sale:$110,000  Units:1
Legal :L33 B9/MOORE'S RESUB OF A POR OF GLENDA*   Doc#:292746     Story:
Owner :BERLINER ALLEN J AND                       Zone:R4*        Yrblt:21
Mail  :685 CANTERBURY RD;SAN MARINO CA 91108                    LotArea:
          ------------------------------------------------------------

6)  Situs:328 W WILSON AV, GLENDALE 91203
APN    :5637-009-026        Assd Land:      $29,600  Use :DUPLEX
County:LOS ANGELES CA       Assd Imp :      $13,600  Date:05/31/73  Bldar:2,383
Map Pg:25-C4                Total Val:      $43,200  Sale:          Units:2
Legal :L38 B8/GLENDALE BOULEVARD TRACT            Doc#:          Story:
Owner :TAYLOR JACK A AND DO                       Zone:R4*        Yrblt:20
Mail  :1415 EDINGBURGH LN;GLENDALE CA 91206                     LotArea:
          ------------------------------------------------------------

7)  Situs:330 W WILSON AV, GLENDALE
APN    :5637-009-025        Assd Land:      $29,600  Use :APARTMENT
County:LOS ANGELES CA       Assd Imp :      $24,900  Date:05/31/73  Bldar:6,428
Map Pg:25-C4                Total Val:      $54,500  Sale:          Units:8
Legal :L37 B8/GLENDALE BOULEVARD TRACT            Doc#:          Story:
Owner :TAYLOR JACK A AND DO                       Zone:R4YY       Yrblt:23
Mail  :1415 EDINGURGH LN;GLENDALE CA 91206                      LotArea:
          ------------------------------------------------------------


  ** PRINT FORMATS **       ** COMMANDS **
SHORT                     PRINT  (Print all)
DETAIL                    SELECT (Select records to be printed)
                          NEW    (New Search)
  ** SORTS **             MAIN   (Main Menu)
SORT OWNER                OPTION (Option Menu)
SORT STR                  DELETE
SORT APN                  HELP
SORT BLDAR                LOGOFF or END
SORT TOTVAL
SORT HOUSENO

Select PRINT FORMAT, SORT and/or a COMMAND (Separate with ;): detail;select
Enter Records Number(s) (e.g. 1 or 1,3,4 or 3+): 5
```

Real Property Detail Format

```
5)  Situs:323 W WILSON AV, GLENDALE 91203

APN    :5637-008-041          Tax Rate Area:4045          Assd Land:     $139,100
County:LOS ANGELES CA         Property Tax :$1,493        Assd Imp :       $9,800
Census:                                                   Total Val:     $138,900
Map Pg:25-C3                  Exemption    :              Assd Year:85
Legal :L33 B9/MOORE'S RESUB OF A POR OF GLENDA*           %Improved: 7%
                                                        Transfer Date:03/19/82
Owner :BERLINER ALLEN J AND                             Document #    :293746
Mail  :685 CANTERBURY RD;SAN MARINO CA 91108                    Price:$110,000

Land-Use  :RELIGIOUS            Lot Size    :           Bldg/Lvarea:2,000
County Use:7100                 Lot Area    :           Yrblt/Eff  :21
Bldg Class:D                    Zoning      :R4*        # Stories  :

# Units   :   1                 Park Type   :
# Bldgs   : 2                   Park Spaces:

Comments  :1)1UN,802#,21YB;2)1198#,2YB

  DAMAR Corporation (c)1986    Real Estate Information Systems    213/380-7105
```

```
  ** PRINT FORMATS **       ** COMMANDS **
SHORT                   PRINT  (Print all)
DETAIL                  SELECT (Select records to be printed)
                        NEW    (New Search)
  ** SORTS **           MAIN   (Main Menu)
SORT OWNER              OPTION (Option Menu)
SORT STR                DELETE
SORT APN                HELP
SORT BLDAR              LOGOFF or END
SORT TOTVAL
SORT HOUSENO

Select PRINT FORMAT, SORT and/or a COMMAND (Separate with ;): logoff
```

- Financing information and lenders involved for each transaction.
- Geographical location of each property by street atlas page, Assessor's Parcel Number and property address.
- Each transaction is researched to identify all parcels involved in the sale.

7.1.2 MOS-1 Benefit Assessment Data Base - Southern California Rapid Transit District

Useability:	Excellent
Relevant Indicator:	Property Value Development/Redevelopment Activity
Smallest Aggregation:	Assessor's Mapbook (ownership) Parcel
Reporting Frequency:	Two times per year
Composition of Data:	Parcel Area
Current Availability:	SCRTD Ownership
Historic Availability:	1984-85 and 1985-86 tax years
Scale:	Square Feet
Cost:	No charge

Overview

SCRTD based this information on LUPAMS data which has been updated by annual comparisons to the Assessor's Secured Basic File and Assessor's Parcel Maps approximately two times per year.

Special Tabulations

This data may be combined with other data items to calculate value per square foot or acre by programming. Data can be totaled by block, zone or land use type.

Useability of Data

The data is recorded by ownership parcels which are based on tax records and does not correspond to a standard geographic unit. If a taxpayer owns three properties -- two office buildings and a parking lot -- and requests one tax bill these three lots will be defined as one ownership parcel. However, because of the highly disaggregated nature of the data, the parcel records can be readily aggregated to correspond to other data sources.

7.1.3 MOS-1 Benefit Assessment Data Base - Southern California Rapid Transit District

Useability:	Good, with adjustments
Relevant Indicator:	Property Value
Smallest Aggregation:	Assessor's Mapbook (ownership) Parcel
Reporting Frequency:	Two times per year
Composition of Data:	Value of Last Sale
Current Availability:	SCRTD Ownership
Historic Availability:	1984-85 and 1985-86 tax years
Scale:	Dollars
Cost:	No charge

Overview

The actual property value data is collected and coded by the Los Angeles County Assessor's Office. SCRTD purchases this information on computer tape through the Assessor's Secured Basic File approximately two times per year and processes it for each property located within the MOS-1 Benefit Assessment Districts A1 and A2.

Inclusions and Exclusions from Data

A cluster of fields contains the price of the last sale; the date of the most recent sale and a key indicating the number of parcels involved in the most recent sale. The value at last sale only represents cash transactions. This items only computes the sale price from the Deed Transfer Tax Stamps, and not the closing costs established by the escrow. That is, the value does not represent non-cash transfers, mortgages or other financing tools. If the number of parcels involved in the last sale is greater than one, it is difficult to ascertain the sales price for the particular parcel.

Special Tabulations

Values can be totaled by block, zone or land use type.

Useability of Data

The data is recorded by ownership parcels which are based on tax records and does not correspond to a standard geographic unit. If a taxpayer owns 3 properties -- two office buildings and a parking lot -- and requests one tax bill these three lots will be defined as one ownership parcel. However, because of the highly disaggregated nature of the data, the parcel records can be readily aggregated to correspond to other data sources.

7.1.4 MOS-1 Benefit Assessment Data Base - Southern California Rapid Transit District

Useability:	Limited, with adjustments
Relevant Indicator:	Property Value
Smallest Aggregation:	Assessor's Mapbook (ownership) Parcel
Reporting Frequency:	Two times per year
Composition of Data:	Improvement Value Land Value
Current Availability:	SCRTD Ownership
Historic Availability:	1984-85 and 1985-86 tax years
Scale:	Dollars
Cost:	No charge

Overview

The improvement value and land value items represent actual market value of the property at the time that the data was collected. The total valuation of the property is given in an separate fields for the land value and improvement value. The actual property value data is collected and coded by the Los Angeles County Assessor's Office. SCRTD purchases this information on computer tape through the Assessor's Secured Basic File approximately two times per year and processes it for each parcel located within the MOS-1 Benefit Assessment Districts A1 and A2.

Useability of Data

Year 1976 assessed values are automatically increased 2 percent per year and are adjusted to reflect current market value only when a transfer of ownership or new construction occurs on the property. Under these circumstances the property value is re-evaluated. Typically when a transfer occurs, actual sale price is used. However, all changed property values are individually reviewed and evaluated. If considered warranted after such review, an appraisal is conducted and the appraisal amount is reflected in the value fields. One limitation of the data is that improvement value does not always reflect the full value of the improvement. Sometimes this information is missing or only represents the value of recent rehabilitation efforts.

The data is recorded by ownership parcels which are based on tax records and does not correspond to a standard geographic unit. For example, if a taxpayer owns three properties -- two office buildings and a parking lot -- and requests one tax bill, these three lots will be defined as one ownership parcel. However, because of the highly

disaggregated nature of the data, the parcel records can be readily aggregated to correspond to other data sources.

The improvement value is the County Assessor's Office dollar value of all the improvements on the parcel. A vacant parcel would have no improvement value assigned. Deteriorated structures would be assigned relatively lower market values. However, a vacant parcel with a billboard or wall would be assigned an improvement value.

Special Tabulations

Land value can be combined with the improvement value to get the total value of land and improvement; or ratios can be established between parcel area and value; land use and value, etc. Market value per square foot or acre can be determined by programming. Values can be totaled by block, zone or land use type.

7.1.5 Real Estate Advertising Citing Proximity To Metro Rail - The BOMA Guide, The Los Angeles Times Real Estate Section, The Downtown News

Useability: Good

Relevant Indicator: Property Value
Lease Rate
Occupancy Rate

Smallest Aggregation: By building

Reporting Frequency: Irregular

Composition of Data: Published advertisements

Current Availability: Public information

Cost: No charge

The inclusion of proximity to Metro Rail in real estate advertising is an indication that developers, leasing agents, and tenants consider such a location to be of value. Through a systematic and regular review of these sources, a count of advertisements which mention Metro Rail access can be maintained which should demonstrate the perception of benefits provided by Metro Rail.

7.1.6 Coldwell Banker Real Estate Advisory Services - Coldwell Banker

Useability:	Low useability compared to high cost
Relevant Indicators:	Property Value Occupancy Rates Lease Rates
Smallest Aggregation:	By Address
Reporting Frequency:	By individual design
Composition of Data:	Building-by-building survey
Current Availability:	Public information
Historic Availability:	NA
Cost:	Fee negotiable
Contact:	Douglas Haney (213) 613-3616

Coldwell Banker Advisory Services is composed of the Appraisal Division and Consultation Division. Both divisions have experts in the field of valuation and consulting for all types of real estate projects. In Los Angeles, they have a staff of twenty professional appraisers and consultants, several of which are members of the American Institute of Real Estate Appraisers. Other Coldwell Banker Commercial Group services include the following:

- o Commercial Real Estate Services
- o Real Estate Finance/Loan Administration Services
- o Capital Management Services
- o Real Estate Management Services
- o Real Estate Marketing Research Services
- o Coldwell Banker/Torto Wheaton Services

Coldwell Banker's Consultation Services division provides market analysis as a basis for decision-making in the acquisition, development and disposition of real estate. Consultation Services works with its clients to identify questions and reach solutions. As part of this division, Coldwell Banker maintains a data bank that encompasses current data on office and industrial space including vacancy rates, lease rates and tenant profiles. All commercial, industrial and investment-grade real estate handled by Coldwell Banker as well as detailed financial profiles for various types of income-producing properties are stored in the data bank.

Consultation Services conducts project-specific primary research to determine current pertinent market information. Intensive field surveys are conducted and the results analyzed by computer models. Specific market estimates of current and projected inventory, absorption rates, price-rent levels, and vacancy trends in the relevant real estate markets and submarkets are determined.

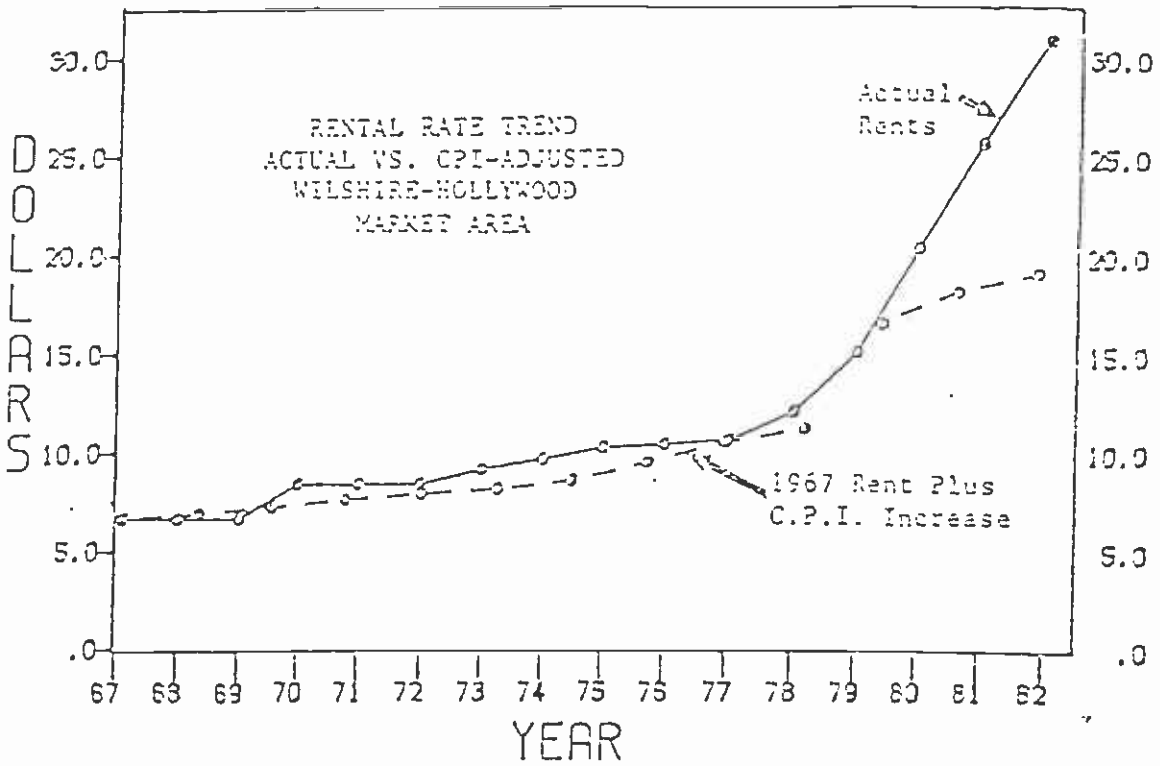
Consultation Services provides market, financial and investment advice to clients on a fee basis. Fees may be quoted on the basis of a fixed-price contract, estimated time and expense budget or hourly professional time rates. A written proposal is submitted after the initial discussion to determine client interests, property characteristics, key issues and any special considerations.

A typical office market profile report contains three parts. Part I, entitled "Office Building Construction, Occupancy and Absorption Trends" presents data largely derived from the Coldwell Banker Office Building Data Bank which catalogues all multi-tenant speculative office buildings (excluding medical and government owned buildings) generally of 30,000 square feet net rentable area and larger. Part II contains information on office space rental rates and is also derived form the Office Space Data Bank as well as interviews with knowledgeable brokers in the local market area. Part III, "Office Space Occupant Characteristics," are largely derived from the Coldwell Banker Office Space Data Bank which inventories firms occupying 1,000 square feet of office space or more and includes occupant profile data such as type of business, lease expiration date, and amount of square footage occupied.

Information obtained from a special study commissioned from Coldwell Banker would be very useful, but also very costly.

OPTIONAL PROVIDED AT EXTRA CHARGE WHEN DATA AVAILABLE

Exhibit 10



RENTAL RATE TREND
NEW CLASS A OFFICE SPACE
WILSHIRE-HOLLYWOOD MARKET AREA

	Actual Quoted Rent				C.P.I. Adjusted Rent	
	Low	High	Mid-Point	Percent Change From Previous Year	Percent Change In C.P.I. 1/	Adjusted Rent
1982 2/	$22.00	$40.00	$31.00	20.4%	5.0%	19.21
1981	19.50	32.00	25.75	25.6%	9.7%	18.30
1980	17.00	24.00	20.50	34.4%	15.7%	16.68
1979	14.50	16.00	15.25	24.5%	10.8%	14.41
1978	11.00	13.50	12.25	14.0%	7.3%	13.01
1977	9.50	12.00	10.75	2.4%	6.9%	12.12
1976	9.00	12.00	10.50	1.3%	6.6%	11.34
1975	9.00	11.75	10.37	6.1%	10.6%	10.64
1974	8.35	11.20	9.77	5.6%	10.3%	9.62
1973	8.00	10.50	9.25	8.8%	5.6%	8.72
1972	8.00	9.00	8.50	0.0%	3.2%	8.26
1971	8.00	9.00	8.50	0.0%	3.7%	8.00
1970	8.00	9.00	8.50	25.9%	5.1%	7.72
1969	6.00	7.50	6.75	0.0%	4.7%	7.34
1968	6.00	7.50	6.75	0.0%	3.9%	7.01
1967	6.00	7.50	6.75	n/a	n/a	6.75

n/a = Not applicable

1/ C.P.I. figures employed are those published by the Bureau of Labor Statistics for [illegible] in Los Angeles/Long Beach/Anaheim.

2/ 1982 rates are asking rental quotes as of 10/81 for pre-leasing of space in buildings under construction which are expected to be ready for occupancy in 1982.

Source: Coldwell Banker Commercial Real Estate Services; Coldwell Banker Real Estate Consultation Services.

7.1.7 Los Angeles Real Estate Market - Salomon Brothers Bond Market Research Department

Useability:	Good for Background
Relevant Indicators:	Property Values
Smallest Aggregation:	Sub-Markets
Reporting Frequency:	Not Fixed, Approximately every two years
Composition of Data:	Coldwell Banker, Salomon Brothers Research
Current Availability:	Proprietary
Historic Availability:	January 1987
Cost:	No Charge
Contact:	David Shulman, Mari Canton, David Kostin

This Salomon Brothers Research publication analyzes the investment potential of Los Angeles real estate. It includes the residential, commercial and industrial areas by broadly defined sub-markets such as "Downtown" or "Mid-Wilshire." This document offers insight in tracking general trends, but does not provide precise data on smaller geographical areas.

Brokerage houses conduct and distribute analyses such as this report as a courtesy to their clients. This report could probably be made available to the SCRTD through its bond attorneys.

Table of Contents	Page
Investment Summary	1
Introduction	1
The Economy	2
The Geography	6
The Real Estate Market	8
Office Real Estate	8
• Macro Factors	8
• Submarket Focus	11
Industrial Market	14
Retail Market	16
Multifamily Residential Market	19
Investment Implications	20

7.1.8 Los Angeles Basin Real Estate 1987 - Grubb and Ellis

Useability:	A convenient general real estate background document
Relevant Indicators:	Property Value
Smallest Aggregation:	CBD
Reporting Frequency:	Annually
Composition of Data:	Building-by-building survey Economic Indicators
Current Availability:	Public information
Historic Availability:	From 1985
Cost:	No charge
Contact:	Rene Ybardolaza, Research Director (213) 622-9595

Grubb and Ellis publishes an annual report on general economic and real estate conditions in the Los Angeles basin. Some relevant topics include:

- o Economic Overview
- o Office/Industrial Overview
- o Los Angeles Office Market
- o Los Angeles Industrial Market
- o Retail Market
- o Investment Market
- o Financing Outlook for 1987

This generalized publication is useful as background information.

Overview

Both highs and lows defined the Greater Los Angeles office market in 1986. Absorption hit all time highs, particularly in Downtown Los Angeles and the San Gabriel Valley, and strong demand coupled with moderating construction activity caused lower vacancy rates.

Downtown Los Angeles has displaced San Francisco as the center for West Coast business and financial service companies from around the world. New prime office space is attracting East Coast financial giants like Citicorp and Chase Manhattan, both of which expanded in Downtown Los Angeles during 1986.

Because of this influx of new tenants from the East Coast and the Pacific Rim, absorption increased 30% from 1985. In 1986, the market's absorption was 1.2 million square feet compared with a 900,000-square-foot absorption rate in 1985. At year-end, availability of large, contiguous space became difficult to find, leading to a general tightening in the market demonstrated by stabilized lease rates and terms.

Construction activity has peaked in Downtown Los Angeles. The remainder of the decade will not see the same level of activity as the first half. From 1980 to 1985, more than 10 million square feet of new office space was added to the Downtown inventory. However, in 1986 some 12 million square feet was built, representing half of the total square footage completed in 1985. The continued slowdown of construction will continue in 1987 when only 554,000 square feet will be added to the market.

The combination of strong demand and reduced construction will cause vacancy rates to reach single digits. Absorption will continue to increase due to the influx of new tenants and the expansion of current tenants. As space becomes scarce, lease rates will increase and concession packages will become less generous. In the wake of new tax legislation, developers will look for cash returns on their investments instead of tax benefits. Because Downtown Los Angeles is not impacted by Proposition U, the recently approved referendum halving office development density, its existing and future high-rise buildings will continue to be a valuable commodity for profit-oriented investors.

OFFICE MARKET OVERVIEW
(Sq. Ft. in Thousands)

	Existing	Vacant	%	New Const. 1987	New Const. 1986	Absorbed 1986	Asking Monthly Rates Low-High
Downtown	24,189	3,719	15%	854	1,201	1,224	$1.50-$2.60
Mid-Wilshire	7,381	1,167	16%	0	422	216	$1.50-$1.75
Pasadena	4,022	754	19%	146	110	230	$1.33-$2.00
Glendale	2,621	644	25%	287	735	246	$1.50-$1.83
San Gabriel Valley	4,144	1,432	35%	1,300	693	325	$0.75-$1.75
Total	42,357	7,716	18%	2,597	3,161	2,241	$0.75-$2.60

Note: Downtown includes all multitenant buildings over 50,000 sq. ft. excluding medical, government and owner-occupied buildings.

7.1.9 CALIFORNIA MARKET DATA COOPERATIVE

Useability:	Limited
Relevant Indicator:	Property Value
Smallest Aggregation:	By address
Reporting Frequency:	Monthly
Composition of Data:	Residential Property
Current Availability:	Available for fee
Historic Availability:	10 Years
Cost:	$80 One-Time Fee; $50 Per Month
Contact:	1110 Sonora Avenue Suite 104 P.O. Box 3604 Glendale, CA 91201-3604

The California Market Data Cooperative publishes a monthly magazine containing information on residential real estate sales. The March, June, September and December issues summarize information from the previous quarter. CMDC is a cooperative, founded on the sharing of appraisal information by the lending and appraisal community.

7.2 OCCUPANCY/LEASE RATES

7.2.1 Greater Los Angeles Office Marketing Guide - Building Owners and Managers Association

Useability:	High useability
Relevant Indicators:	Occupancy rates Lease rates
Smallest Aggregation:	By address
Reporting Frequency:	Annually
Composition of Data:	Buildings 20,000 square feet and over
Current Availability:	Public information, Available for fee
Historic Availability:	From 1985
Cost:	$25 per year
Contact:	Geoffrey Ely (213) 624-2181

The 1985 BOMA Guide includes rental information for 209 buildings in the downtown area. Buildings are listed by name, address, number of stories, square footage, asking lease rates, and available square footage.

Inclusion in the BOMA Guide is not limited to BOMA members. BOMA conducts, in their words, an "aggressive" survey and believes that the Guide is highly accurate and complete.

Combined with the benefit assessment data base, the BOMA Office Marketing Guide could provide address specific information on lease rates in the benefit assessment districts. The BOMA Guide would appear to provide highly useful information.

	BUILDING NAME & ADDRESS	LEASING AGENT	BUILDING SIZE	TERMS PARKING YEAR BUILT	AVAILABILITY
A1	Kajima Bldg. 250 E. 1st St. Los Angeles 90012	Tom Fers Kajima Buildings (213)680-1197	15 stories 230,000 sq. ft.	Negotiable 5515 spaces 1987	Immediate 104,219 sq. ft.
A2	S.K. Ueda 312 E. 1st St. Los Angeles 90012	Sakura Ueda Ueda Department Store (213)624-4790	5 stories 25,000 sq. ft. 5,000 per floor	Negotiable 1918	Immediate Contact agent
A3	Mitsubishi Bank 321 E. 2nd St. Los Angeles 90012	Michael Stern Caldwell Banker (213)613-3458	15 stories 68,000 sq. ft. 5,000 per floor	$1.45 Gross 52 spaces 1985	
A4	Million Dollar Theatre 306 W. 2nd St. Los Angeles 90013	Stella Saavedra Million Dollar Theatre (818)966-1207	10 stories 60,000 sq. ft. 5,000 per floor	Negotiable 1917	
A5	Office Condo 329-330 W. 3rd St. Los Angeles 90013	Tom Overton Caldwell Banker (213)613-3333	7 stories 45,000 sq. ft. 6,500 per floor	$2.15 Gross	
A6	The Popular Center 125 E. 4th St. Los Angeles 90012	Carlos Sanchez Popular Center (213)626-1160	8 stories 105,000 sq. ft. 11,000 per floor	$1.00-1.25 Gross 1923	
A7	Downtown Professional Center 1211 W. 4th St. Los Angeles 90017	Ted Grace The Seeley Co. (213)627-1214	10 stories 100,000 sq. ft. 16,500 per floor	$2.25 Gross 3.0/1000 sq. ft. 1986	1986 37,000 sq. ft.
A8	1225 W. 4th St. Bldg. 1225 W. 4th St. Los Angeles 90017	Ted Grace The Seeley Company (213)627-1214	5 stories 50,000 sq. ft. 10,000 per floor	$2.25 Gross 3.0/1000 sq. ft.	Immediate 50,000 sq. ft.
A9	Jewelry Trades Bldg. 220 W. 5th St. Los Angeles 90013	Richard DePalma R.A.M. Property Mgmt. (213)689-9061	9 stories 105,454 sq. ft. 11,718 per floor	$1.00-1.25 Net 1905	
A10	312 W. 5th St. Bldg. 312 W. 5th St. Los Angeles 90013	Irving Banks The Irving Banks Co. (213)627-9334	11 stories 250,000 sq. ft. 23,500 per floor	$1.12-1.27 Gross 1926	Immediate 210,000 sq. ft.
A11	317 West Fifth 317 W. 5th St. Los Angeles 90013	Ivan Goldstein McDade & Shidler (213)485-1400	2 stories 20,000 sq. ft.	Negotiable	
A12	411 Bldg. 411 W. 5th St. Los Angeles 90013	Greg Harless Lynn Klous Faulkner & Co. (213)622-2440	12 stories 100,000 sq. ft. 8,000 per floor	$1.75 Gross 2.0/1000 sq. ft. 1931	Immediate 40,000 sq. ft.
A13	One Bunker Hill Bldg. 601 W. 5th St. Los Angeles 90017	Alan Palmer Westgroup (213)489-6178	13 stories 203,000 sq. ft. 15,349 per floor	$2.00 Gross 7.0/1000 sq. ft. 1931	Immediate
A14	6th & San Pedro Bldg. 421 E. 6th St. Los Angeles 90014	Jim Staley R.A. Rowan & Co. (213)481-6961	6 stories 103,000 sq. ft.	$0.10-0.23 Gross 1920	Immediate 7,410 sq. ft.
A15	Security Pacific Bank 213 W. 6th St. Los Angeles 90014 (see ad pg. 22)	Chris Demitrio Demitrio et. al. (213)624-8407	12 stories 188,000 sq. ft. 15,750 per floor	Negotiable 1910	Immediate 31,000 sq. ft.
A16	225 W. 6th St. Bldg. 225 W. 6th St. Los Angeles 90014	Nat Daughtery Western Management (213)627-2348	5 stories 47,000 sq. ft. 9,400 per floor	$1.00 Gross 1925	Immediate 28,000 sq. ft.
A17	Jewelers Wholesale Bldg. 314 W. 6th St. Los Angeles 90014	Nat Daughtery Western Management (213)627-2348	6 stories 33,000 sq. ft. 5,500 per floor	$1.17 Gross 1973	Immediate 2,000 sq. ft.
A18	Park Central Bldg. 412 W. 6th St. Los Angeles 90014	John Nemer Park Central Bldg. (213)627-3976	14 stories 100,000 sq. ft. 7,000 per floor	$0.75 Gross 1914	
A19	Keren Bldg. 510 W. 6th St. Los Angeles 90014	Muhlstein Goldstein Cushman & Wakefield (213)485-1424	12 stories 200,000 sq. ft. 16,000 per floor	$1.25-1.50 Gross 1925	1 ES 45,000 sq. ft.
A20	Pacific Mutual Bldg. 523 W. 6th St. Los Angeles 90014	Michelle Berthea Pacific Mutual Bldg. (213)622-2033	10 stories 380,904 sq. ft. 3 buildings	$2.00 Gross 0.7/1000 sq. ft. 1926	
A21	530 W. 6th St. Bldg. 530 W. 6th St. Los Angeles 90014	Gaya Williams Crown Management (213)628-1141	13 stories 150,000 sq. ft. 12,500 per floor	$1.65 Net 1920	Immediate 7,000 sq. ft.
A22	AT & T Center [illegible] Los Angeles 90017	Greg Harless [illegible] (213)622-2440	42 stories [illegible] sq. ft. 16,500 per floor	$2.17-2.83 Gross [illegible] sq. ft. 1969	Immediate [illegible] sq. ft.
A23	Calif. 1st Bank Bldg. 630 W. 6th St. Los Angeles 90017	Dave Gondt Caldwell Banker (213)613-3449	5 stories 106,729 sq. ft. 20,000 per floor	$2.60 Gross 1.0/1000 sq. ft. 1956	
A24	Pacific Financial Center 800 W. 6th St. Los Angeles 90017 (see ad pg 1)	Gerald Eg: Cushman & [illegible] (213)485-[illegible]	[illegible]ries [illegible]4 sq. ft. 0 per floor	$2.07 Gross 1.0/1000 sq. ft. 1973	Immediate 19,500 sq. ft.

7.2.2 Quarterly Office Absorption Study - Grubb and Ellis

Useability:	A convenient source of lease rates and trends
Relevant Indicators:	Lease Rates Occupancy Rates Development/Redevelopment Activity
Other Data:	Number of projects Total rentable square feet Available square feet Square feet absorbed and pre-leased Asking gross rental rates
Smallest Aggregation:	CBD
Reporting Frequency:	Quarterly
Composition of Data:	Building-by-building survey includes 257 existing, under construction and planned office projects
Current Availability:	Available for fee
Historic Availability:	From 1980 (Comparisons made to 1970)
Cost:	$250 for current report, $10 for historic reports
Contact:	Rene Ybardolaza, Research Director (213) 622-9595

The Grubb and Ellis Quarterly Office Absorption Study shows the following information in a summary table:

- Number of projects
- Total rentable square feet
- Available square feet
- Square feet absorbed and pre-leased
- Asking gross rental rates

The study shows historical vacancy and office space absorption on a quarterly basis starting from the year 1985. Market overview, inventory and vacancy, market activity and future development are also discussed.

Downtown Los Angeles office building construction is summarized in a table showing the annual additions (number of buildings and square feet) and in cumulative format beginning from 1970 to the present.

Buildings under construction and planned are listed in separate tables listing the following information:

- Project name address

- o Scheduled Completion
- o Number of floors
- o Total rentable square feet
- o Amount vacant

The Quarterly Absorption Study duplicates information available from BOMA for a smaller fee. Both sources will require some manipulation to aggregate buildings address by address to compile information by benefit assessment district. However, the Grubb and Ellis study includes convenient trend information which is likely to provide useful insights for the Before-and-After Study.

7.2.3 Black's Guide

Useability:	Well organized and inexpensive
Relevant Indicators:	Lease rates Occupancy rates
Smallest Aggregation:	By building address
Reporting Frequency:	Annually
Composition of Data:	Building area listed by name, address number of stories, square feet per floor and total square footage. Black's Guide includes maps which show the exact location of any property with over 20,000 square feet.
Current Availability:	Available for fee
Historic Availability:	From 1984
Cost:	$39.95 per copy
Contact:	David Black (213) 839-9869

Black's Guide is a division of McGraw Hill Company. The major source of this information is Black's Guide in house data base, which was compiled by field work and is updated annually. Black's Guide field staff update and verify the existing data base and compile new information through organized field work. The data collection process separates building into four categories:

- Proposed buildings
- Buildings in development stage
- Buildings under construction
- New buildings

The following factors should be considered when using this guide:

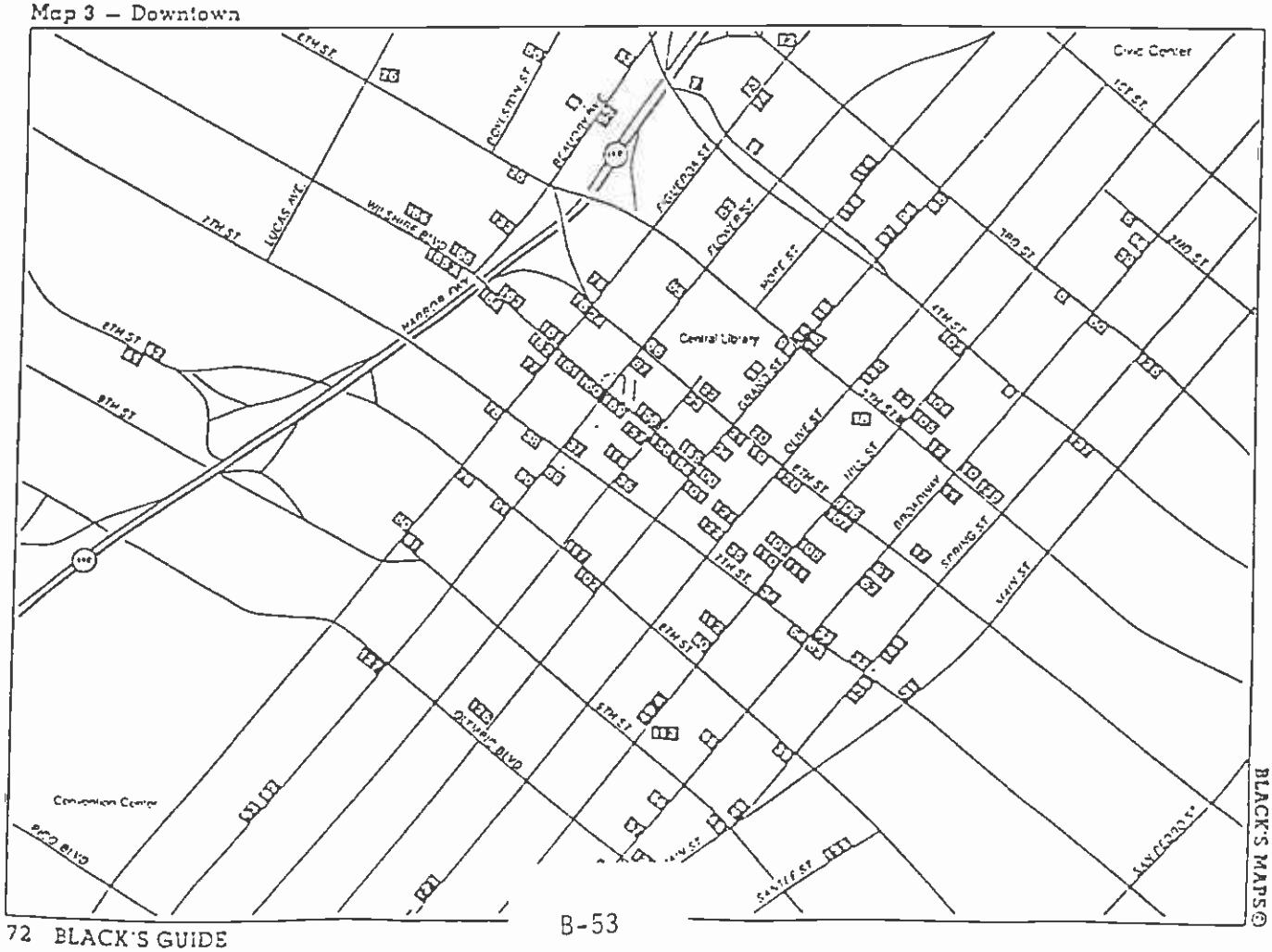
- The Guide does not include any information on residential, commercial (other than office) and industrial uses.
- The buildings of less than 20,000 square feet are not included in this Guide.

Black's Guide . . . the office-leasing industry's desktop reference

Black's Guide is the first place to look for office space information. The Editorial Section answers your questions about relocating and leasing. The Office Directory Section, complete with indexes, maps and listings, helps you find the office space that meets your needs. And the Professional Directory Section profiles the companies whose services can make an office move easier.

For advertising rates, or to obtain a free project listing in the Guide, phone (213) 839-9869.

Map 3 – Downtown



BLACK'S MAPS©

Map No. Name	Building Name Address	Renting Agent Contact	Size Sq. Feet	Rent	Availability Sq. Feet
MAP 3 49	Fashion Design Center 117 W. 9th St. Los Angeles CA	Veronica Becerra Anjac Fashion Bldg. 213-626-5321	12 Stories 6,500 per fl. 78,000 total	$ .70 Gross + All Utilities M:U YB:43 PR: 0	Immediate..Relet 95 to 700
MAP 3 49A	Coast Savings Bldg. 315 W. 9th St. Los Angeles, CA	Robert Buckles Coast Savings Building 213 629 2041	12 Stories 12,000 per fl. 102,000 total	$1.00-1.25 Gross Full Service M:R YB 26 PR:1.5	Immediate..Relet 300 to 100,000
MAP 2 50	Teamsters Bldg. 1616 W. 9th St. Los Angeles CA	John Smith Teamsters Bldg. 213-387-8545	5 Stories 11,000 per fl. 55,000 total	$ 1.05 Gross Full Service M:R YB 57 PR 7.0	Immediate..Relet 2,400 to 35,000
MAP 2 51	St. Vincent Prof Ctr Bldg 201 S. Alvarado St. Los Angeles CA	Michael Calley Charles Dunn Prop. Mgmt. 213-484-9180	8 Stories 12,000 per fl. 97,722 total	$ 1.75 Gross Full Service M:U YB:77 PR 4.0	Immediate..Relet 900 to 3,500
MAP 3 52	The Beaudry Center #2A 233 S. Beaudry Ave. Los Angeles CA	G.A. Julin, III Martin Management Corp. 213-250-4442	13 Stories 60,000 per fl. 126,128 total	$ 1.50- 1.67 Gross Full Service M:R YB 85 PR 2.0	Immediate..New 1,000 to 38,000
MAP 3 53	Security Pacific Bldg. 333 S. Beaudry Ave. Los Angeles CA	Bill Vetter Security Pacific Bank 213-580-2720	28 Stories 44,000 per fl. 896,564 total	To Be Determined M:R YB: 0 PR 2.0	Immediate..Relet Limited
MAP 2 54	1720 Beverly Blvd. Los Angeles CA	Hunt Williams Charles Dunn Company 213-481-1900	2 Stories 7,500 per fl. 15,000 total	$ .75 Net + Everything M:R YB 25 PR: .0	Immediate..Relet Limited
MAP 2 55	2333 Beverly Blvd. Los Angeles CA	Mr. & Mrs. Patterson 2333 Bev. Blvd. Bldg. 213-484-6850	4 Stories 5,000 per fl. 20,000 total	To Be Determined M:R YB: 0 PR: 0	Immediate..Relet Limited
MAP 3 56	411 S. Boylston St. Los Angeles CA	Donna Smith The Faulkner Co. 213-622-2440	2 Stories 7,866 per fl. 15,732 total	$ 1.00 Gross Full Service M:R YB: 0 PR 2.0	Immediate..Relet 550 to 3,500
MAP 3 57	Cal. Pacific Bank Bldg. 977 N. Broadway Los Angeles CA	Brian Edwards Cushman & Wakefield 213-485-1424	5 Stories 11,000 per fl. 65,000 total	$ 1.75 Gross + All Utilities M:U YB:84 PR:2.0	Immediate..New 1,000 to 2,400
MAP 3 58	Civic Center Plaza Co. 205 S. Broadway Los Angeles CA	Gail Holtzman Crown Mgmt 213-628-1141	10 Stories 6,500 per fl. 65,000 total	$ 1.25 Gross Full Service M:R YB: 0 PR: .0	Immediate..Relet 1,400 to 1,900
MAP 3 59	Civic Center Plaza Co. 207 S. Broadway Los Angeles CA	Gail Holtzman Crown Mgmt 213-628-1141	7 Stories 7,500 per fl. 52,500 total	$ 1.25 Gross Full Service M:U YB: 0 PR: .0	Immediate..Relet Partial floor to 15,000
MAP 3 60	Bradbury Bldg. 304 S. Broadway Los Angeles CA	Nate Daugherty Western Management 213-627-3348	5 Stories 10,000 per fl. 50,000 total	$ 1.25- 1.50 Gross + Parking M:U YB:93 PR: .0	Immediate..Relet Limited
MAP 3 61	W. Coast Jewelry Center 610 S. Broadway Los Angeles CA	Said Shoshani W. Coast Jewelry Center 213-622-8484	11 Stories 14,400 per fl. 158,400 total	$ 1.10- 1.40 Gross Full Service M:R YB: 0 PR: .0	Immediate..Relet 300 to 1,500
MAP 10 62	St. Vincent Galleria 639-649 S. Broadway Los Angeles CA	Antranik Karaquezian L.A U.I.C. 213-629-2124	4 Stories 30,000 per fl. 200,000 total	$ .50- 1.00 Net + Everything M:U YB:87 PR: .0	U/C; Delivery 3/87 30,000 to 200,000
MAP 3 63	Lankershim Square 700 S. Broadway Los Angeles CA	Tim Sommerset Central Real Estate 213-622-9693	3 Stories 10,500 per fl. 35,000 total	To Be Determined M:R YB:87 PR: .0	U/C; Delivery 5/87 Partial floor to 35,000
MAP 3 64	United Bldg. 707 S. Broadway Los Angeles CA	Richard Ellman Romerman Realty 213-623-2187	12 Stories 16,500 per fl. 200,000 total	$ .60 Gross Full Service M:U YB:21 PR: .0	Immediate..Relet 150 to 2,500
MAP 3 65	Eastern-Columbia Bldg. 849 S. Broadway Los Angeles CA	Edwards/McCann Cushman & Wakefield 213-485-1424	13 Stories 18,000 per fl. 250,000 total	$ 1.25 Gross Full Service M:R YB:30 PR: .0	Immediate..Relet 500 to 30,000
MAP 3 66	929 S. Broadway Los Angeles CA	Mark Needleman Needleman Enterprises 213-629-2566	13 Stories 6,500 per fl. 65,000 total	$ .44 Gross Full Service M:R YB:31 PR: .0	Immediate..Relet Limited
MAP 3 67	1031 S. Broadway Los Angeles CA	Veronica Becerra Anjac Fashion Bldg. 213-626-5321	12 Stories 16,500 per fl. 198,000 total	$ .85 Gross + All Utilities M:U YB 32 PR: .0	Immediate..Relet 2,000 to 6,000
MAP 3 68	Broadway Towers 1050 S. Broadway Los Angeles CA	Harry Lumer, Jr. Spring Street Towers 213-629-0263	10 Stories 8,000 per fl. 80,000 total	$ .55 Gross Full Service M:R YB 25 PR: .0	Immediate..Relet Limited
MAP 2 69	711 W. College St. Los Angeles CA	J. Horning/S. Seinfeld Crane/Sachar Rlty & Mgmt. 213-622-1856	6 Stories 9,000 per fl. 54,000 total	$ 1.65 Gross + Electric M:U YB 83 PR:4.0	Immediate..New 900 to 7,000
MAP 2 70	Figueroa Plaza 201 N. Figueroa St. Los Angeles CA	David Cushman Cushman Realty Corp. 213-613-1505	16 Stories 17,657 per fl. 307,555 total	$27.00 Gross + Parking M:R YB:85 PR 4.0	Immediate..New 1,000 to 137,500
MAP 2 71	Figueroa Plaza 227 N. Figueroa St. Los Angeles CA	David Cushman Cushman Realty Corp. 213-613-1505	16 Stories 17,657 per fl. 307,555 total	To Be Determined M:R YB: 0 PR:4.0	Project Start 12/86 1,000 to 307,555

7.2.4 Studley Report And Space Data

Useability:	Useful and inexpensive
Relevant Indicators:	Occupancy rate Lease rate
Smallest Aggregation:	By the following subareas: Downtown, Mid-Wilshire, Beverly Hills and Century City, Westwood and West Los Angeles, Santa Monica, Fox Hills and Airport, West San Fernando Valley, East San Fernando Valley, Burbank and Glendale, Conejo Valley, and Pasadena.
Report Frequency:	Bimonthly
Composition of Data:	The data includes the office market trends supply and demand figures, total available office space and available space in each subarea. The data also includes average rent per square foot of office space in each subarea.
Current Availability:	Available for fee
Historic Availability:	From 1984
Cost:	$25 for each issue $125 for a year
Telephone:	622-9599

The Studley report includes up-to-date information on the office space market in various subareas, however, it does not cover residential, commercial and industrial uses.

STUDLEY REPORT & SPACEDATA

LOS ANGELES • OFFICE SPACE & OFFICE BUILDINGS • MARCH/APRIL 1987

Leasing activity during March/April 1987 continues to show the tightening trend that office space leasing in the Los Angeles area is experiencing. While the total amount of leasing activity in all office buildings for this period decreased from the record level of 2,329,722 square feet for this same period in 1986 to 1,838,522 square feet, the number still represents a very high level of office space movement. The year-to-date total for 1987 of 4,407,400 square feet shows a total decrease in leased space of 471,595 square feet over the same four month period of 1986. New office space projects revealed total lease commitments of 905,611 square feet in comparison to 1,225,600 square feet for the same period in 1986; this decrease is consistent with the diminished supply of office space being offered.

The average asking rental rate for all space offered in office buildings during March/April 1987 is $23.64 per square foot per year, fully serviced. This average represents a decrease of approximately four (4%) percent from March/April 1986 when the average asking rental rate for all buildings was $24.60 per square foot per year. The average rental rate for space in new buildings in Los Angeles is $25.20 per square foot per year, fully serviced, as compared to $26.64 per square foot per year in 1986.

The supply of new office space being offered continues to decline from what was a record high being offered during July/August 1985 of 16,032,173 square feet, to a current supply of 12,552,075 square feet. The shortage of new projects breaking ground on the horizon indicates that this supply of new space being offered will continue to shrink and result in rental rates increasing as the supply tightens through the remainder of 1987.

Deals completed in the Los Angeles area during March/April included the law firm of Orrick, Herrington & Sutcliffe leasing 20,000 square feet at 333 South Hope; IDS Financial Services leasing 21,000 square feet at Westside Towers; both DIC Animation Groups leased 40,000 square feet and DISC Entertainment Services leased 18,000 square feet at 3601 East Olive; and the computer graphics firm of Whitney Demos subleased 25,000 square feet at 300 Corporate Pointe.

All Buildings	1987	1986
March/April Space Leased	1,838,552	2,329,722
Year-to-Date Space Leased	4,407,400	4,878,995
New Buildings		
March/April Space Leased	905,611	1,225,600
Year-to-Date Space Leased	2,018,234	2,566,621

Average Rental Offered March/April	1987	1986
New	25.20	26.64
Old	21.84	21.60

LOS ANGELES

JULIEN J. STUDLEY INC.

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THE LOS ANGELES STUDLEY REPORT & SPACEDATA IS A SURVEY OF RENTS AND ALL OFFICE SPACE LEASED, TOGETHER WITH SPECIFIC AVAILABILITY IN COMPETITIVE NEW OFFICE BUILDINGS RECENTLY COMPLETED, UNDER CONSTRUCTION OR SCHEDULED IN THE LOS ANGELES AREA.

7.2.5 Quarterly Reports - Los Angeles Times Library

Useability:	Useful background information
Relevant Indicators:	Occupancy rate Property value
Smallest Aggregation:	By City
Reporting Frequency:	Quarterly
Composition of Data:	The major office market trends in Los Angeles and Orange County. The data focuses on CBD office market in these areas along with office market data from other cities.
Historic Availability:	As needed. (The information is available at the Los Angeles Times Library)
Cost:	No cost
Contact:	Bill Turpin

The information is summarized from news releases by commercial brokers, particularly Grubb & Ellis and Coldwell Banker. The Before and After Study may be able to use this data source directly.

LA Times 7/27/86

Office Vacancy Rates Show Drop

West Los Angeles, Orange County Most Active Markets

Absorption of commercial space throughout Southern California exceeded expectations during the first half of 1986, a newly released study by Grubb & Ellis shows.

Forecasters generally had expected otherwise but office vacan-

See related story on Page 2.

rates in most of the Southland opped markedly.

"The doomsayers can make all pronouncements they want, markets in Southern elsewhere are a lot many would lead us id Phillip D. Royster, n's senior vice presi- nal manager of com- rage services.

were surprised when research staff came to us with ir findings for the last two arters."

At the end of June, the overall vacancy rate was 18%; by year's end, that will likely increase by only one or two percentage points, Royster predicted.

Absorption at midyear stood at 6.8-million square feet, with Orange County, San Diego and downtown Los Angeles accounting for about 4.8-million square feet.

For diverse reasons, West Los Angeles and Orange County were the most active markets, according to the study.

The former, now the largest office market in the Southland—with 27 million square feet—has a current vacancy rate of 10%, lowest in the region. But Royster expects it will increase to about 12% over the next six months because of an increase in the amount of square footage now under construction and work to be completed by year's end.

About 1.6 million square feet of new space will be built by the end of the year but a "dwindling supply of developable land and the fear of slow- and no-growth legislation will continue to keep this market-place the tightest in the region," the executive said.

The Orange County market's vacancy factor fell from 23% to 17% in the first half of the year, and, unlike West Los Angeles, there is no lack of developable land, nor any significant no-growth legislation pending.

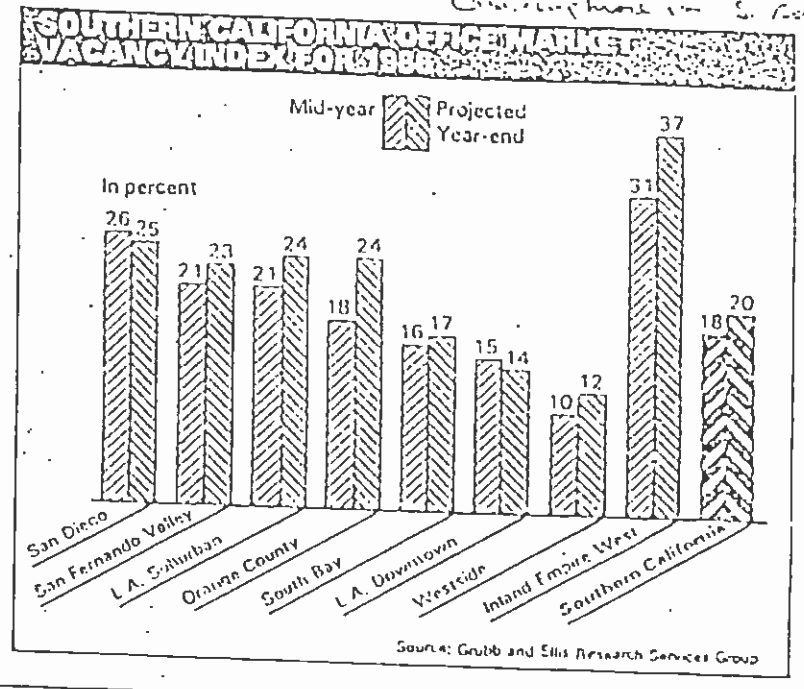
Expect Vacancy Rise

During the last six months, 2.1-million square feet of space was committed, topping all of the 1985 total of just 1.6-million square feet. Currently, there are 7.6-million square feet of construction under way, the largest amount of office space being built anywhere in the Southland. Of that total, 1.3-million square feet has been pre-leased.

"Vacancy levels in Orange County by year's end will again rise to 24% as another 3.7-million square feet come on line," Royster said. Totally, there now exist 23 million square feet, with 4.3 million square feet being vacant.

Vacancies in downtown Los Angeles also have dropped, from 17% to 15% in the first six months of 1986, he said, and if activity re-

Please see OFFICES, Page 5



7.2.6 California Real Estate Directory

Useability:	Limited
Relevant Indicators:	Occupancy rates Lease rates
Smallest Aggregation:	By address
Reporting Frequency:	Quarterly
Composition of Data:	Voluntary listings
Current Availability:	Available for fee
Cost:	$30 per quarter

The California Real Estate Directory contains information similar to that found in the BOMA Guide, such as space availability and lease rates. However, the California Real Estate Directory is not as complete a listing as BOMA. The current issue lists only about 100 buildings in the CBD. The California Real Estate Directory would appear to be most useful as a check on the accuracy of lease rates found in the BOMA Guide.

Northeast

Downtown

BUILDING NAME ADDRESS	LEASING AGENT	MANAGEMENT AGENT	RENT	AVAILABILITY	SIZE
Biltmore Plaza Los Angeles, CA	Westgroup, Inc. D. Allen Palmer 213 488-0111	Same	$2.17 gross	1st Qtr 88	2 Bldgs. 12 & 24 Stories 500,000 sf
Fujima Bldg. 250 1st St. E. Los Angeles, CA	Fujima Int'l, Inc. Tom Fehr 213 680-1987	Same	N/A	FULL	15 Stories 104,015 sf
Broadway Square 250 2nd St. W. Los Angeles, CA	Irving Schiff Co. Irving Schiff/Scott Schwartz 213 627-9004		$2.10-$2.75 gross	150,000 1st Qtr 88	1 Bldg. 8 Stories 150,000 sf
The Professional Ctr. 1201 4th St. W. Los Angeles, CA	The Cooley Co. Ted Grace 213 627-2014		N/A	50,000 Proposed	5 Stories 50,000 sf
Chester William Bldg. 215 5th St. W. Los Angeles, CA	David Perry & Assoc. David Perry 213 689-4411	Fiske & Dawson 213 689-4411	$.60-$.90 gross	40,000 Immediately	12 Stories 216,000 sf
312 5th St. W. Los Angeles, CA	Irving Schiff Co. S. Schwartz 213 627-9004		$1.10-$1.21 gross	211,500 Immediately	11 Stories 300,000 sf
Title Guarantee Bldg. 411 5th St. W. Los Angeles, CA	Faulkner Co. Greg Mattess 213 622-0440	Four-Eleven Associates 213 624-5056	$1.00-$1.25 gross	50,000 Immediately	1 Bldg. 12 Stories 100,000 sf
One Bunker Hill Bldg. 601 5th St. W. Los Angeles, CA	Westgroup D. Allen Palmer/C. R. Lande 213 488-0111	Same	$2.17 gross	60,000 Immediately	1 Bldg. 12 Stories 220,000 sf
Park Central Bldg. 412 5th St. W. Los Angeles, CA	Moran Mgmt. Corp. John Nemer 213 627-3936		$.70-$.85 gross	2,000 Immediately	1 Bldg. 14 Stories 100,000 sf
Heron Bldg. 510 6th St. W. Los Angeles, CA	Cushman & Wakefield C. Muhlstein/A. Goldstein 213 488-1400	Jones Lang Wootton 213 624-2500	$1.50-$1.83 gross	40,000 Immediately	12 Stories 200,000 sf
Pacific Mutual Bldg. 523 6th St. W. Los Angeles, CA	Westgroup D. Allen Palmer/C. R. Lande 213 488-0111	Same	$2.16 gross	20,000 Immediately	3 Bldgs. 12 Stories 400,000 sf
530 6th St. W. Los Angeles, CA	Crown Mgmt. Gail Holtzman 213 625-1145		$1.50-$1.65 gross	6,000 Immediately	12 Stories 140,600 sf
AT&T Center 611 6th St. W. Los Angeles, CA	Faulkner Co. E. Page/G. Mattess 213 622-0440	Aspen Property Mgmt. Muriel Shelby 213 488-4870	$2.00-$2.25 gross	160,000 Immediately Will divide	42 Stories 692,000 sf
California First Bank 616 6th St. W. Los Angeles, CA	California First Bank 213 972-6200		N/A	FULL	6 Stories 110,618 sf
Pacific Financial Ctr. 600 6th St. W. Los Angeles, CA	Pacific Southwest Realty R. Sveresen/B. Vetter 213 613-7505		$2.67-$2.92 gross	19,459 Immediately Will divide	17 Stories 206,731 sf
Linder Plaza 624 6th St. W. Los Angeles, CA	Coldwell Banker G.W. Vaughan/G. Toeller 213 613-3200	Same	$2.23 gross	15,000 Immediately Will divide	14 Stories 95,000 sf
1052 6th St. W. Los Angeles, CA	California Metro. Corp. Carol Hahn 213 482-4111	Same	N/A	18,000 Immediately	6 Stories 70,000 sf
617 7th St. W. Los Angeles, CA	Westgroup D. Allen Palmer/C. R. Lande 213 488-0111	Same	$1.75 gross	30,000 Immediately Will divide	1 Bldg. 12 Stories 190,000 sf
Roosevelt Bldg. 727 7th St. W. Los Angeles, CA	Helmsley-Spear Joe Perlmutter 213 627-3045	Same	$1.60 gross	50,000 Immediately	1 Bldg. 12 Stories 252,120 sf
Fine Arts Bldg. 811 7th St. W. Los Angeles, CA	Jones Lang Wootton Rob Langer/Tony Acerra 213 624-2500	Patkovich, Bowers & Perez Inc. Barbara Ryan 213 489-3161	$25.00 gross	13,500 Immediately	1 Bldg. 12 Stories 107,675 sf
Fine Arts Bldg. 811 7th St. W. Los Angeles, CA	Grubb & Ellis Freeman 213 451-0250		N/A	10,500 Immediately	12 Stories 100,908 sf
818 Bldg. 818 7th St. W. Los Angeles, CA	Jones Lang Wootton Tony Acerra/C. Cooney 213 624-2500	Davis Wall 213 624-2500	$2.00 gross	205,000 Immediately	1 Bldg. 12 Stories 256,625 sf
Theatre Jewelry Centre 411 7th St. W., #702 Los Angeles, CA	Shidler Management Group, Inc. Michael Ann Rose	Same	$1.00-$1.25	1,500 Immediately	1 Bldg. 9 Stories
Garfield Bldg. 403 8th St. W. Los Angeles, CA	Coldwell Banker T. Owens/A. Grapioli 213 613-3270	Garfield Assoc. Ltd. Peter Beale 213 627-8153	$1.54-$1.78 gross	70,000 Immediately	12 Stories 90,000 sf
Westlake Center 1015 8th St. W. Los Angeles, CA	Westlake Center Arthur F. O'Leary 213 613-3121	Same	$1.10 gross	4,550 Immediately Will divide	3 Stories 34,000 sf
Beaudry Ctr. Ph. II 333 Beaudry Ave. S. Los Angeles, CA	C-D Investment Co. Sandra Orell 213 553-7811		N/A	699,000 Immediately	15 Stories 695,000 sf

7.2.7 Office Vacancy Index Of The United States - Coldwell Banker

Useability:	A convenient source of historic vacancy rates
Relevant Indicators:	Occupancy Rates
Smallest Aggregation:	CBD
Reporting Frequency:	Quarterly
Composition of Data:	Building-by-building survey
Current Availability:	Public information
Historic Availability:	From June 1979
Cost:	No charge
Contact:	William Thompson, (213) 613-3211

The Coldwell Banker Officer Vacancy Index is a quarterly report on vacancies and suburban areas of selected major metropolitan areas of the U.S. Each individual Index is computed as a percentage, dividing vacant space for lease or rent by the total square footage of office space in buildings covered by the survey in each area.

The national index for downtown areas is presently the average vacancy rate of 34 areas, including two in Manhattan. (See "Downtown Areas.") The national index for suburban areas presently includes 33 metropolitan areas. (See "Suburban Areas.") Additional downtown and suburban areas will be added to the survey from time to time as data become available.

The Index covers major competitive multi-tenant office buildings. It excludes government-owned buildings, medical buildings, office condominiums, and buildings that are clearly not competitive in today's marketplace. Most buildings covered by the survey were constructed since World War II, although buildings that have been well-maintained or renovated are also included. Newly constructed office buildings are added to the survey upon completion.

Each downtown index typically covers office buildings in the central core of the largest city within the metropolitan area. The corresponding suburban area typically includes all other portions of the metropolitan area outside the central core. Thus, some smaller "downtown" urban centers are included in the "suburban" Index. Buildings included in the downtown and suburban survey areas comprise the entire competitive office space base within the metropolitan area. Vacancy rates for entire metropolitan areas (downtown and suburban combined) are included. In a few metropolitan areas there is no single major central core (for example, Orange County, California) and the entire metropolitan area is classified "suburban."

The Index is based on a quarterly survey of major office buildings

selected from the Office Building Data Bank maintained by Coldwell Banker Commercial Real Estate Services. The Office Building Data Bank is unique computerized system used to monitor real estate market trends in major U.S. cities. Data on each building are obtained directly from the property owner, manager or leasing agent. Customary methods of determining square footage area are followed in each city.

The Coldwell Banker Office Vacancy Index defines downtown Los Angeles as the area bounded by Hill Street west to the west side of Bixel Street, Olympic Boulevard north to the Civic Center.

Historical Data — Downtown Areas

For prior quarters' data (to June 1970) see previous issues.

	JUN 1979	SEP 1979	DEC 1979	MAR 1980	JUN 1980	SEP 1980	DEC 1980	MAR 1981
National	4.8	4.2	3.5	3.4	3.5	3.9	4.1	3.8
Atlanta	10.0	12.0	11.6	11.9	12.5	13.1	13.9	12.1
Baltimore	•	•	•	•	•	•	•	•
Boston	•	•	•	•	•	2.2	1.5[1]	1.4
Charlotte	•	•	•	•	•	•	0.9	0.9
Chicago	3.0	3.0	3.2	4.2	4.1	3.7	3.7	3.5
Cincinnati	•	•	•	•	•	5.0	5.2[1]	5.1
Columbus	•	•	•	•	•	•	•	•
Dallas	7.0	5.7	4.4	2.4	3.7	3.0	4.8	3.3
Denver	3.5	1.4	1.8	1.9	2.0	1.0	0.3	0.1
Hartford	•	•	•	•	•	•	•	•
Houston	1.6	1.7	1.7	1.5	1.1	1.3	1.4	2.2
Indianapolis	•	•	•	•	•	•	•	•
Jacksonville	•	•	•	•	•	•	•	•
Kansas City	6.9	15.4	14.4	9.3	8.3	11.1	10.2	9.2
Los Angeles	1.4	1.3	0.3	1.2	0.2	0.4	0.2	0.3
Manhattan, Downtown	•	•	•	•	•	•	•	•
Manhattan, Midtown	•	•	•	•	•	•	•	1.5[1]
Miami	2.5	3.5	2.1	1.5	1.4	1.1	1.6	1.8[1]
Minneapolis-St. Paul	1.5	1.4	1.2	1.0	2.1	4.5	6.8	5.5[1]
Nashville	•	•	•	•	•	•	•	•
New Orleans	•	•	•	•	•	•	•	•
Oakland-East Bay	•	•	•	•	•	•	•	•
Oklahoma City	•	•	•	•	•	•	•	0.6[1]
Orlando	•	•	•	•	•	•	•	•
Philadelphia	•	•	•	•	6.9	6.5	5.5[1]	5.9
Phoenix	5.5	4.5	3.8	4.3	7.3	6.0	6.8	9.7
Portland	1.0	1.4	1.9	5.2	3.7	3.0	3.7[1]	3.1
Sacramento	3.4	2.4	2.4	3.6	1.5	1.1	1.1	1.2
St. Louis	•	•	•	•	•	•	•	•
Salt Lake City	•	•	•	•	•	•	•	•
San Antonio	•	•	•	•	•	•	•	•
San Diego	10.5	6.9	5.0	4.5	4.5	4.3	3.7	3.5
San Francisco	1.5	0.2	0.4	0.2	0.2	0.1	0.1	0.1
San Jose	•	•	•	•	•	•	•	•
Seattle	3.3	2.4	2.1	2.3	2.0	4.5	6.0	4.7
Tampa	•	•	•	•	•	•	•	•
Toronto	•	•	•	•	•	•	•	•
Vancouver, B.C.	•	•	•	•	•	•	•	•
Washington, D.C.	0.3	0.1	0.1	0.1	1.1	0.9	0.8	0.5

	JUN 1981	SEP 1981	DEC 1981	MAR 1982	JUN 1982	SEP 1982	DEC 1982	MAR 1983	JUN 1983	SEP 1983	DEC 1983	MAR 1984
National	4.1	4.4	4.8	5.5	7.1	8.9	10.0	10.9	11.7	11.7	12.4	13
Atlanta	11.6	12.0	17.7	15.4	15.2	20.1	19.4	19.9	18.4	16.3	16.0	14
Baltimore	•	•	•	•	•	•	•	•	•	•	•	•
Boston	2.7	2.2	2.0	3.1	3.7	4.0	3.7	3.3	2.7	2.0	1.9	2
Charlotte	0.7	0.8	1.5[1]	17.5	15.5	15.0	15.8	13.1	16.5	15.5	15.0	14
Chicago	4.0	4.0	4.9	5.0	6.4	7.6	8.0	9.0	9.7	10.6	11.0	10.7
Cincinnati	5.0	4.8	6.4	5.0	4.9	4.0	4.5	4.9	5.4	4.0	5.5	6.1
Columbus	•	•	•	•	•	•	•	•	•	•	14.5	13.1
Dallas	4.9	4.8	4.8	4.9	3.9	5.4	10.0	12.9	13.1	13.3	14.6	15.1
Denver	0.1	0.1	0.1	0.0	2.1	3.5	6.0	13.2	19.3	22.4	23.0	25.5
Hartford	•	•	•	•	•	•	•	•	•	•	•	•
Houston	1.9	1.3	1.0	1.0	2.3	2.9	5.9	8.0	12.1	12.5	14.5	18.5
Indianapolis	•	•	•	•	•	•	•	•	•	11.2	13.0	12.5
Jacksonville	•	•	•	•	•	•	•	•	•	•	•	•
Kansas City	8.0	7.9	7.5	7.8	7.7	10.2	11.2	10.5	9.7	9.5	8.9	10.0
Los Angeles	0.3	0.5	0.8	1.9	3.8	5.9	9.5	11.5	13.0	13.1	12.3	12.2
Manhattan, Downtown	•	2.1	1.4	2.3[1]	2.5	2.8	3.3	3.4	4.2	3.5	3.7	4.5
Manhattan, Midtown	2.1	1.9	2.4	3.2	3.5	4.1	4.3	5.5	6.2	6.3	7.2	6.3
Miami	2.2	3.5	4.8	5.1	5.0	6.3	7.2	12.8	12.8	13.9	15.5	14.3
Minneapolis-St. Paul	4.7	4.5	5.1	5.1	6.0	7.0	9.7	9.1	8.2	7.2	9.5	11.1
Nashville	•	•	•	•	•	4.7	4.4	4.7[1]	13.3	13.9	10.5	14.9
New Orleans	•	•	•	•	•	4.5	7.4	8.4[1]	8.4	15.0	20.9	19.4
Oakland-East Bay	•	•	•	•	•	•	•	•	•	•	•	12.1
Oklahoma City	0.9	2.3	3.3[1]	3.6	5.9	5.3	9.5	9.0	9.3	9.7	9.1	13.0
Orlando	•	•	•	•	•	•	•	•	•	•	•	•
Philadelphia	5.2	6.1	6.4	6.2	5.3	7.5	9.1	11.6	9.4	9.0	8.5	8.9
Phoenix	7.7	7.9	7.5	7.7	10.2	11.6	11.0	12.4	12.5	9.7	15.3	15.2
Portland	4.9	7.9	6.9	5.9	6.7	12.9	18.9	15.8	20.1	15.0	18.4	18.2
Sacramento	5.9	6.5	9.1	8.3	7.7	17.4	15.3	17.9	18.0	21.5	19.3	23.0
St. Louis	•	•	6.3	11.4	9.4	9.6	10.9[1]	10.5	6.5	8.5	12.0	10.5
Salt Lake City	•	•	•	•	•	•	•	•	•	•	•	•
San Antonio	•	•	•	•	•	•	•	•	•	•	•	•
San Diego	2.7	1.9	2.7	2.5	19.8	26.2	27.3	23.2	23.3	21.4	21.3	20.1
San Francisco	0.1	0.3	0.4	0.9	3.4	3.6	5.7	5.9	6.1	6.4	5.9	6.9
San Jose	•	•	•	•	5.7	7.3	12.3	11.5[1]	10.6	10.5	10.2	9.9
Seattle	6.9	6.9	6.5	8.5	9.5	9.2	8.7	8.7	8.0	10.0	14.3	14.8
Tampa	•	•	13.2	15.4	15.1	14.8	13.7	15.6[1]	15.4	13.6	11.2	10.5
Toronto	•	•	•	•	•	•	•	•	•	•	12.3	12.8
Vancouver, B.C.	•	•	•	•	•	•	•	•	•	•	•	•
Washington, D.C.	0.7	1.5	2.7	4.8	6.3	7.3	9.5	11.2	14.0	13.2	11.7	12.1

• Indicates no data kept by Coldwell Banker until later date.

[1] Included in National Index [illegible] beginning with quarter [illegible]

7.3 DEVELOPMENT/REDEVELOPMENT ACTIVITY

7.3.1 MOS-1 Benefit Assessment Data Base - Southern California Rapid Transit District

Useability:	Good, with adjustments
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	Assessor's Mapbook (ownership) Parcel
Reporting Frequency:	Annually
Composition of Data:	Land Use Square Footage
Current Availability:	SCRTD Ownership
Historic Availability:	1984-85 and 1985-86 tax years
Cost:	No charge

Overview

Actual land use data for each parcel in MOS-1 Benefit Assessment Districts A1 and A2 is collected by SCRTD and coded according to use through review of public records and field inspections.

Inclusions and Exclusions from Data

A cluster of fields is used to allocate square footages by land use. The data is refined annually through review of public records and field inspections. However, as the data base was developed to calculate the direct assessment for each parcel in the Metro Rail MOS-1 Benefit Assessment Districts, land use is defined according to the needs of the assessment formula. For example, one category contains Institutional-Government uses. This field contains the square footages for properties which are considered non-profit under the Benefit Assessment guidelines. However, if an agency is considered "for profit", it will not be included in this category, but rather included in the Service classification.

Special Tabulations

This data may be combined with other data items to calculate value per square foot or acre. Data can be totaled by block, zone or land use type.

Useability of Data

The data is recorded by ownership parcels which are based on tax records and does not correspond to a standard geographic unit. If a taxpayer owns 3 properties -- two office buildings and a parking lot -- and requests one tax bill these three lots will be defined as one ownership parcel. However, because of the highly disaggregated nature

of the data, the parcel records can be readily aggregated to correspond to other data sources.

7.3.2 Major Building Projects - Los Angeles Chamber of Commerce

Useability:	Very Good
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	By project
Reporting Frequency:	Monthly
Composition of data:	All projects of $1 million or more
Current Availability:	Available for fee
Historic Availability:	Use Security Pacific California Construction Trends
Cost:	$300 per year
Contact:	Jack Kyser, Economist (213) 629-0672

This report was created to fill the gap left when the Security Pacific Bank discontinued California Construction Trends. The information is derived from questionaires returned to the U.S. Census Bureau by each issuing place. These questionaires include virtually all construction projects in Los Angeles of $1@million or more.

MAJOR BUILDING PROJECTS IN SOUTHERN CALIFORNIA
TABLE C——BY 5-DIGIT ZIP CODE
PREPARED BY
WESTERN ECONOMIC RESEARCH CO.& THE L.A. CHAMBER OF COMMERCE

ZIP CODE	POST OFFICE	SITE ADDRESS	No. UNITS	CONSTRUCTION VALUE	PROJECT DESCRIPTION	NAME AND ADDRESS OF OWNER OR BUILDER	CITY OF OWNER OR BUILDER	NORTH
91324	NORTHRIDGE	10248 DEERFIELD LANE	1	$,530,000	SGL. FAMILY DWELLING	NOT LISTED	NOT LISTED	JUN
91351	CANYON COUNTRY	1310 KEATON AVENUE	1	$,500,000	SGL. FAMILY DWELLING	NOT LISTED	NOT LISTED	JUN
91364	WOODLAND HILLS	23637 KINGSBORO WAY	1	$,530,000	SGL. FAMILY DWELLING	NOT LISTED	NOT LISTED	JUN
91401	VAN NUYS	11156 ACAMA STREET	13	$,780,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90004	LOS ANGELES	4826 ROSEWOOD AVENUE	9	$,713,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90006	LOS ANGELES	1586 VENICE BLVD.		$ 2,600,000	APARTMENT/4 STORIES	DSL REALTY, 836-8364	NOT LISTED	JUN
90015	LOS ANGELES	2121 9TH STREET		$,530,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90015	LOS ANGELES	240 S. HOPE STREET		$ 17,000,000	APARTMENT/RETAIL/28 FLOOR	GRAND PROMENADE,	NOT LISTED	JUN
90020	LOS ANGELES	535 N. NORMANDIE BLVD.		$ 1,000,000	APARTMENT/3 STORIES	PRIMARY INVESTMENT CORPORATION	NOT LISTED	JUN
90024	WEST LOS ANGELES	1657 VETERANS BLVD.	9	$,910,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90025	LOS ANGELES	1522 BUNDY DRIVE	9	$,723,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90025	LOS ANGELES	1505 BARRY AVENUE	27	$ 2,000,000	APARTMENT/2 STORIES	MARTIN UROV	NOT LISTED	JUN
90025	WEST LOS ANGELES	1958 BARRINGTON AVENUE	5	$,517,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90025	WEST LOS ANGELES	1857 MIDVALE AVENUE	5	$ 1,882,000	APARTMENT/3 STORIES	JACOB FRUCHTER	NOT LISTED	JUN
90025	WEST LOS ANGELES	1601 SELBY AVENUE	13	$ 1,652,000	APARTMENT/2 STORIES	TONY MASTER	NOT LISTED	JUN
90034	LOS ANGELES	3614 PARIS DRIVE	48	$ 3,500,000	APARTMENT/2 STORIES	PARIS I	NOT LISTED	JUN
90038	LOS ANGELES	1220 N. LAS PALMAS	36	$ 2,502,000	APARTMENT/5 STORIES	YOU DEVELOPMENT	NOT LISTED	JUN
90046	LOS ANGELES	839 HAYWORTH AVENUE	8	$,510,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90049	BRENTWOOD	1169 WELLESLEY AVENUE	6	$,690,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90049	LOS ANGELES	1616 BARRINGTON AVENUE	26	$ 2,400,000	APARTMENT/3 STORIES	CENTURY WEST DEVELOPERS,818/458-1831	NOT LISTED	JUN
90056	LOS ANGELES	3261 SAWTELLE BLVD.	16	$ 1,265,000	APARTMENT/2 STORIES	RICHWOOD DEVELOPMENT CORPORATION	NOT LISTED	JUN
90066	WEST LOS ANGELES	2118 COLBY AVENUE	10	$,780,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
90066	LOS ANGELES	3549 HUGHES AVENUE		$ 1,000,000	APARTMENT/3 STORIES	CWO HUGHES ASSOCIATION	NOT LISTED	JUN
90066	LOS ANGELES	10021 TABOR STREET		$ 4,830,000	APARTMENT/3 STORIES	HARTWOOD DEVELOPMENT COMPANY	NOT LISTED	JUN
90067	LOS ANGELES	1421 AMBASSADOR STREET	46	$ 4,300,000	APARTMENT/3 STORIES	COAST FEDERAL PROPERTIES, 274—5553	NOT LISTED	JUN
90744	WILMINGTON	1444 N. "D" STREET		$ 1,000,000	CLUB WITH GYM/BOYS & GIRL	WILMINGTON BOYS CLUB/549-8323	WILMINGTON	JUN
91006	ARCADIA	1508 GREENFIELD AVENUE		$ 4,250,000	APARTMENT/4 STORIES	NATHEN ROSENBLATT, 879-4060	NOT LISTED	JUN
91104	PASADENA	2213 MICHIGAN AVENUE	25	$ 1,360,000	APARTMENT/3 STORIES	D.S.J. CONSTRUCTION COMPANY., INC.,818/907-6133	NOT LISTED	JUN
91104	PASADENA	2213 MICHIGAN AVENUE	34	$ 1,760,000	APARTMENT/3 STORIES	D.S.J. CONSTRUCTION COMPANY,INC., 907-6133	NOT LISTED	JUN
91325	CANOGA PARK	21320 PARTHENIA STREET	24	$ 1,600,000	APARTMENT/2 STORIES	JOHN VOUTECH	NOT LISTED	JUN
91331	NORTHRIDGE	17839 ROSCOE BLVD.	58	$ 4,000,000	APARTMENT/3 STORIES	NORTHWESTERN-ROSCOE,A CAL LIMITED PARTNERSHIP, 786-1581	NOT LISTED	JUN
91402	PACOIMA	10743 LAUREL CANYON BLVD.	17	$,950,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
91402	VAN NUYS	8757-823 BURNETT AVENUE		$,781,320	APARTMENT	NOT LISTED	NOT LISTED	JUN
91402	VAN NUYS	9224 DERNET AVENUE		$,918,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
91406	VAN NUYS	14405 TERRA BELLA ST.	18	$,818,000	APARTMENT	NOT LISTED	NOT LISTED	JUN
91436	ENCINO	15150 SHERMAN WAY	65	$ 5,800,000	APARTMENT/3 STORIES	LYCON GROUP	NOT LISTED	JUN
91601	NORTH HOLLYWOOD	15130 DICKENS STREET	26	$ 2,280,000	APARTMENT/3STORIES	PROJECT WEST CORPORATION	NOT LISTED	JUN
91601	NORTH HOLLYWOOD	11270 HUSTON STREET	22	$ 1,600,000	APARTMENT/3 STORIES	VILLA SOFIA INCORPORATED	NOT LISTED	JUN
91604	NORTH HOLLYWOOD	5325 CARTWRIGHT AVENUE	15	$ 1,050,000	APARTMENT/2 STORIES	CARTWRIGHT GROUP	NOT LISTED	JUN
91606	NORTH HOLLYWOOD	4128 WHITSETT AVENUE	28	$ 1,500,000	APARTMENT/3 STORIES	SAM KOLIK, 818/769-1944	NOT LISTED	JUN
91754	MONTEREY PARK	11817 VICTORY BLVD.	45	$ 1,600,000	APARTMENT/3 STORIES	FURMAN DEVELOPMENT	NOT LISTED	JUN
		7233 LOMA VERDE AVENUE	30	$ 2,100,000	APARTMENT/2 STORIES	VICTOR MONTAGNA AND ROGER D. ROSS, 878-6318	NOT LISTED	JUN

7.3.3 California Construction Report - Security Pacific Bank

Useability:	Not available
Relevant Indicator:	Development/Redevelopment Activity
Reporting Frequency:	Monthly
Smallest Aggregation:	City
Composition of Data:	Building Permits
Historic Availability:	1969
Current Availability:	Discontinued
Cost:	Back issues, $50 Annually
Contact:	Ms. Ambaro (213) 345-8467

The economics research department at the Security Pacific Bank is in the process of reorganization. The California Construction Report has been discontinued. March 1987 was the last month of publication.

When published, the California Construction Report provided permit activity by city, by type of construction and valuation and, as such, may provide a source of historic development data.

7.3.4 Department Of Water And Power

Useability:	Well organized but incomplete information about properties
Relevant Indicators:	Development/Redevelopment Activity
Smallest Aggregation:	Zip code or census tract.
Reporting Frequency:	By individual request.
Composition of Data:	The data includes "use type" information on all properties served
Current Availability:	Public information. Special tabulations available.
Historic Availability:	Starting from 1978.
Cost:	No charge.
Contact:	Ralph Carlson 481-3373 Dennis Widny 481-5881

Overview

The Department of Water and Power maintains a data base of utility hook-ups. The main source of data is applications for utility accounts. It includes consumption demand, and metered information. The data is aggregated by census tract. The data maintained by DWP could conceivably be used in conjunction with other data sources to monitor development/redevelopment activity in specified geographic areas.

Reliability of Data

The data is updated continuously. Every new development and redevelopment project that requires a new account will be included in the database.

Explanation of Terms

The print out includes data on consumption. Consumption figures are aggregated to monthly and near monthly and yearly consumption is calculated. The data base includes the number of customers in each census tract. The following terms are used in the printout.

SMKWM = Total monthly KWH
SYKWM = Total yearly KWH
MMKWM = Mean monthly KWH
MYKWM = Mean yearly KWH
NM = Number of customers monthly
NY = Number of customers yearly

Special Tabulations

Special tabulations may be obtained. The data will be in summary form and will include variables presented in the sample. Special tabulations should be requested in advance to allow sufficient time for the staff to provide the data. Tabulations may be done by either zip code or census tract. Ralph Carlson of DWP should be contacted at 481-3373 to discuss special tabulations.

Additional information

The following factors should be considered when using this data:

- The data base does not include the size of properties.
- The data base does not have a uniform method to register apartment buildings. If an apartment is metered individually, it will appear as residential. If the entire apartment building has one meter, the building will appear as commercial use in the database.

OBS	CENTR	TYPE	_TYPE_	_FREQ_	SMKWH	SYKWH	MMKWH	MYKWH	NM	NY
1			0	1854	44176902	16124569111	29550	10785665	1495	1495
2		COM	1	1010	436613	159363781	569	207775	767	767
3		IND	1	18	6242	2278415	347	126579	18	18
4		RES	1	826	43734046	15962926915	61597	22482996	710	710
5	207200		2	210	11263021	4111002690	56035	20452750	201	201
6	207700		2	1644	32913881	12013566421	25436	9284054	1294	1294
7	207200	COM	3	122	32796	11970647	271	98931	121	121
8	207200	IND	3	18	6242	2278415	347	126579	18	18
9	207200	RES	3	70	11223983	4096753628	101032	66076671	62	62
10	207700	COM	3	888	403817	147393135	625	228163	646	646
11	207700	RES	3	756	32510064	11866173287	50170	18311996	648	648

Maria

SMKWH = total monthly KWH

SYKWH = " yearly "

MMKWH = mean monthly KWH

MYKWH = " yearly "

NM = number of customers monthly

NY = number of customers yearly.

lines 5 & 6 are totals for constituents

7–11 break totals into commercial, industrial, residential

7.3.5 Projstat - CRA

Useability:	Excellent
Relevant Indicators:	Development Activity
Smallest Aggregation:	By Building
Reporting Frequency:	Annually
Composition of Data:	Projects Known to the CRA
Current Availability:	Public Information
Historic Availability:	Since 1985
Cost:	Free
Contact:	Barbara Kaiser, CRA 977-1873

Don Spivack, CRA's CBD Project manager, maintains a project status listing of development activity planned or pending in the downtown CBD Redevelopment Project area. This data base includes number of stories, office square feet, retail square feet, hotel rooms, housing units, parking spaces, FAR, estimated current development value, and developer. It is updated annually. This data base could be an excellent source of information on development in the CBD.

COMMUNITY REDEVELOPMENT AGENCY/CITY OF LOS ANGELES

DEVELOPMENT STATUS -- CORE AREA

Project Name	No. of Stories	Office Sq. Ft.	Retail Sq. Ft.	Hotel Rooms	Housing Units	Parking Spaces	F.A.R.	Est. Current Dev't. Value	Developer
DEVELOPMENT UNDER CONSTRUCTION OR PENDING									
1. Brunswig Square	8	120,000	30,000	0	0	150	2.70:1	$ 11.0 million	HIKA Corporation
2. Hotel Tokyo/Unipac	10	0	13,000	174	0	25 [a]	6.00:1	13.0 million	Unipac Ltd.
3. Priority Intervention Area Rehabilitation	n/a	0	0	0	786	0	n/a	7.8 million	S R O Housing Corporation
4. Broadway-Spring Center	9	0	28,000	0	0	1,250	0.05:1	16.5 million	Broadway Spring Center
5. Broadway Mini-Park	1	0	2,200	0	0	0	0.05:1	0.5 million	Broadway Spring Center
6. Biltmore Place and Biltmore Hotel Rehabilitation	22	409,000	30,000	723	0	330	6.01:1	200.0 million	Westgroup/First Boston
7. California Medical Center	14	10,000	0	0	276 beds [g]	0	3.00:1	54.0 million	Lutheran Hospital Society of So. Calif.
8. YMCA (Arco Garage)	2	70,000 [f]	0	0	0	88	0.70:1	15.0 million	Metropolitan Y M C A
9. Engine Co. # 28 Rehabilitation	5	22,000	5,000	0	0	9	3.50:1	3.5 million	Engine Company No. 28 Ltd.
10. Allright Shopping and Parking Complex	7	6,000	30,000	0	0	352	1.10:1	10.0 million	Allright Auto Parks
11. Mayflower Hotel Rehabilitation	13	0	0	192	0	0	10.00:1	42.0 million	535 So. Grand Associates
12. Library Square	73	1,225,000	75,000	0	0	500 [a]	[d]	315.0 million	Maguire Thomas Partners
13. Reliance Hilton Phases I and II	23	454,000	12,000	900	0	900 [a]	10.00:1	150.0 million	Reliance Development Group
14. Medical Office Building	4	60,000	3,000	0	0	0 [a]	2.50:1	12.0 million	CMC Medical Plaza Partnership
15. Huntington Hotel	4	0	0	200	0	0	n/a	2.2 million	Adriana G. and Marvin Karno
16. Sixth Street Parking	10	0	10,000	0	0	930	0.29:1	9.5 million	600 South Spring Associates
17. Broadway Center Rehabilitation	9	315,000	83,000	0	0	350	6.00:1	50.0 million	Luby Enterprises

7.3.6 Contact Regarding Potential Development - L.A. City Department of Planning

Useability:	Very Useful
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	Address
Reporting Frequency:	As filed
Composition of Data:	Should be all filed building permits in station areas. May not be sufficiently reliable.
Current Availability:	Public information
Historic Availability:	Not available before 1987
Cost:	No charge
Contact:	Karin Hodin

The Planning Department has a new requirement that persons applying for building permits also file an information form with the City Planning Department. Information on the form includes:

- o Station Area
- o Name, address and telephone of contact
- o Description of project and address
- o Discussion

If this source is determined to be reliable after some experience with its use, it could prove a convenient method of obtaining permit information.

METRO RAIL

CONTACTS REGARDING POTENTIAL DEVELOPMENT

Station Area: Wilshire / Alvarado

Date of Contact: 3/24/87

Name, Address & Phone of Contact: Wm. L. Olson, Inc
P.O. Box 3786
Granada Hills, 91344
(818) 360-9660

Description of Project & Address: Demolition of office building at 198 So. Alvarado St, between Miramar and Valley Street. Owener: D. Le Lau Aux, 525 E. Harvard, Burbank, CA (818) 843-6372

Discussion: Demolition of office bldg. in C2-1 zone Corner lot.

Hom. K. Hsieh

Planner Contacted

B-75

Please submit completed forms to

7.3.7 Transfer Of Development Rights - CRA

Useability:	Excellent
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	By address
Reporting Frequency:	As approved
Composition of Data:	All approved transfers
Current Availability:	Public information
Historic Availability:	Since first approved in 1980
Cost:	No charge
Contact:	Mr. Kawaratani 977-1675

Mr. Kawaratani is the CRA co-ordinator for development rights transfers. He keeps a file which includes all such transfers which have occurred. Over the past seven years about eighteen have taken place, most under 100,000 square feet. He will make that file available after a written request to do so.

The process by which development transfers are granted is being revised and consolidated by the City Council and CRA. Mr. Kawaratani, however, will continue to keep records on all transfers.

7.3.8 Office Building Survey - CRA

Useability:	Useful source of historical data
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	Address
Reporting Frequency:	Irregular
Composition of Data:	Field Survey Conducted by CRA
Historic Availability:	May 1982 February 1983
Current Availability:	Public information
Cost:	No Charge
Contact:	Barbara Kaiser, Project Manager

The CRA has conducted (at least) two field surveys in the downtown area. In May 1982 they conducted the Office Building Survey, and in February 1983 they conducted a similar study entitled Characteristics of Competitive Office Space in the Los Angeles Financial District. These studies provide information similar to BOMA listings for up to three years prior to the first BOMA publication. This information could be useful to the Before-and-After Study if the final study design includes these years.

Area: Downtown Los Angeles

Date: May, 1982

Building Name Address Intersection	Year Comp.	Floors	Total Sq.Ft.	Average Floor Size	Vacant	% Leased	Rental	Rental Adjustment	Parkir
field Building W. 8th St. (NWC 8th/Hill Sts.)	1923	12+ basement	93,847	6,505	52,300	41,500	Commencing @ $18	75% of CPI 3% floor	200 (8th/H Garage
South Olive Street Building South Olive St. Olive between 7th & 8th	1911	4 + basement	50,522	11,072	11,000	100%	$23 NNN	CPI (Negot.)	0
ve Center 3 South Olive Street st side of Olive St. between 6th/7th	1913	10	65,000	6,437	6,399	90.1%	$15-$16.20 (cap negot)	Full CPI annually	0
rker Brothers Building 3 West Seventh Street h & Figueroa	1923	12	390,000	32,700	0	100%	$18.50	Full CPI after 5 years	0
ational Oil Building 13 South Grand Avenue WC 6th & Grand	1923	13	92,556	7,300	1,650	98%	$15-13	None	0
17 West 7th Street 17 W. 7th St. NWC 7th & Hope	1924	12	167,500	15,000	0	100%	$22	Full CPI Annually	0
Five-Ten Building 510 6th St. SEC 6th & Olive	1925	12	167,000	13,000	8,000	95%	$18	7% bump annually	
Global Marine Building 811 West 7th St. 7th St. b/t Flower & Figueroa	1926	12 + penthse.	99,357	8,421	0	100%	$21	Market every 5 yrs.	

Characteristics of Competitive Office Space
Los Angeles Financial District
February 1983

Building Name/Location	Year Built	Story Height	Total Net Rentable	Vacant Area	Vacant Percent	Annual Asking Rates	Rental Remarks
Pre-1967 Built							
1) Pacific Mutual Building 523 West Sixth Street	1923	12	350,000	6,700	1.9	$24.00 - 26.00	Classic older building, still competitive.
2) Lloyd's Bank (Mobil Oil) Bldg. 612 South Flower Street	1950	13	432,000	2,500	.6	29.40	Quality building. Has an additional floor of windowless space available for sublease.
3) Los Angeles Hilton 900 Wilshire Boulevard	1952	15	175,000	5,015	2.9	25.00	Older building. Office portion is low profile but good location.
4) Bank of California 550 South Flower Street	1956	12	130,000	-0-	-0-	24.00	Large long term occupants.
5) Wilshire Flower (Equitable) Building 615 Wilshire	1960	20	300,000	90,692	30	24.00 +	Two large tenants just vacated. Being heavily advertised.
6) Bank of Tokyo 630 West Sixth Street	1966	6	101,000	-0-	-0-	25.00	Primarily owner occupied.
7) State Mutual Savings Building 626 Wilshire Boulevard	1966	12	125,000	1,803	4.1	24.00	
Subtotal			1,613,000	106,710	6.6		

7.3.9 F.W. Dodge Reports

Useability:	Limited
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	By Project
Reporting Frequency:	Quarterly
Composition of Data:	Private and public sources
Current Availability:	Available
Cost:	$564 Per Quarter Per County
Contact:	Peter Tai (213) 727-0120

F.W. Dodge offers a private subscription service to the building industry to provide information on planned and on-going construction projects. To gather the information Dodge has 1,100 news reporters who solicit public and private sources of information on new buildings, major additions, and renovations. In a typical year they make 2,000,000 calls on architects, engineers, contractors, public officials and other sources of inside information. Dodge subscriptions can be tailored by valuation, stage of development and specific trades or materials.

For the Before-and-After Study it may be more reliable and accurate to use building permit information than planned construction information.

START

General Contract awarded—work to begin within 60 days.

December 3

Dodge Reports

NY 777 444e 11-03x C START
Last Rept 11-20-xx 12-3-xx

OFFICE BLDG $510,000
Yourcity NY (Douglas Co) 123 Main St
GC AWD-const to start Dec 5-bid 11-20
Owner-Norton & Co Frank Byrd (Proj Mgr) 456 First Ave Yourcity NY 10011 (212/997-6184)
Arch-Robert Miller 3301 Elm St Yourcity NY 10015 (212/443-1245)
Engr(str)-Evans Assoc 123 Market St Yourcity NY 10015 (212/586-1165)
Engr(mech)-H L Brown & Co 201 W 89th St Yourcity NY 10018 (212/684-8446)
Engr(elec)-Patterson & Ross 1407 Altadena Dr Yourcity NY 10021 (212/783-3873)
brk ext-1 sty-no bsmt-10,000 square ft-wall trg-conc slab on grade floor-stl bar joist roof-mtl roof deck
GC-RICECLARK CONTRACT CORP 1130 PARK ST PORTLAND NY 10116 (212/853-7772)

Dodge Reports

This Report:

shows name and address of successful GC and indicates work will start within a few days.

ACTION STEP

- You can make a final try for an order.
- Close out activity files.
- Prepare list of active and successful general contractors to tailor promotional efforts.
- File by competitor (knowledge of workload will help in future bidding).

CONSTRUCTION

Subcontracts awarded and work started.

December 15

Dodge Reports

NY 777 444f 14-03x SC CONST
Last Rept 12-03-xx 12-15-xx

OFFICE BLDG $510,000
Yourcity NY (Douglas Co) 123 Main St
ON EXCAV
Owner-Norton & Co Frank Byrd (Proj Mgr) 456 First Ave Yourcity NY 10011 (212/997-6184)
Arch-Robert Miller 3301 Elm St Yourcity NY 10015 (212/443-1245)
Engr(str)-Evans Assoc 123 Market St Yourcity NY 10015 (212/586-1165)
Engr(mech)-H L Brown & Co 201 W 89th St Yourcity NY 10018 (212/684-8446)
Engr(elec)-Patterson & Ross 1407 Altadena Dr Yourcity NY 10021 (212/783-3873)
GC-RICECLARK CONTRACT CORP 1130 PARK ST PORTLAND NY 10116 (212/853-7772)
Excav-Hale Excav Svc 114 E Main
[illegible]
HVAC-Sheet Mtl-Macy Bros Htg 18 Cabanne Ave
Rfg-Wheeling Rfg Inc 7220 Pearl Ave
Painting-Harkville Painting & Decorating Co 1260 Dowling Dr (all Yourcity NY)

Dodge Reports

This Report:

identifies subcontractors who will work on the project.

ACTION STEP

- You can get final commitment on materials quoted during bidding stage.
- Build lists of active and successful subs.

7.3.10 F.W. Dodge Green Sheets

Useability:	Limited
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	By Project
Reporting Frequency:	Quarterly
Composition of Data:	Private and public sources
Current Availability:	Available
Cost:	$362 Per Quarter Per County
Contact:	Peter Tai (213) 727-0120

F.W. Dodge offers a private subscription service to the building industry to provide information on planned and on-going construction projects. To gather the information Dodge has 1,100 news reporters who solicit public and private sources of information on new buildings, major additions, and renovations. In a typical year they make 2,000,000 calls on architects, engineers, contractors, public officials and other sources of inside information. F.W. Dodge Green Sheets list biddable projects by county. For the Before-and-After Study it may be more reliable and accurate to use building permit information than planned construction information.

BUILDING RECORDS

LOS ANGELES COUNTY

BUILDING PERMITS

LOS ANGELES COUNTY

Restaurant (Alt) ($30,000) 11618 Venice Blvd, West Los Angeles; recorded 6-3-87; Speedy Bird Inc, own, 2501 Wilshire Blvd, Santa Monica 90403; Ind Inc, arch, 2053 Rosslyn, Los Angeles 90065; Thomas Newton Design, bldr, 3053 Rosslyn St, Los ASngeles 90065 (818/244-8106).

Office (Alt) ($33,240) 10474 Santa Monica Blvd Ste 312, West Los Angeles; recorded 6-4-87; Douglas Emmett Co, own, 11950 San Vicente Blvd Ste 200, Los Angeles 90049 (213/820-7039); Siegel Sklarek Damens, arch, 10780 Santa Monica Blvd Ste 260, Los Angeles 90025 (213/474-3244); Westec, Inc, bldr (395-3066).

Apartment (Alt) ($30,0000 408 S Venice Blvd, West Los Angeles; recorded 6-3-87; Crimson Ind, own/bldr, 11022 Santa Monica Blvd, West Los Angeles 90025 (213/478-7000); Kevin Kelly, arch, 2216 Wilshire Blvd, Santa Monica 90403 (213/828-3431).

Office (Alt) ($39,0000 1565 Sepulveda Blvd, San Pedro; recorded 6-3-87; Fred Arkenburg, own, 3838 Carson St Sto 331, Torrance 90503 (213/540-4434); Sayre Smith Nesbitt, arch, 3856 Pacific Coast, Torrance 90505 (213/373-2880); Sayre, Smith-Nesbitt, bldr (373-2880).

House Addn 1421 W 19 St, San Pedro; Mario Pesic, own/bldr, 1421 W 19 St, San Pedro; 18x21 sq ft; 1 sty; 6-3-87; $20,000

House Addn 3130 Veteran Ave, West Los Angeles; Ray Hartman, own, 3130 Veteran Ave, West Los Angelews (475-4609); Plans by David L Fleck, 20554 Hartland St #2, Canoga park (818/999-2460); bldr not selected; 4x16 sq ft; 1 sty; 6-3-87; $40,000

House Addn 12249 Dorothy St, West Los Angeles; S Mohammad R Borgheri, own, 12249 Dorothy St, West Los Angeles (820-4786); Plans by Soleman I Naim (477-4517); 25x32 sq ft; 2 stys; 6-3-87; $50,000

House Addn 13160 Mulholland Dr, West Los Angeles; Gary Cooper, own/bldr, 13160 Mulholland Dr, West Los Angeles (273-8-81); Plans by Tony Unruh, 19461½ N Vermont Ave, Los Angeles (450-5085); 900 sq ft; 2 stys; 6-3-87; $48,000

Duplex Addn 2739 E 5th St, Los Angeles; Javier Chavez, own, 2739 E 5th St, Los Angeles; Plans by Felipe Forrez (256-8159); M M, bldr (268-0130); 28x22 sq ft; 1 sty; 6-4-87; $39,000

House Addn 5339 Stillwater Dr, Los Angeles; Vena Ricketts, own, 5335 Stillwater Dr (290-1437); bldr not selected; 22x19 sq ft; 2 stys; 6-4-87; $55,000

Duplex 116 & 18 W 78 St, Los Angeles; Cristo9bal Aguirre, own, 5904 Rendera St, Los Angeles (557-5819); R I Const Co, bldr (589-5700); 32x98 sq ft; 1 unit; 6-4-87; $102,500

House Addn 634 W 98 St, Los Angeles; Delaino Bobby, own/bldr, 634 W 98 St, Los Angeles (755-8455); 636 sq ft; 1 sty; 6-4-87; $32,000

Duplex 329 N Ave 51, Los Angeles; Martin Moya, own, 329 N Ave 51, Los Angeles (258-3275); Plans by Vicky Barbieri, 1713 W Verdugo Ave, Burbank (840-0568); 272x44 sq ft; 1 sty; 6-4-87; $62,000

VAN NUYS OFFICE

Office (Alt) ($33,000) 16830 Ventura, Encino; recorded 6-16; First Financial Group, own, at lot (818/981-4500); Reback Design, arch, 10960 Wilshire Blvd #300, Los Angeles 90024 (213/478-0142); Buckley Const, bldr, 10920 Wilshire Blvd #220, Los Angeles 90024 (213/208-2209).

Store (Alt) ($40,000) 13060 Glenoaks, San Fernando Valley; recorded 6-16; Little Caesars Ent, own, 12235 Beach, Stanton 90680 (714/894-4741); bldr to be selected.

Office (Alt) ($37,000) 22151 Ventura, Woodland Hills; recorded 6-17; Graybill Investments, own, 23241 Ventura, Woodland Hills 91364 (818/348-4424); Century Group, arch, 14429 Ventura, Sherman Oaks 91423 (818/995-7810); ABI, bldr.

Country Club (Alt) ($40,000) 4001 Reseda, Tarzana; Braemar Country Club, own/bldr, 4001 Reseda, Tarzana 91356 (818/345-6520); G Farkas, arch (213/470-9611).

Office (Alt) ($75,000) 10575 Balboa, Granada Hills; recorded 6-17; Medco Assoc Inc, own, 18700 Oxnard St #207, Tarzana 91356 (818/705-6947); E H Butland Dev, bldr.

Office (Alt) ($76,000) 8433 Fallbrook, Canoga Park; recorded 6-16; Hughes Aircraft, own/bldr, at lot; H Ho, arch, 17620 Sherman Way, Van Nuys 91406 (818/345-5572).

House Addn 17858 Duncan, Reseda; J Banuelos, own/bldr, at lot; Plans by F M Diaz; 6-16; $31,000

Retail Sales (Alt) ($50,000) 5101 Owensmouth, San Fernando Valley; recorded 6-16; J Bert, own, 11847 Laughton, Northridge 91326; K Butts, AIA, arch, 21133 Victory Blvd #219, Canoga Park 91303 (818/999-4272); bldr not stated.

Apartment Building (10 Units) ($628,000) 17247 Roscoe, San Fernando Valley; recorded 6-17; G Shanklin, own, 1122 N Brand, Glendale 91202 (213/579-9667); M Keo, arch, 1912 Via del Rey, South Pasadena 91030; bldr not stated.

Apartment Building (22 Units) ($1,500,000) 11206 - 70 - 76 Huston, San Fernando Valley; recorded 6-17; Villa Soffia Inc, own, 3413 Henritta, Glendale 91214 (213/957-2915); Dumbrum Badescu, arch, 5322 Wilshire, Los Angeles 90036 (213/935-4690); John Baden, bldr.

Retail / Offices / Rest (Alt) ($50,000) 14325 Ventura, Sherman Oaks; R J Investment, own, 14144 Ventura, Sherman Oaks 91423 (818/788-8867); Solberg Louie, arch, 1901 Main, Santa Monica 90405 (213/393-9521); bldr not stated.

House 4550 Cedros, Sherman Oaks; A Farahl, own/bldr, 2933 Beverly Glen, Los Angeles (213/474-5757); Plans by M Namdar; 6-15-87; $160,000

4 Houses 18646, 55, 56, 48 Blythe, San Fernando Valley; Marbro Dev, own/bldr, 16250 Ventura, Encino (788-0662); Plans by R Mendoza, 14402 Haynes, Van Nuys (994-4022); 6-16; $430,000

House 10161 Vanalden, San Fernando Valley; S Tiic, own/bldr, 20902 Itasca, Chatsworth (882-3577); Plans by Janet & Assoc, 3306 Glendale, Los Angeles 9242-9455; 6-16; $490,000

House 5831 Sedring, Woodland Hills; M Pollacchio, own/bldr, (340-5942); 6-16; $40,000

House Addn 20156 Hatteras, Woodland Hills; A R Elliett, own/bldr, at lot (994-4157); Plans by T Woo, 15035 Delgado, Sherman Oaks (783-1930); 6-16; $50,000

2 Houses 9172 & 9162 Columbus, San Fernando; A Satterlee, own/bldr, 26560 Agoura, Calabosas; Plans by M Francis, 4377 Springfiod, Simi; 6-16; $220,000

House 4505 St Clair, San Fernando Valley; T Itakavich, own, 12753 Tiara, North Hollywood (980-3823); Plans by H Goodman, 14401 Sylvan, Van Nuys (786-3387); bldr not selected; 6-16; $100,000

House 10466½ Telfair, San Fernando Valley; C Terranova, own/bldr, 27323 Banuelo, Saugus (254-0814); 6-16; $114,000

House Addn 7455 Genesta, Van Nuys; B Coss, own/bldr, at lot; 6-16; $40,000

House Addn 4406 Willens, Woodland Hills; N Kazmar, own/bldr, at lot; Plans by RSA, 8363 Sunset, Los Angeles (650-1457); 6-17; $40,500

House 4124 Vanetta Pl, San Fernando Valley; I Pascal / B Sichancha, own/bldr, 1881 Alpha, Glendulo (241-7398); Plans by A Fernandez, 1331½ Rosemont, Los Angeles (483-0769); 6-17; $270,000

House 10338 Marcus, Tujunga; G Stipo, own/bldr; 6-17; $77,000

2 Houses 7607 & 7618 Rudnick, San Fernando Valleyp; M Madrigal, own/bldr, 23656 Miranda, Woodland Hills (884-2565); Plans by Hale & Assoc (259-9702); 6-17; $250,000

House Addn 23347 Califa, Woodland Hills; K Berson, own/bldr, at lot (340-5875); Plans by B Smith, 17000 Ventura, Encino (501-7529); 6-17; $100,000

Swim Pool 9501 Gladbeck, Northridge; Gill, own, at lot (349-0335); Plans by J Ferguson, 18340 Ventura, Tarzana (881-5334); Appealing Pools, bldr (704-7525); 6-17; $16,000

Swim Pool 9234 Nagle, Arleta; H Valdez, own, at lot (894-5938); Plans by F Miles, 7136 Haskell, Van Nuys (994-6278); Swan Pools, bldr (891-1355); 6-17; $16,000

Swim Pool 3333 St Clair, North Hollywood; R Martin, own, at lot (476-3675); Plans by H Goodman, 14401 Sylvan, Van Nuys (786-3387); Contempo Swim Pool, bldr (476-3675); 6-17; $16,000

Swim Pool 7521 St Clair, North Holl...

AUGUST 12—Wednesday

METRO RAIL COMMUNICATIONS SYSTEM (A640) ($20,000,000 - $25,000,000) LOS ANGELES (LA CO) So Cal Rapid Transit Dist taking bids August 12 at 2 pm (PDT)
(Take bids reported 4-20—Rept 153 703)

AEG Bayly Inc 167 Hunt St Ajax Ontario Canada L1S1P6 (416/683-8200)
Bechtel Inc 50 Beale St San Francisco 94105 (415/768-1234)
Besafa Inc 1093 E Bedmar St Carson 90746 (213/638-9327)
Canadian Pacific Consltg Svc 1000 Rte 208 Fair Lawn NJ 07410 (201/794-7224)
IAL Communications Inc 23 E Wilmont St Richmond Hill Ontario Canada L4B1A3 (416/731-1300)
LK Comstock & Co Inc 1777 Oakland Bl #100 Walnut Creek 94596 (415/935-9000)
Lord Elec Co Inc 86 Coolidge Av Watertownd MA 02172 (617/926-5500)
Mitsui & Co (USA) Inc 611 W 6th St Los Angeles 90017 (213/972-2535)
Nissho Iwai American Corp 700 S Flower St #1900 Los Angeles 90017 (213/688-0600)
Randolph Industries Inc 12117 Woodruff Ave Downey 90241 (213/803-1407)
Telino System Inc 1651 N Glenville Dr Richardson [illegible] -7750)
Telsta Network Svc Inc 847 Arnold Dr Martinez 9
B G Choco Intn'l Ltd 7700 De Lamartino St Anjou (514/353-8940)
Fischbach & Moore Inc 4690 Werth St Los Angele[illegible].00)
Warren H Davis Co 1000 E Walnut #211 Pasadena 91106 (818/578-0325)
Electronic Data Systems Corp 2415 W 6th St Los Angeles 90057 (213/487-5749)

7.3.11 County Projections Center For Continuing Education For California Economy

Useability:	Limited
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	Zip code
Reporting Frequency:	By individual order
Composition of data:	All properties in CBD area: building size, service type, occupancy rate, land value
Current Availability:	Available for fee
Historic Availability:	One year
Cost:	$300 for all zip codes requested in CBD; this will include only building size and type of service. Other information such as occupancy rate and land value will cost extra depending on the number of parameters requested.
Contact:	Viva Bernstein (415) 321-8550

This organization is a private research firm which designs and conducts special studies for a fee. Their services are costly and conducted on an individual job basis.

7.3.12 Market Analysis Of The Chinatown Redevelopment Project - Kotin, Regan & Mouchly

Useability:	Good for Chinatown Area
Relevant Indicators:	Development/Redevelopment Activity
Smallest Aggregation:	Chinatown Census Tracts
Reporting Frequency:	One-time Report
Composition of Data:	Various
Current Availability:	Available from the CRA
Historic Availability:	None
Cost:	Available from CRA
Contact:	Margaret Liu, CRA 977-1986

This market research study was conducted for the CRA to determine market conditions in Chinatown. It contains useful background information and points to good primary sources for sales and population data.

LIST OF EXHIBITS

7.3.13 Market Base Analysis And Conceptual Development Framework For The United States Postal Service Terminal Annex And The Los Angeles Union Passenger Terminal - Halcyon Ltd. for the CRA

Useability:	Good background
Relevant Indicators:	Development/Redevelopment Activity
Smallest Aggregation:	CRA Redevelopment Projects
Reporting Frequency:	One-Time Study
Composition of Data:	Compiled by Halycon
Current Availability:	Public Information
Historic Availability:	None
Contact:	CRA

This market study was conducted in 1986 and provides good background information and trend analysis. It contains separate analyses for El Pueblo, Chinatown, Little Tokyo, and the Civic Center. Statistics in this report are based on sources such as the State Department of Finance. Such regularly reported sources may be more useful to the Before and After Study.

TABLE OF CONTENTS

7.3.14 Marketing Study: Union Station Area - CRA

Useability:	May be highly useful when completed
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	Unknown
Reporting Frequency:	One-Time Study
Composition of Data:	Field Survey Conducted by CRA Consultant
Historic Availability:	NA
Current Availability:	Subject to Approval
Cost:	No Charge
Contact:	Herb Marshall, CRA

The CRA has hired consultants who are conducting a marketing study of the Union Station Area. The study is jointly funded by the railroads, the Post Office, and the CRA. As of August 1987, the study is being conducted. The CRA is considering making the study available to the RTD with the agreement of all funding partners. If this study is made available, it may be very useful to the Before-and-After Study.

7.3.15 Field Survey: Wilshire/Alvarado Station Area - City of Los Angeles Department of Planning

Useability:	Useful if other field surveys were to be conducted
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	Address Census Block/Tract
Reporting Frequency:	One-Time Survey
Composition of Data:	Field Survey Conducted by City Planning Department
Current Availability:	Public information
Cost:	No Charge
Contact:	Karin Hodin, L.A. City Department of Planning

The L.A. City Planning Department has conducted a one-time field survey of the Wilshire Alvarado Station Area which includes employment data by census tract, the only known source of such data. If SCRTD chooses to conduct field surveys as a way of obtaining future employment data, some of the information collected by the City Planning Department may by useful.

FIELD SURVEY SUMMARY

STATION AREA: Wilshire Alvarado

200 ft²/employee office 350 ft²/employee retail 16 employees/room industrial employees/acre 0.9 employees/guest room	55 employees/net office acre 1 employee/library 5 employees/theatre/arena seat

STREET NAME	STREET NUMBER	NO. OF STORIES	LAND USE AND/OR INSTITUTION NAME	OFFICE SQ. FT.	RETAIL SQ. FT.	INDUSTRIAL-PARCEL SQ. FT.	OTHER (SPECIFY)	TOTAL SQ. FT./ACRES	*	EMPLOYMENT	CENSUS BLK/TRACT
Silver (NYC) 2 of 2	2211	5	Ground Floor Restroom				132 beds		✓	30	2088/302
Wash Dr. to Crocker	2307	3	Amelia Taper Res. Hall (rest rooms)				108 beds		✓	29	2088/302
	2101-03	1-5	ret/off/res	1,620	3,990				✓	19	2088/201
	2115	2	off	91,040					✓	205	2088/301
				1-2,160	3,990				✓		

7.3.16 Metro Rail Transit Corridor Specific Plan: Overall Development Potential And Alvarado Station Area - City of Los Angeles Department of Planning

Useability:	Useful
Relevant Indicator:	Development/Redevelopment Activity
Smallest Aggregation:	Address
Reporting Frequency:	NA
Composition of Data:	Field Survey Conducted by Planning Department
Current Availability:	Public information
Cost:	No Charge
Contact:	Karin Hodin, L.A. Department of City Planning

On August 1, 1985 the City Planing Commission conducted a public hearing on the Metro Rail Transit Corridor Specific Plan Amendments, and Draft Environmental Impact Report. Subsequent to that hearing, the Commission requested staff to discuss with the Commission issues and concerns regarding these efforts on a Sector-by-Sector basis. This report focuses on the overall development potential for the entire corridor and the Alvarado Sector. It includes recommendations on amending the boundaries of the Alvarado Sector to include the area between the Alvarado and Wilshire Center Sectors previously not included within the Plan.

7.3.17 Downtown Los Angeles Commercial Real Estate - The Downtown News

Useability:	Useful as background material
Relevant Indicator:	Development/Redevelopment Activity
Reporting Frequency:	Quarterly
Composition of Data:	Emphasis on major projects
Current Availability:	Public information
Historic Availability:	From May 1986
Cost:	No charge

The Downtown News publishes a quarterly commercial real estate supplement. This supplement focuses on major trends and projects in the downtown area. While it does contain useful background information, it may not supply comprehensive data needed for the Before-and-After Study.

Downtown Projects

New, Under Way or Anticipated

by Mark Zasada and Bob Ickes

Bamboo Plaza

The combined shopping plaza and parking garage is one of the most important new projects to go up in Chinatown in recent years. Located at 980 N. Hill St., the structure will offer nearly 70,000 square feet of retail space, along with 426 parking spaces. As part of a 25-year agreement, the CRA will own and be responsible for the operation of the parking garage, while the Jack C. Lee Family, property owner and developer, will provide the $8 million in financing for the retail center. The construction start has been delayed until mid-summer as final plan-approval drags through the bureaucracy.

Beaudry Center II

The 126,000-sq. ft. first phase of this development, located on the northwest corner of Miramar Street and Beaudry Avenue, has now been completed and currently houses the Pacific Stock Exchange. Two additional high-rise towers are planned with a net rentable space of 1 million square feet. No plans have yet been announced for the groundbreaking of any of these new phases.

Biltmore Place

The stately office tower that is nearing completion atop the Biltmore hotel. First Boston Real Estate has bought out partner Westgroup to become the managing entity of "Biltmore Partners." Wrather Management has taken over operations of the hotel, and Tishman West is managing the tower.

The project, located at Fifth and Grand, includes 140,000 square feet for offices, 2,000 retail, and 10 floors of parking. The hotel renovation is completed, and the office interiors are also finished. The formal entrance to the hotel, at 5th and Grand, will be completed by the end of the month, pending the resolution of some sidewalk reconstruction.

Bradbury Building

Western Management Co. will spend $1.6 million to renovate one of Downtown's most famous historic structures. At 3rd & Broadway.

Broadway Centre

Luby Enterprises is rehabilitating the old Broadway Department Store into 315,000 square feet of office space, and 83,000 square feet of retail space.

Broadway-Spring Center

A 1,250-space garage with 28,000-square-foot ground-floor retail, which will someday take up the eastern half of the block between 3rd and 4th, Broadway and Spring.

The CRA has entered into a first implementation agreement with the developer which includes loans of up to $3 million of a total $16.5 million project.

The idea is to lease much of the parking to the planned State Office building.

California First Center

California First Bank (Bank of Tokyo), together with Taisei and Takenaka, is planning the development of the block bounded by 8th Street, Figueroa, 8th Place and Francisco Street, but no specifics have been announced.

California Mart Expansion

At Broadway & Olympic, the expansion will consist of 12 stories with 1 million square feet of office space and 300,000 square feet of retail space at a cost of $300 million. California Mart itself would be the developer. Nothing expected until after 1990.

California Plaza

Metropolitan Structures has changed the phasing of the new additions to the massive complex at the top of Grand Avenue. The 20-story, 450-room luxury hotel will be the next phase developed, with groundbreaking slated for "early 1988" and completion targeted for late 1989. It will not follow the design of the first tower, but will have a distinctive 19th-Century European roof. Intercontinental is expected to be the operator. The first of two 250-unit residential towers should follow the hotel, with a start in "fall 1988," and the second big office tower might start simultaneously: 65-stories with 1.4 million square feet of office and retail space.

Citicorp Plaza

According to sources in the brokerage community, 7th and 8th on Figueroa), has found a partner (Japanese?) to develop phases II and III of Citicorp. Expect an announcement within a month or so. Also expect those towers to look different than the drab first tower—and to run about 900,000 square feet. If all of the Plaza is built, it could house 3.7 million square feet.

Continental Building Rehabilitation

The Continental Building, on the southwest corner of 4th and Spring, is now undergoing a renovation that should be completed by November. The 12-story project will offer 75,000 square feet of office space, and 5,000 square feet of retail space. Cost is $4 million; developer is Jerrold Fine.

Convention Center

Over 600,000 square feet of exhibition space and 5,000 parking spaces will be added to the existing Convention Center facility at Pico and Figueroa, at an "official cost" of $350 million (expect it to be higher). The Convention Center Authority is the developer and will begin work in the spring of 1988, with completion targeted for the Spring of '91.

The debate over booking policies at the expanded Center continues, though major players have come to agreement on a potential mission statement ("the economic benefit of L.A.") which would give priority to big out-of-town conventions and trade shows over the local consumer shows.

If all goes well, the Mayor may bring the issue to a vote in City Council sometime in July.

After that come other debates: who will market the Center? Will the final design include the big contiguous spaces needed by the major conventions?

County Engineering Building

Located at Second and Main, this is an $18 million rehabilitation project with some 416,500 square feet of office space and 52,000 square feet of retail space. Baywood Equities is the developer.

Could be a key to the redemption of Main Street.

Crown Hill

This 10-acre property, located near 3rd and Bixel, is now owned by the Richfield Group, which have announced plans for a major mixed-use project, to include a hotel, high-rise offices, condominiums and a retail element.

No specifics and no dates, however.

865 S. Figueroa

A $220 million development undertaken by the Manufacturers Life Insurance Company of Canada, which has received a one-year extension from the CRA on its groundbreaking date. But, according to Manufacturer's

7.3.18 Industry Report Commercial Real Estate - The Los Angeles Business Journal

Useability: Useful as background material

Relevant Indicator: Development/Redevelopment Activity

Reporting Frequency: Monthly

Composition of Data: Emphasis on major projects

Current Availability: Public information

Cost: $0.75 per month

Similar to the Downtown News, the L.A. Business Journal also publishes a periodic commercial real estate report. This information may not be sufficiently complete to be used for any purpose other than background information.

7.4 RETAIL SALES

7.4.1 Taxable Sales In California - State Board of Equalization

Useability:	Excellent but costly data source
Relevant Indicator:	Retail Sales
Smallest Aggregation:	By city or by special tabulation
Reporting Frequency:	Quarterly
Composition of Data:	All retail taxable sales. Food for home consumption, prescription medicines, other nontaxable items, and taxable sales included by board audit are excluded.
Current Availability:	Public information; special tabulations available for a fee.
Historic Availability:	By city from 1972 Special tabulations for only two years previous
Scale:	Transactions in thousands of dollars
Cost:	By city - No charge Special tabulations - Approximately $5.00 per outlet
Contact:	Dave Hayes, Bob Rossi (916) 445-0840

Overview

Taxable Sales in California is a status report on the major sector of the state's merchandising activity: transactions of tangible personal property subject to sales or use tax. Published by the State Board of Equalization quarterly and summarized annually, it highlights and presents taxable sales data for the State, counties, and cities. Prior to 1972, it was called Trade Outlets and Taxable Retail Sales in California.

Printing Schedule

Sales data are computed from tax payments and compiled on a quarterly basis. No monthly sales breakdowns are available. Reports are published approximately four months after the close of the reporting period.

Inclusions and Exclusions from Data

Several factors need to be kept in mind when using these data:

(1) Total taxable transactions do not necessarily indicate the gross sales of stores dealing in taxable items. Only sales subject to

sales or use tax are tabulated; excluded are sales for resale, sales of nontaxable items such as food for home consumption and prescription medicines, and taxable sales disclosed by board audits.

(2) Some businesses dealing primarily in nontaxable activities such as services, manufacturing, contracting, or wholesaling either sell some merchandise that is subject to sales tax or use some items that were purchased ex-tax, on which use tax must be paid. Such transactions are included in the tabulation.

(3) Data are compiled by type of store but cannot be broken down by commodity.

(4) Businesses are classified according to their principal line of merchandise or service.

Sales permits are tabulated twice a year: as of January 1 and July 1. The number of sales tax permits is printed in the second- and fourth-quarter reports for counties and the first- and third-quarter reports for cities. A sales tax permit is required for each place of business operated by all manufacturers, wholesalers, and retailers of tangible personal property except those dealing solely in nontaxable commodities.

Some permittees, by the nature of their business, are not required to allocate local sales or use tax to specific local jurisdictions. Their taxable transactions are listed as "unallocated." Contractors and manufacturers generate most of these unallocable transactions through construction work and the installation of manufactured products.

Special Tabulations

Special manual tabulations of the data are available at a cost of about $5.00 per outlet. A special tabulation requires both the name and address of each business of interest. To protect privacy, information is not released for areas with fewer than four businesses or where one business comprises 90% or more of total sales. For an area as large as the Los Angeles CBD, the Board unofficially estimates a special tabulation could be completed in four to five months.

Useability of Data

The State Board of Equalization keeps records of retail sales which are highly relevant and specific to the Metro Rail Before and After Study. However, to obtain this information at a meaningful level of aggregation will require a very costly and time consuming special tabulation.

TABLE 5. TAXABLE SALES IN THE 240 LARGEST CITIES, BY TYPE OF BUSINESS, FIRST-QUARTER 1983[a]

(Taxable transactions in thousands of dollars)

Type of Business	[illegible] Permits	[illegible] Taxable transactions	[illegible] Permits	[illegible] Taxable transactions	[illegible] Permits	[illegible] Taxable transactions	[illegible] Permits	[illegible] Taxable transactions
Retail Stores								
Apparel stores	47	2 427	19	673	24	2 324	15	435
General merchandise stores	22	11 613	6	473	1	8	7	2 313
Drug stores	14	2 578	5	1 125	4	442	-	8
Food stores	46	13 767	21	7 943	17	2 777	14	2 752
Packaged liquor stores	14	844	10	413	2	8	3	8
Eating and drinking places	115	7 576	61	2 787	23	3 945	24	2 562
Home furnish. and appliances	41	3 513	14	529	24	715	17	442
Bldg. matrl. and farm implmts.	21	3 513	8	1 734	4	456	9	774
Auto dealers and auto supplies	21	12 674	18	3 328	3	8	3	8
Service stations	20	2 451	13	3 733	7	2 112	6	1 477
Other retail stores	221	4 378	47	2 625	24	62 731	41	13 276
Retail Stores Totals	561	73 513	219	24 418	171	14 248	176	24 372
All Other Outlets	458	16 457	293	2 445	278	3 280	313	2 492
Totals All Outlets	1 029	18 119	513	21 [illegible]	449	[illegible]	489	[illegible]

Type of Business	[illegible] Permits	[illegible] Taxable transactions	[illegible] Permits	[illegible] Taxable transactions	[illegible] Permits	[illegible] Taxable transactions	LODI Permits	LODI Taxable transactions
Retail Stores								
Apparel stores	8	421	4	378	14	714	18	1 774
General merchandise stores	4	8	2	8	11	1 244	15	6 473
Drug stores	4	259	3	8	6	2 204	13	2 219
Food stores	23	3 156	16	2 556	13	4 4-2	13	4 323
Packaged liquor stores	5	371	4	152	8	733	10	1 229
Eating and drinking places	43	3 153	42	2 215	24	4 3-5	112	2 123
Home furnish. and appliances	22	1 571	22	275	23	164	46	2 223
Bldg. matrl. and farm implmts.	15	2 27-	10	215	13	2 116	29	3 739
Auto dealers and auto supplies	24	2 42-	39	10 817	17	9 727	41	13 438
Service stations	20	4 125	16	3 491	18	5 331	32	6 659
Other retail stores	26	14 349	38	6 742	45	2 234	118	3 929
Retail Stores Totals	223	22 648	212	28 211	285	24 833	474	48 224
All Other Outlets	319	3 6-1	412	5 179	729	3 914	675	10 219
Totals All Outlets	542	26 209	624	33 411	1 014	28 227	1 149	58 533

Type of Business	[illegible] Permits	[illegible] Taxable transactions	LONG BEACH Permits	LONG BEACH Taxable transactions	LOS ALAMITOS Permits	LOS ALAMITOS Taxable transactions	LOS ALTOS Permits	LOS ALTOS Taxable transactions
Retail Stores								
Apparel stores	22	170	217	9 5-8	6	225	36	1 476
General merchandise stores	18	3 436	76	39 833	5	59	12	326
Drug stores	5	426	76	8 296	4	8	5	526
Food stores	29	3 323	259	32 546	5	8	10	2 453
Packaged liquor stores	6	472	152	9 315	3	8	8	772
Eating and drinking places	52	3 372	656	56 379	26	1 098	47	4 678
Home furnish. and appliances	22	1 732	254	31 195	11	318	26	2 226
Bldg. matrl. and farm implmts.	11	1 315	79	17 332	13	4 722	11	767
Auto dealers and auto supplies	20	5 174	157	42 274	5	2	5	
Service stations	19	2 727	273	26 126	8	1 267	12	2 421
Other retail stores	61	1 767	651	32 522	27	14 122	166	4 726
Retail Stores Totals	246	24 772	3 146	294 651	145	23 677	331	22 5-2
All Other Outlets	446	2 953	5 281	121 696	466	13 469	7-8	5 3-8
Totals All Outlets	692	27 725	8 427	415 347	551	37 3-6	1 079	27 859

Type of Business	LOS ANGELES Permits	LOS ANGELES Taxable transactions	LOS BANOS Permits	LOS BANOS Taxable transactions	LOS GATOS Permits	LOS GATOS Taxable transactions	LYNWOOD Permits	LYNWOOD Taxable transactions
Retail Stores								
Apparel stores	3 313	175 441	14	277	46	1 767	21	370
General merchandise stores	742	332 241	6	893	8	75	5	3 136
Drug stores	5-8	88 637	6	613	8	837	6	1 218
Food stores	2 477	298 754	24	2 616	24	4 463	42	5 215
Packaged liquor stores	890	46 184	6	373	11	921	22	1 229
Eating and drinking places	7 124	635 631	48	1 472	15	6 416	66	3 352
Home furnish. and appliances	2 247	230 436	12	261	72	2 375	8	657
Bldg. matrl. and farm implmts.	818	333 469	12	732	11	567	4	1 375
Auto dealers and auto supplies	1 727	412 419	11	2 318	17	27 715	29	723
Service stations	1 468	346 729	17	1 776	18	3 577	17	2 123
Other retail stores	8 033	470 431	39	1 326	139	3 412	54	672
Retail Stores Totals	28 807	2 841 261	176	12 273	468	52 567	298	29 733
All Other Outlets	65 932	3 292 232	153	2 223	742	6 461	306	9 618
Totals All Outlets	94 739	6 133 296	329	14 496	1 210	59 028	604	39 349

Footnotes on page 23

7.4.2 Census Of Retail Trade - U.S. Department of Commerce

Useability:	Excellent source of data aggregated by zip code
Relevant Indicators:	Retail Sales
Other Data:	Number of Establishments First Quarter Payroll Paid Employees Kind of Business Annual Payroll
Smallest Aggregation:	CBD or special tabulation
Reporting Frequency:	Every five years, last published for 1982
Composition of Data:	Establishments primarily engaged in selling merchandise for personal or household consumption
Current Availability:	Public information
Historic Availability:	By CBD from 1977 Special tabulations from 1977
Scale:	Transactions in current thousands of dollars
Cost:	By CBD - No charge Special tabulations - zip codes may become available at no charge
Contact:	Mark Wallace (301) 763-7038

Overview

The Census of Retail Trade, part of the Economic Censuses, covers retail trade as defined in the Standard Industrial Classification (SIC) Manual. It includes all establishments primarily engaged in selling merchandise for personal or household consumption and rendering services incidental to the sale of the goods. Data for direct sellers with no paid employees are not included. Data for establishments which are auxiliary to retail establishments (warehouses, etc.) are not included.

Large- and medium-size firms, plus all firms known to operate more than one establishment, are sent questionnaires to be completed and returned to the Department of Commerce by mail. For most very small firms, including those with no paid employees, data from existing administrative records of other Federal agencies were used instead. These records provided basic information on location, kind of business, sales, payroll, number of employees, and legal form of organization. In addition, more detailed information for selected kinds of business was obtained on the various questionnaires.

Census Disclosure Rules

In accordance with Federal law governing census reports, no data are published that would disclose the operations of an individual establishment or business. However, the number of establishments in a kind-of-business classification is not considered a disclosure, so this item may be released even though other information is withheld. For every CBD, statistics on sales, payroll, and number of employees are presented for all kind-of-business lines which do not require suppression to avoid disclosing data for individual companies.

Reliability of Data

All data in the Retail Census originates from either census questionnaires or administrative records of other Federal agencies. These data are not subject to sampling errors because data is collected on every business through one of these two methods. However, the data are subject to nonsampling errors. Nonsampling errors can be attributed to many sources: inability to identify all cases in the actual universe; definition and classification difficulties; differences in the interpretation of questions; errors in recording or coding the data obtained; and estimation for missing or misreported data.

The accuracy of these tabulated data is determined by the joint effects of the various nonsampling errors. No direct measurement of these effects has been obtained except for estimation of missing or misreported data. However, precautionary stops were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize the effects of nonsampling errors.

Sales

Sales include merchandise sold for cash or credit at retail and wholesale by establishments primarily engaged in retail trade; amounts received from customers for layaway purchases; receipts from rental or leasing of vehicles, equipment, instruments, tools, etc.; receipts for delivery, installation, maintenance, repair, alteration, storage, and other services; and gasoline, liquor, tobacco, and other excise taxes which are paid by the manufacturer or wholesaler and passed on to the retailer.

Special Tabulations

Special tabulations of data collected in the 1982 Census of Retail Trade may be obtained, depending on availability of time and personnel, on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the

data to be provided, should be directed to the Chief, Business Division, Bureau of the Census, Washington, D.C., 20233.

Special tabulations of retail sales data by census tract are not available. Neither are special tabulations by business name or address. Tabulations by zip code are possible, and the Bureau is at present considering publishing that data at no charge for the 1987 census. A decision on that proposal is expected by August 1987. A special tab by zip code would be possible for 1982 data for a fee. For 1977 data, a special tab by zip code is theoretically possible, but the Bureau is aware that many zip codes are missing from that data, probably to an extent which would make the special tab highly inaccurate.

Useability of Data

The Retail Census offers a highly reliable, affordable source of data at the zip code level. The Bureau is not able to provide information at a smaller aggregation. Therefore, if aggregation by zip code is determined to be sufficiently precise to show Metro Rail benefits, the Retail Census could be the retail sales data source of choice.

Table 2. Statistics by Kind of Business for Central Business Districts in the Standard Metropolitan Statistical Area: 1982

[For meaning of abbreviations and symbols, see introduction text. For definition of terms "adjusted" and "unadjusted" and for indication of comparability of 1982 CBD data and 1977 CBD data, see Comparability of 1977 and 1982 Censuses in appendix A. For definition of SMSA, see appendix D. For comparable CBD trade statistics, 1977 and 1982, see appendix H. For description of CBD boundaries, see appendix I]

SIC code	Kind of business	Establishments		Sales		Annual payroll		First quarter payroll		Paid employees for pay period including March 12	
		Adjusted (number)	Unadjusted (number)	Adjusted ($1,000)	Unadjusted ($1,000)	Adjusted ($1,000)	Unadjusted ($1,000)	Adjusted ($1,000)	Unadjusted ($1,000)	Adjusted (number)	Unadjusted (number)
	LOS ANGELES CBD										
	Retail stores[1,2]	1 731	1 687	697 309	656 119	103 613	103 304	25 104	25 104	19 241	19 208
	Retail stores (establishments with payroll)[2]	1 024	1 039	611 670	611 503	103 613	103 304	25 104	25 104	19 241	19 208
52	Building materials, hardware, garden supply, and mobile home dealers	6	6	3 415	3 415	228	228	53	53	33	33
525	Hardware stores	3	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
52 ex. 525	Other	3	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
53	General merchandise group stores	11	11	69 660	69 651	16 054	16 053	3 904	3 903	1 731	1 730
531	Department stores (incl. leased depts.)[3]	5	5	100 556	100 556	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
531	Department stores (excl. leased depts.)[3]	5	5	64 930	64 930	13 234	13 234	3 265	3 265	1 353	1 353
533	Variety stores	4	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
539	Miscellaneous general merchandise stores	2	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
54	Food stores[4]	67	67	58 774	58 774	4 778	4 778	1 055	1 055	447	447
541	Grocery stores	29	29	23 782	23 782	2 344	2 344	553	553	215	215
55 ex. 554	Automotive dealers	6	6	4 445	4 443	575	574	215	212	42	41
554	Gasoline service stations	12	12	11 783	11 783	783	783	168	168	64	64
56	Apparel and accessory stores	265	264	127 351	127 349	18 625	18 632	4 475	4 473	1 780	1 777
561	Men's and boys' clothing and furnishings stores	63	63	42 781	42 777	7 675	7 674	1 835	1 835	435	434
562, 3, 8	Women's clothing and specialty stores and furriers	112	111	44 191	44 188	5 648	5 647	1 269	1 268	701	700
562	Women's ready-to-wear stores	90	88	28 355	28 352	5 011	5 010	1 104	1 103	635	635
565	Family clothing stores	26	26	10 275	10 275	1 349	1 349	335	335	180	180
566	Shoe stores	61	61	23 545	23 545	3 474	3 470	822	821	342	341
564, 9	Other apparel and accessory stores	23	23	6 552	6 552	859	859	211	211	122	122
57	Furniture, home furnishings, and equipment stores	50	50	54 592	54 588	9 087	9 084	2 458	2 466	578	577
5712	Furniture stores	6	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
5713, 4, 9	Home furnishing stores	9	9	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
572, 3	Household appliance, radio, television, and music stores	35	35	27 055	27 054	4 416	4 415	1 271	1 270	298	295
58	Eating and drinking places	268	268	65 002	65 002	24 964	24 964	6 127	6 127	3 364	3 364
5812	Eating places	235	235	58 452	58 452	23 360	23 360	5 715	5 715	3 136	3 136
5813	Drinking places	33	33	6 550	6 550	1 604	1 604	412	412	245	245
591	Drug and proprietary stores	17	17	16 242	16 242	2 252	2 252	566	566	178	178
59 ex. 591	Miscellaneous retail stores[5]	312	309	160 328	158 845	24 877	24 866	6 065	6 991	1 574	1 947
592	Liquor stores	16	16	9 315	9 315	955	965	330	330	115	115
594	Miscellaneous shopping goods stores[6]	217	215	115 528	115 333	17 508	17 249	4 080	4 039	1 286	1 278
5944	Jewelry stores	134	134	79 109	78 957	12 191	11 954	2 800	2 767	785	777
5947	Gift, novelty, and souvenir shops	24	23	7 273	7 246	1 258	1 226	280	255	102	100
5949	Sewing, needlework, and piece goods stores	5	5	2 423	2 423	666	666	158	155	84	84
5992	Florists	14	14	3 419	3 419	934	934	241	241	101	101

See footnotes at end of table.

7.4.3 Dun's Marketing Services

Useability:	Limited
Relevant Indicator:	Retail Sales
Smallest Aggregation:	Census Tract Code
Reporting Frequency:	As needed
Composition of Data:	Very complete at the high end, but incomplete for small businesses
Current Availability:	Available
Cost:	Depending on subscription
Contact:	Steve Hauge (213) 625-3867

Nationwide, the Dun & Bradstreet database includes information on over six million businesses. The files are continuously updated by of staff of over 1,700 analysts who interview thousands of business leaders every day to make up to 500,000 revisions per month.

The Trends File tracts information on numbers of employees and sales volume over a three or five-year period. The Abstract File of all business establishments is a statistical file containing only numeric data, not names.

The Dun and Bradstreet data base covers 99% of the gross national product. The 1% not covered are almost exclusively small retail establishments. This may impact its usefulness for this study.

7.4.4 Donnelly Marketing Information Services

Useability:	Poor
Relevant Indicator:	Retail Sales
Smallest Aggregation:	Zip Code
Reporting Frequency:	As needed
Composition of Data:	Uses the Dun's database
Current Availability:	Available
Cost:	$50 per aggregation of zip codes, up to 25 zip codes
Contact:	(714) 978-1122

Donnelly uses the Dun's database to construct economic reports by zip code. Economic reports describe the commercial environment. These reports list the number of businesses in an area by SIC code and include their sales volumes and employee counts. They also provide summaries of banking activity for all branches in the area.

Because Donnelly uses the Dun's database, this information suffers the same short comings as noted above.

DONNELLEY MARKETING INFORMATION SERVICES
A COMPANY OF THE DUN & BRADSTREET CORPORATION

INFORMATION SERVICES
SAMPLE ZIP CODE

AMERICAN PROFILE 06/16/86
**** ECONOMIC REPORT ****

PRIMARY SIC	NUMBER OF FIRMS	EMPLOYEES IN AREA	SALES VOLUME # OF FIRMS REPORTING	SALES VOLUME $(000000)
AGR/FOR/FISH	7	57	6	17
MINING	4	15	4	53
CONSTRUCTION	43	137	30	157
MANUFACTURING	39	6937	26	3255
TRANSP/COMM/UTIL	13	326	9	73
WHOLESALE TRADE	43	371	38	358
RETAIL TRADE	66	690	49	166
FIN/INSUR/REAL EST	50	304	16	54
SERVICES	195	4720	118	1196
TOTAL	470	13717	296	7243

FINANCIAL INSTITUTION DEPOSIT DATA - $(000)

NUMBER OF INST.	DEMAND IPC	ALL SAVINGS	OTHER IPC	TOTAL PUBLIC	ALL OTHER	TOTAL DEPOSITS
11	24052	152379	98568	4	607	275610

3. 0. 0: DEFINITION BY ZIPCODE

(203) 965 - 5454

7.4.5 Los Angeles Business Licenses - Daily Commerce

Useability:	Good
Relevant Indicator:	Retail Sales
Smallest Aggregation:	By license
Reporting Frequency:	Periodically according to the number of licenses granted
Composition of Data:	All licenses issued by the City Clerk
Current Availability:	Public information
Historic Availability:	Since 1980
Cost:	No charge
Contact:	Eric Biederann 624-3111

The Daily Commerce furnishes current information of on the issuance of business licenses by the City of Los Angeles by reproducing computer printouts. These printouts provide the name of the licensee (LN), fictitious firm name (DBA), address of the licensee (BA) and mailing address (MA or CO). Not all of the businesses listed are new enterprises. Some reports are the result of reinstatements or of changes of ownership.

BA: 15423 CHATSWORTH ST
MISSION HILLS CA 91345

LN: MARCO A/MARIA C CASTILLO
DBA: MARYS GIFT SHOP
BA: 9720 WOODMAN AV
ARLETA CA 91331

LN: MAHMOOD ALISGHAR
DBA: BOBS ENGINE
BA: 18551 TOPHAM ST #C
RESEDA CA 91335

LN: UNIVERSAL MARINE SUPPLY INC
BA: 14901 OXNARD ST
VAN NUYS CA 91411

LN: GUSTAVO A GUTIERREZ
BA: 6919 SEPULVEDA BL #12
VAN NUYS CA 91405

LN: GEORGE A LETOSKY JR
DBA: ANGEL'SAUTOMOTIVE
BA: 2422 LINCOLN BL
VENICE CA 90291

MOTION PICTU

LN: CROWN BOOKS WEST CORP
DBA: CROWN BOOKS #880
BA: 662 S MARIPOSA AV
LOS ANGELES CA 90010
MA: 3300 75TH AV
LANDOVER MD 20785

WHOLESALE SA

LN: EONG H KIM/KYUNG W KIM
DBA: ALFREDO MARKET
BA: 1549 GLENDALE BL
LOS ANGELES CA 90026
CO: CARE TAX/ACCOUNTING COMPNAY
MA: 2621 W OLYMPIC BL #210
LOS ANGELES CA 90006

WHOLESALE SA

WHOLESALE SALES

LN: PETER ROTHE
DBA: IMAGERY WOODWORKING
BA: 25908 S SENATOR AV
HARBOR CITY CA 90710

LN: SIX ELEVEN LIMITED INC
BA: 7239 COLDWATER CANYON AV
N HOLLYWOOD CA 91605

LN: PALI JAG TAG /C
BA: 11660 SHELDON ST
SUN VALLEY CA 91352

LN: BRUCK MICHAEL
DBA: STAR COMMUNICATIONS
BA: 477 S FAIRFAX
LOS ANGELES CA 90036

LN: OGANES GALADJIAN
DBA: O G CAR DEALERSHIP
BA: 6448 AGNES AV
N HOLLYWOOD CA 91606

LN: JIMMIE L HANKINS
DBA: J L ENTERPRISES
BA: 13320 TERRA BELLA ST
ARLETA CA 91331
CO: BA FOR MAIL PURPOSES ONLY

LN: JAMES/ADELE GALLIEN
DBA: GALLIEN BEAUTY SUPPLY
BA: 10479 SUNLAND BL
SUNLAND CA 91040
MA: 7957 DAY ST
SUNLAND CA 91040

LN: CHARMAINE ALEXANDER
BA: 900 ARROYO DR #3
S PASADENA CA 91030
CO: BA FOR MAILING PURPOSES ONLY

LN: IRVIN E NISHKIAN
DBA: AMERICAN ROBIN
BA: 13134 VALLEYHEART DR #4
STUDIO CITY CA 91604
CO: BA FOR MAIL PURPOSES ONLY

RETAIL SALES

LN: SOON JA KIM
BA: 4501 S ALAMEDA ST #B15
LOS ANGELES CA 90058
MA: 241 S ALEXANDRIA AV #J
LOS ANGELES CA 90004

LN: DANIEL GALINDO
BA: 4501 1/2 S ALAMEDA ST #C
LOS ANGELES CA 90058
MA: 3626 MONON ST
LOS ANGELES CA 90027

LN: VIRGINIA RAMIREZ
BA: 4501 8/9 S ALAMEDA ST #G
LOS ANGELES CA
MA: 135 W GAGE ST
LOS ANGELES CA 90003

LN: ROSA MARTINEZ
BA: 4501 5/6 S ALAMEDA ST #C
LOS ANGELES CA 90058
MA: 5921 MAKEE AV
LOS ANGELES CA 90001

LN: G S E COMMUNICATIONS INC
BA: 11779 W PICO BL
LOS ANGELES CA 90064

LN: HEIDI F GILLES
BA: 764 E AVENUE 43
LOS ANGELES CA 90031

LN: ELISEO S GARDENAS
BA: 2802 ESTRADA AV
LOS ANGELES CA 90065

LN: AURELIO VIZCARRA
BA: 5767 WILSON AV
LOS ANGELES CA 90280

LN: CRESCENCIO F HERNANDEZ
BA: 4647 S MICHIGAN AV
LOS ANGELES CA 90022

WHOLESALE SALES

LN: APIC PRODUCTS INC
DBA: APIC PRODUCTS/BLADES UNLIMIT
BA: 640 TIGERTAIL RD
LOS ANGELES CA 90049
CO: BA FOR MAIL PURPOSES ONLY
MA: P O BOX 49760
LOS ANGELES CA 90049

Turn to page

7.4.6 Los Angeles Business Licenses - Los Angeles City Clerk

Useability:	Good
Relevant Indicator:	Retail Sales
Smallest Aggregation:	By license
Reporting Frequency:	Monthly
Composition of Data:	All licenses issued by the City Clerk
Current Availability:	Available for a fee
Historic Availability:	Date of issue not readily available. May be available with additional programming.
Cost:	Under review. Probably about $200 for the first month, $45 for each additional month.
Contact:	Bill Burn, 485-3960 Don Debord, Tax and Permit Division 201 N. Main Street #101 L.A., CA 90012

Each month the L.A. City Clerk's Office makes available new business license requests for that month. That information is available in both hard copy and computer tape. The City Clerk also keeps a computer tape listing all current business licenses including date of issuance. Bill Burn of that office believes that the computer tape could be sorted by zip code but not by the date of issuance. Additional requests for information should be addressed in writing to Don Debord.

7.5 EMPLOYMENT

7.5.1 Business Pattern Data - Central City Association

Useability:	Highly useful
Relevant Indicator:	Employment
Smallest Aggregation:	Zip Code
Reporting Frequency:	Likely to be an annual report
Composition of Data:	From the U.S. Department of Commerce County Business Patterns Report
Historic Availability:	Data from 1982
Current Availability:	Public information, Available for fee
Cost:	$35.00
Contact:	Michael Pfiefer (213) 624-1213

In June 1987 the Central City Association published a new report on business pattern data derived from the U.S. Department of Commerce. The report was prepared by a consultant, Western Economic Research, who processes Department of Commerce tapes obtained by an agreement with a firm called Market Statistics. Mr. Pfiefer of the Central City Association believes that they may publish such a report on an annual basis. CCA defines downtown as a set of ten zip codes centered on the CBD. The statistics compare 1982 and 1984 employment by SIC code. Employment data has only recently been available by zip code. This report appears to be an excellent source of data for the Before-and-After Study.

Information Source

The business statistics in this report were derived from the County Business Pattern Reports of the U.S. Department of Commerce. For many years the Department has been issuing these reports showing the number of businesses by size and kind, and employment by SIC, all totaled by counties. This information in turn is derived from the Quarterly Payroll Reports (Form 941) to the Internal Revenue Service. These are made available to the Department of Commerce for statistical purposes; and the County Business Pattern Reports showing County totals are the end product of this effect.

Now it has become possible to obtain this same information at the zip code level. Market Statistics of New York, a private research firm, obtained tapes of the County Business Pattern data showing the number of firms by employee size class by zip codes. From this and other information the made estimates of the business employment by (SIC) Standard Industrial Classification for every Zip Code in the country.

Government Excluded

CCA cautions users that the County Business Pattern Reports do not include Government: Local, State or Federal. Normally Government accounts for about ten percent of all employment, but this can vary substantially by Community or area. Hard statistics are not presently obtainable, but it is estimated that downtown Los Angeles had approximately 50,000 government employees in 1984. This includes those actually working Downtown for the three levels of Government: Federal, State & Local.

Area Covered

As used in this report, downtown Los Angeles includes ten zip codes. These zips were selected by the Central City Association, as being logical to include. Some of these zips, especially 90011 and 90012 include territory not usually associated with downtown. On the other hand the employment reported for P.O. boxes were not included in the main portion of this study, as it was not certain those employees actually worked Downtown.

Population

While this report deals primarily with Businesses and Business Employment, there is some population information. For the area covered by the ten zips the population was 183,612 at the time of the 1980 Census, and was estimated at 190,000 in 1982 and 201,000 in 1984. About 144,000 were in the three zips 90007-11-12, leaving about 57,000 in the seven remaining zips that are more centrally located.

Table 1. SUMMARY TABULATION BY ZIP CODES DOWNTOWN 1984 Data

Zip	PO Designation	Number Businesses	Business Employment	Avg Size*	1984 ** Population	Ratio Of Jobs To People***
90007	USC Dockweiler	905	23,685	26	43,400	546
90011	Washington	504	12,367	25	70,300	176
90012	Main 1	1,424	24,379	17	30,300	805
90013	Main 2	1,045	14,451	14	8,100	1,784
90014	Metropolitan	2,000	29,491	15	2,700	10,922
90015	De Valle	2,178	52,333	24	21,400	2,445
90017	Foy	1,818	49,418	27	20,100	2,459
90021	Market	1,317	32,227	24	4,700	6,856
90071	Arco	552	28,586	52	0	No Pop
90079	Calif Mart	153	687	45	0	No Pop
TOTAL DOWNTOWN		11,896	267,624	22	201,000	1,331
As A % Of LA CO		6.6%	8.3%	132%	2.5%	327%

* Average Size is Number Employees per Establishment.
**Population as estimated by the Western Economic Research Co Apr 1984.
***Ratio Of Jobs To People is the number of business jobs for every 1,000 of the resident population.

As shown above the DOWNTOWN Area embracing the 10 Zip Codes listed, in 1984 had 11,896 Businesses giving employment to 267,624 persons. The greatest concentration of business activity as measured by employment as well as the number of establishments was 90015. Except for the California Mart, the Zip with the least business was 90011.

DOWNTOWN, with 2.5% of Los Angeles County°s population had 6.6% of its businesses and 8.3% of its business employment. The average size business DOWNTOWN was 22 employees per firm, or about one-third over the County-wide average of 16.6.

DOWNTOWN as represented by these Zip in 1984 had a population of 201,000, with 144,000 or &2% in three Zips 90007-11-12. This left about 57,000 residents in the remaining 7 Zips representing the central portion.

DOWNTOWN has a high ratio of Jobs to people, having 1,331 business employees for every 1,000 residents, compared to 407 in Los Angeles County. This ratio would be 3,617 in the 7 Zip area centrally located, eliminating the 3 outlying Zips 90007-11-12.

7.5.2 Business Profile Of Downtown - Los Angeles Chamber of Commerce

Useability:	Good, economical data source
Relevant Indicators:	Employment
Smallest Aggregation:	Zip code
Reporting Frequency:	Biannually, even years
Composition of Data:	U.S Census
Current Availability:	Public information, Available for a fee
Historic Availability:	From 1982
Scale:	Numbers of businesses, workers
Cost:	$20.00
Contact:	Jack Kyser, Economist (213) 629-0672

The Los Angeles Chamber of Commerce publishes a report called the "Business Profile of Downtown." This report compares business trends in the Los Angeles CBD beginning in 1982. The report includes number of business establishments and employment in the CBD. The data is broken down by zip code.

The Business Profile of Downtown contains basic information relevant to the Before and After Study. It is an economical source of data.

7.5.3 Demographic And Business Data - Western Economic Research Co., Inc.

Useability:	Good
Relevant Indicator:	Population Employment
Smallest Aggregation:	Zip Code for employment Census tract for population
Reporting Frequency:	Same as U.S. Census and the Census of Retail Trade
Composition of Data:	Same as U.S. Census and the Census of Retail Trade
Current Availability:	Available for a fee
Historic Availability:	Since 1980
Cost:	Approximately $100 to $500 per report for Los Angeles
Contact:	(818) 981-9762

Western Economic Research Company is a private firm which processes U.S. Census and Census of Retail Trade computer tapes for sale to data users. They offer a variety of standard reports, three samples of which are included in the following pages.

SAMPLE PAGE

14 BASIC CENSUS ITEMS BY 5 DIGIT ZIP CODE

SAMPLE PAGE

AVAILABLE FOR: ARIZONA, CALIFORNIA, COLORADO, NEVADA-UTAH, OREGON, TEXAS, WASHINGTON NEW MEXICO, FLORIDA & ILLINOIS

SUMMARY OF KEY 1980 CENSUS DATA BY ZIP CODES

ZIP CODE	TOTAL POP	POP IN GROUP QUARTER	POP PER HOU HLD	# OCC HOU UNT	% OCC AS SINGL FAM. UNT	% POP UNDR 18	% POP OVR 65	% HISP.	% BLACK	% ASIAN	MEDIAN RENT	MEDIAN FAMILY INCOME	MEDIAN HOU HLD INCOME	PER CAPITA INCOME
98002	53,550	486	2.8	18,605	69.4	31.3	6.7	2.0	.3	1.6	295	24,255	21,644	8,240
98003	46,008	332	2.6	16,115	69.8	31.2	4.6	2.2	1.4	3.8	338	26,139	23,789	9,324
98004	22,950	287	2.6	8,810	75.1	23.9	11.4	1.1	.6	2.6	375	35,325	29,128	15,563
98005	13,458	103	2.7	5,027	63.8	26.6	4.7	1.6	1.4	3.7	343	33,423	27,652	12,329
98006	23,392	0	3.2	7,387	92.0	32.4	3.2	1.7	1.4	6.0	478	34,975	33,720	12,029
98007	18,754	100	2.3	8,109	36.3	22.3	4.6	1.9	2.0	3.8	349	24,293	20,029	10,358
98008	23,240	95	3.1	7,560	86.4	30.5	4.3	2.1	1.2	4.4	426	31,398	29,992	10,644
98010	1,392	0	2.7	525	75.4	30.0	12.4	1.6	.1	.1	244	21,100	18,906	7,353
98011	52,239	200	3.0	17,457	81.1	31.5	6.3	1.9	.4	2.5	337	26,453	24,825	9,070
98013	2,504	0	2.6	992	87.8	26.2	10.8	.8	.8	.2	324	23,871	22,265	12,583
98014	3,263	0	2.9	1,071	80.9	35.1	5.7	3.2	.2	2.7	249	20,619	18,929	6,936
98019	2,397	0	2.8	844	81.6	31.9	5.8	.5	0.0	.8	272	21,528	20,152	7,171
98020	46,058	412	2.8	16,515	76.7	27.3	8.4	1.5	.3	2.0	338	27,844	24,775	10,219
98022	14,073	125	2.8	4,935	79.3	32.2	10.8	.5	0.0	.3	245	23,710	20,567	8,342
98024	3,348	133	2.9	1,118	77.1	31.8	10.2	.6	.9	.2	240	23,571	21,053	7,650
98025	207	0	3.2	60	90.0	27.1	15.5	0.0	0.0	0.0	0	35,319	35,319	9,218
98026	64	0	4.3	10	0.0	0.0	0.0	0.0	0.0	0.0	0	40,906	52,076	14,719
98027	20,557	400	3.0	6,791	83.4	31.6	5.8	1.5	.3	1.5	308	31,584	28,596	10,286
98028	107	107	0.0	0	0.0	5.6	6.5	0.0	0.0	0.0	0	0	0	4,070
98031	80,875	259	2.8	27,909	73.0	31.6	4.9	2.1	1.2	2.6	317	25,550	23,446	8,891
98033	55,524	1,023	2.7	19,917	71.9	28.9	5.9	1.9	1.0	2.2	365	26,534	23,716	9,819

14 EMPLOYMENT STATISTICS FROM 1980 CENSUS BY PLACE OF RESIDENCE

AVAILABLE FOR CALIFORNIA ONLY

EMPLOYMENT STATISTICS BY ZIP CODE - 1980 CENSUS - BASED ON PLACE OF RESIDENCE

ZIP CODE	PERSONS IN LABOR FORCE	PERCENT UNEMPLOYED	MANAGERIAL & PROFESSIONAL	TECH., SALES, ADMINISTR.	SERVICE OCCUPATIONS	FARMING, FORESTRY FISHING	PRECISION PRODUCTS, CRAFT & REPAIR	OPER., FABRICATORS, LABOR	MANUFACTURING	WHOLESALE, RETAIL TRADE	PROFESSIONAL, RELTD. SERVCS	PRIVATE WAGE, SALARY WORKERS	GOVT. WORKERS	SELF EMPLOYED WORKERS
90001	15,893	6.0	547	2,521	2,048	193	1,763	6,213	6,438	1,822	1,675	10,951	2,031	263
90002	10,607	7.0	562	2,327	2,038	106	766	2,551	2,139	1,076	2,060	5,833	2,302	208
90003	15,441	8.7	859	3,602	2,689	145	1,270	3,386	3,340	1,946	2,348	8,860	2,783	306
90004	26,694	3.1	5,677	8,078	3,705	251	2,469	3,427	4,333	5,222	4,465	19,576	2,081	1,812
90005	16,712	4.6	2,836	4,811	2,915	215	1,320	2,775	3,128	3,022	2,353	12,838	1,147	858
90006	27,156	5.1	2,382	5,196	5,159	368	2,740	8,121	8,198	5,038	2,760	20,965	1,699	1,205
90007	21,429	4.1	1,958	4,446	2,749	224	1,594	4,968	5,021	2,839	3,793	13,819	1,623	460
90008	17,335	3.3	4,108	6,000	2,018	251	1,035	1,682	1,991	2,226	4,417	9,580	4,678	811
90009	24	45.8	0	0	0	0	0	0	0	0	0	0	0	0
90010	91	0.0	48	29	14	0	0	0	6	7	24	80	6	5
90011	24,205	10.0	1,201	3,919	3,821	327	2,192	8,914	8,090	2,676	2,857	15,826	3,068	551

1984 KEY BUSINESS SAMPLE PAGE

SUMMARY OF KEY 1984 BUSINESS TO BUSINESS DATA BY ZIP CODE

STATE : WISCONSIN
ZIP CODE : 53204
P.O. NAME : MILWAUKEE

METRO CODE : 5080
METRO NAME : MILWAUKEE

COUNTY CODE : 55079
NAME : MILWAUKEE

STANDARD INDUSTRIAL CLASSIFICATION	TOTAL EMPLOY.	TOTAL ESTAB.	ESTABLISHMENTS BY EMPLOYMENT SIZE 1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000+
AGRICULTURAL SERVICES,FORESTRY,FISHERIES	0	0	0	0	0	0	0	0	0	0	0
MINING	0	0	0	0	0	0	0	0	0	0	0
CONTRACT CONSTRUCTION :	675	45	19	7	11	5	2	1	0	0	0
15 GENERAL BUILDING CONTRACTORS	23	4	1	3	0	0	0	0	0	0	0
17 SPECIAL TRADE CONTRACTORS	638	40	18	4	10	5	2	1	0	0	0
MANUFACTURING :	7,396	125	30	20	26	20	15	10	3	0	1
20 FOOD AND KINDRED PRODUCTS	760	10	0	3	3	1	0	2	1	0	0
23 APPAREL AND OTHER TEXTILE PRODUCTS	424	5	2	1	0	0	1	0	1	0	0
24 LUMBER AND WOOD PRODUCTS	2	1	1	0	0	0	0	0	0	0	0
25 FURNITURE AND FIXTURES	21	4	3	0	1	0	0	0	0	0	0
27 PRINTING AND PUBLISHING	252	18	8	5	2	1	2	0	0	0	0
28 CHEMICALS AND ALLIED PRODUCTS	211	8	1	0	3	3	1	0	0	0	0
29 PETROLEUM AND COAL PRODUCTS	0	0	0	0	0	0	0	0	0	0	0
33 PRIMARY METAL INDUSTRIES	453	9	1	0	1	4	2	1	0	0	0
34 FABRICATED METAL PRODUCTS	223	14	2	6	3	2	1	0	0	0	0
35 MACHINERY, EXCEPT ELECTRICAL	442	20	5	4	8	3	1	1	0	0	0
36 ELECTRIC AND ELECTRONIC EQUIPMENT	3,080	8	3	0	0	1	1	1	1	0	1
37 TRANSPORTATION EQUIPMENT	15	1	0	0	1	0	0	0	0	0	0
372 AIRCRAFT AND PARTS	0	0	0	0	0	0	0	0	0	0	0
376 GUIDED MISSILES, SPACE VEHICLES	0	0	0	0	0	0	0	0	0	0	0
38 INSTRUMENTS AND RELATED PRODUCTS	205	3	0	0	1	1	0	1	0	0	0
39 MISCELLANEOUS MANUFACTURING INDUSTRI	240	7	2	0	2	0	3	0	0	0	0
TRANSPORTATION AND PUBLIC UTILITIES :	367	31	14	6	5	5	1	0	0	0	0
42 TRUCKING AND WAREHOUSING	165	13	5	2	5	0	1	0	0	0	0
44 WATER TRANSPORTATION	37	4	3	0	0	1	0	0	0	0	0
WHOLESALE TRADE :	2,095	89	33	22	14	12	5	2	0	1	0
50 WHOLESALE TRADE-DURABLE GOODS	873	55	20	12	12	8	3	2	0	0	0
51 WHOLESALE TRADE-NONDURABLE GOODS	1,122	34	13	10	2	8	2	0	0	1	0
RETAIL TRADE :	2,384	253	135	54	36	20	8	0	0	0	0
52 BUILDING MATERIALS GARDEN SUPPLIES	158	11	3	4	2	1	1	0	0	0	0
53 GENERAL MERCHANDISE STORES	138	3	0	0	0	2	1	0	0	0	0
54 FOOD STORES	401	30	14	8	4	4	2	0	0	0	0
55 AUTOMOTIVE DEALERS SERVICE STATIONS	130	20	10	8	3	1	0	0	0	0	0
56 APPAREL AND ACCESSORY STORES	114	16	5	7	4	0	0	0	0	0	0
57 FURNITURE AND HOME FURNISHINGS/APPLI	211	20	10	5	2	2	1	0	0	0	0
58 EATING AND DRINKING	222	35	21	7	5	2	0	0	0	0	0
FINANCE, INSURANCE, AND REAL ESTATE :	1,340	92	54	13	11	8	3	1	1	0	0
60 BANKING	142	4	0	0	1	2	1	0	0	0	0
612 SAVINGS AND LOAN ASSOCIATIONS	14	1	0	0	1	0	0	0	0	0	0
64 INSURANCE AGENTS, BROKERS AND SERVIC	37	2	0	1	0	1	0	0	0	0	0
65 REAL ESTATE	87	10	6	2	0	2	0	0	0	0	0
SERVICES :	2,119	175	104	24	27	12	5	2	1	0	0
70 HOTELS AND OTHER LODGING PLACES	0	0	0	0	0	0	0	0	0	0	0
73 BUSINESS SERVICES	782	24	13	2	3	2	2	1	1	0	0
75 AUTO REPAIR, SERVICES, AND GARAGES	127	18	7	4	4	1	0	0	0	0	0
79 AMUSEMENT RECREATION SERVICES	89	8	2	1	1	2	0	0	0	0	0
80 HEALTH SERVICES	535	32	21	4	4	2	0	1	0	0	0
806 HOSPITALS	0	0	0	0	0	0	0	0	0	0	0
81 LEGAL SERVICES	21	6	4	2	0	0	0	0	0	0	0
82 EDUCATIONAL SERVICES	35	8	3	2	1	0	0	0	0	0	0
TOTAL	15,386	748	351	138	121	80	37	15	4	1	1

PREPARED BY MARKET STATISTICS (JANUARY 1986)

1986 MID DECADE SAMPLE PAGE

STATE : NEW YORK

SUMMARY OF KEY 1986 DEMOGRAPHIC CHARACTERISTICS BY ZIP CODE
ESTIMATES AS OF 1/1/86 UNLESS OTHERWISE NOTED

ZIP CODE	TOTAL POPULATION	1980-1986 POP. % CHANGE	TOTAL HOUSEHOLDS	POPULATION BY AGE 0-17	POPULATION BY AGE 18-44	POPULATION BY AGE 45-64	POPULATION BY AGE 65+	MEDIAN AGE	MEDIAN HHLD. INCOME	HOUSEHOLDS BY INCOME <$15,000	HOUSEHOLDS BY INCOME $50,000+	DEC. 1984 TOTAL EMPLOYMENT
06390	1,245		454	315	561	232	137	31.3	30,530	95	99	135
10000												1,695
10001	20,308	18.5	10,752	2,196	10,068	4,159	3,885	36.9	16,000	5,098	834	118,601
10002	92,580	18.5	34,413	22,819	37,713	18,729	13,319	33.6	11,413	21,566	657	16,704
10003	57,128	18.4	33,625	4,227	35,928	9,697	7,276	33.9	23,203	10,690	5,667	48,484
10004	4,275	18.5	888	1,242	2,856	151	26	24.2	18,699	336	32	84,785
10005	455	18.5	303	47	300	47	61	33.0	32,268	55	50	74,573
10006	143	17.2	110	16	70	20	37	38.0	25,000	37	38	43,119
10007	2,349	26.6	778	137	1,781	162	269	31.0	21,919	320	169	28,459
10008												705
10009	46,302	-18.7	21,812	9,865	20,489	8,651	7,297	34.1	15,380	10,722	1,355	5,942
10010	32,291	26.4	18,498	3,107	17,842	6,499	4,843	36.0	28,248	4,189	3,926	52,370
10011	56,040	19.1	33,847	4,436	32,339	10,705	8,560	36.2	22,287	11,066	4,996	55,788
10012	26,676	18.5	14,086	3,175	15,478	4,989	3,034	34.3	19,196	5,614	1,758	21,416
10013	26,477	18.6	10,733	3,203	13,416	6,079	3,779	37.6	14,976	5,376	783	53,802
10014	36,281	20.4	23,654	2,158	23,114	6,826	4,183	35.8	22,008	7,933	3,243	20,155
10015												8,459
10016	47,352	18.5	31,896	2,357	27,632	10,453	6,910	38.2	27,199	7,356	6,480	104,905
10017	16,102	18.8	12,063	662	8,910	3,977	2,553	40.0	26,567	2,869	2,825	203,068
10018	3,667	18.5	2,460	172	2,369	739	387	37.5	8,794	1,740	109	108,267
10019	42,478	25.0	27,220	3,579	20,617	9,832	8,450	40.7	21,156	10,011	4,357	128,332
10020												46,299
10021	103,783		63,287	8,699	53,832	22,143	19,109	39.6	37,457	10,554	22,803	62,501
10022	35,079	6.7	23,903	1,556	16,664	9,964	6,895	44.0	39,244	3,536	9,268	178,157
10023	72,298	23.0	45,744	5,610	38,502	13,889	14,297	38.6	27,549	12,153	8,997	33,203
10024	74,561	18.5	42,332	8,390	41,978	13,281	10,912	35.6	26,311	12,362	10,002	10,623
10025	99,308	.8	47,594	15,454	53,444	17,433	12,977	34.2	18,224	18,936	5,043	11,101
10026	20,438	-20.6	8,209	5,039	7,607	4,616	3,176	35.6	7,997	6,283	134	629
10027	51,853	-8.1	21,811	10,450	23,609	10,671	7,123	34.1	11,696	12,962	1,001	18,428
10028	37,000	-16.9	20,990	4,505	20,196	6,828	5,471	36.1	33,112	4,390	6,972	16,444
10029	62,671	-16.5	23,570	18,040	26,021	11,737	6,873	30.8	10,816	14,968	1,044	9,814
10030	19,870	-20.6	8,974	4,086	7,371	4,625	3,788	39.6	8,365	6,562	144	936
10031	51,476	-1.1	20,641	12,186	21,388	10,918	6,984	34.5	10,747	13,097	499	3,368
10032	55,813	-2.3	21,199	13,305	25,066	10,441	7,001	32.5	12,805	12,189	623	4,950
10033	48,110	-3.7	18,578	11,296	20,093	8,972	7,749	34.6	14,923	9,334	898	7,688
10034	33,717	-6.7	14,240	7,958	14,553	5,759	5,447	33.1	14,195	7,544	461	5,562
10035	23,677	-19.4	8,277	7,202	9,867	4,301	2,307	30.0	9,072	5,740	770	4,243
10036	20,733	18.8	12,054	2,426	11,437	4,409	2,461	35.2	11,828	7,497	351	101,206
10037	18,105	-5.3	8,533	3,206	6,284	4,955	3,660	43.3	13,129	4,774	235	1,929
10038	15,570	16.3	6,041	3,175	6,435	3,612	2,348	34.6	19,140	2,446	414	58,854
10039	19,449	-19.4	8,170	4,742	7,188	4,338	3,181	36.9	10,773	5,234	74	775
10040	39,697	1.8	16,501	8,769	16,232	6,742	7,954	34.7	13,955	8,835	639	2,249
10041												3,329
10043												3,798
10044	7,499	7.7	2,315	1,450	3,150	1,344	1,555	38.8	36,684	369	758	128
10045												33
10046												2
10047												236

A JOINT SERVICE OF MARKET STATISTICS AND ADVO SYSTEM INC.

7.5.4 California Labor Market Bulletin Statistical Supplement - State Employment Development Department

Useability:	Useful as an index of county-wide trends
Relevant Indicator:	Employment
Smallest Aggregation:	County
Reporting Frequency:	Monthly
Composition of Data:	Wage, salary and employment information is collected from unemployment tax payments. The unemployment rate is calculated from the Current Population Survey, a survey of 2,000 households in Los Angeles County.
Current Availability:	Public information
Historic Availability:	Methodology reviewed and revised annually
Cost:	No charge
Contact:	Jerry Hawbaker (213) 744-2507

The Statistical Supplement of the California Labor Market Bulletin provides statewide data by industry for employment, average weekly earnings, average hourly earnings, and average hours worked. It also provides employment data for 17 Metropolitan Statistical Areas (MSA) and for women. Each monthly publication provides three data sets: the current month, the preceding month, and the corresponding month from the preceding year. Wage, salary and employment information is collected from unemployment tax payments. The unemployment rate is calculated from the Current Population Survey, a survey of 2,000 households in Los Angeles County. Information from the population survey cannot be disaggregated from the county level. Information from unemployment tax payments cannot be disaggregated from the MSA level.

The definition of wage and salary workers in nonagricultural establishments does not include employers, own-account workers, unpaid family workers, domestic servants, and agricultural workers. Construction employment data does not include force-account and government construction workers. Government service data includes all civilian employees of Federal, State and local governments regardless of the activity in which the employee is engaged. Education employment data includes all employees of State and local public schools.

Average hours and earnings are based upon data for full-time and part-time production and related workers in manufacturing and mineral extraction industries, construction workers in construction, and nonsupervisory employees and working supervisors in other industries. Average gross weekly and hourly earnings include overtime and premium wages for late-shift work.

Because the information from the California Labor Market Bulletin Statistical Supplement cannot be disaggregated below the county level, it may be useful to provide baseline comparisons for the Before-and-After Study.

TABLE 3
WAGE AND SALARY WORKERS IN NONAGRICULTURAL ESTABLISHMENTS (A),
LOS ANGELES - LONG BEACH MSA (IN THOUSANDS)

INDUSTRY	JUN 1986	MAY 1986	JUN 1985
TOTAL NONAGRICULTURAL	3903.4	3899.0	3834.
MINING	11.5	11.7	12.
OIL & GAS MINING	10.3	10.5	11.
OTHER MINING & QUARRYING	1.2	1.2	1.
CONSTRUCTION (B)	120.5	119.7	120.
GENERAL BUILDING CONTRACTOR	27.8	27.4	28.
HEAVY CONSTRUCT CONTRACTORS	13.6	13.7	14.
SPECIAL TRADE CONTRACTORS	79.1	78.6	77.
MANUFACTURING	906.9	907.0	895.
NONDURABLE GOODS	289.2	288.2	284.
DURABLE GOODS	617.7	618.8	610.
NONDURABLE GOODS			
FOOD & KINDRED PRODUCTS	47.7	46.3	47.
CAN, CURED, FROZ SEA FOODS	3.7	3.4	3.
MEAT PRODUCTS	4.9	4.9	5.
DAIRY PRODUCTS	5.0	5.9	5.
CAN,PRESRVD FRUIT & VEGTBL	4.5	4.0	4.
GRAIN MILL PRODUCTS	2.1	2.1	2.
BAKERY PRODUCTS	9.4	9.4	9.
BEVERAGES	5.8	5.9	6.
OTHR FOOD & KINDRED PRODUCT	11.3	10.7	10.
TEXTILE MILL PRODUCTS	9.5	9.4	9.
APPAREL & OTHER TEXTILE PROD	80.2	81.3	77.
MEN'S & BOYS' FURNISHINGS	3.8	3.8	4.
WOMEN'S & MISSES' OUTERWEAR	56.4	57.4	54.
WOMEN & CHILDRENS UNDERGRMT	3.4	3.4	3.
OTHR APPAREL & TEXTILE PROD	16.6	16.7	16.
PAPER & ALLIED PRODUCTS	18.9	18.8	18.
MISC CONVERTED PAPER PRODS	9.1	9.1	8.
PAPERBOARD CONTAINERS & BOX	7.9	7.8	7.
OTHR PAPER & ALLIED PRODUCT	1.9	1.9	1.
PRINTING & PUBLISHING	56.8	56.5	55.
NEWSPAPERS	17.1	17.0	16.
OTHR PRINTING & PUBLISHING	39.7	39.5	39.
CHEMICALS & ALLIED PRODUCTS	27.6	27.5	27.
INDUSTRIAL INORGANIC CHEMS	2.4	2.4	2.
PLASTIC MATERAL & SYNTHETIC	2.0	2.0	1.
DRUGS	5.6	5.6	5.
SOAP, CLEANERS, TOILET GOOD	8.6	8.5	8.
PAINTS & ALLIED PRODUCTS	4.3	4.3	4.
OTHR CHEMICAL & ALLIED PROD	4.7	4.7	4.

7.5.5 U.S. Census - U.S. Bureau of the Census

Useability:	Marginally useful
Relevant Indicator:	Employment
Smallest Aggregation:	Block
Reporting Frequency:	Every ten years
Composition of Data:	Complete
Current Availability:	Public information
Cost:	No charge
Contact:	Ben Steinfeld (213) 209-6612

The U.S. Census gathers extensive, accurate information on population, vital statistics, immigration, health, education, employment, earnings, income, expenditures, wealth, housing, and other characteristics of American life. The information can be disaggregated to the census block level.

The U.S. Census is conducted only every ten years. The next Census will be conducted in 1990. Data from that Census will not effectively be available until 1992. Because Census data is collected so infrequently, this data source may not be very useful to the Before-and-After Study.

7.6 POPULATION

7.6.1 Population, Housing, Employment And Income Profile Report - Southern California Association of Governments

Useability:	Excellent
Relevant Indicators:	Population
Smallest Aggregation:	Census Tract
Reporting Frequency:	Irregular; every few years
Composition of Data:	From the California Department of Finance
Current Availability:	Available for fee
Historic Availability:	Since 1984
Cost:	$15 per census tract
Contact:	Shelly Snyder 739-6689

For 1984, SCAG has taken the California Department of Finance population estimates and broken then down by census tract. They plan to publish such information periodically, and probably will do so for 1988. However, a regular reporting schedule has not been established.

** LEVEL F: FOR TRACTS AND COUNTIES WITHIN REGION
** THIS REPORT IS NOT TO BE COPIED OR DISTRIBUTED

REGIONAL INSTITUTE OF SOUTHERN CALIFORNIA **
VERSION 1 : REPORTS SUBJECT TO REVISION **

SAMPLE — $15 PER TRACT

		1970	1980	1985	1990	1995	2000	2005	2010	1984 ESTIMATE
LOS ANGELES COUNTY										
TRACT 9108.01										
TOTAL POPULATION	S	6303	7995	11072	13893	16457	17880	19302	7482	
GROUP QUARTER POP	S	0	0	0	0	0	0	0	0	
RESIDENT POPULATION	S	6303	7995	11072	13893	16457	17880	19302	7482	
TOTAL HOUSING	S	1936	2410	3361	4312	5158	5805	6453	2241	
OCCUPIED HOUSING	S	1833	2408	3342	4266	5078	5687	6291	2241	
SINGLE FAMILY UNITS	S	1840	2259	3046	3773	4352	4716	5041	2115	
OCCUPIED	S	1773	2258	3033	3742	4298	4636	4931	2115	
NOT OCCUPIED	S	67	1	13	31	54	80	110	0	
MULTIPLE UNITS	S	96	151	315	539	806	1089	1412	126	
OCCUPIED	S	60	150	309	524	780	1051	1360	126	
NOT OCCUPIED	S	36	1	6	15	26	38	52	0	
EMPLOYMENT BY PLACE OF WORK	S	96	123	222	313	395	456	517	106	
RETAIL EMPLOYMENT	S	41	56	100	141	178	205	232	48	
NONRETAIL EMPLOYMENT	S	55	67	122	172	217	251	285	58	
WORKERS BY RESIDENCE	S	2948	3799	5416	6990	8511	9497	10523	3534	
HOUSEHOLDS WITH INCOME										
UNDER $5000	S	42	55	77	81	90	108	119	52	
$5000 - $ 9,999	S	57	76	105	111	131	147	163	70	
$10000 - $14,999	S	114	151	210	220	262	293	325	141	
$15000 - $19,999	S	173	229	318	334	398	446	493	213	
$20000 - $24,999	S	259	343	477	501	596	667	738	319	
$25000 - $34,999	S	548	721	999	1147	1367	1529	1692	670	
$35000 - $49,999	S	470	612	849	1375	1636	1834	2028	570	
$50000 AND ABOVE	S	170	221	307	497	592	663	733	206	
MEDIAN HOUSEHOLD INCOME	S	$29,039	$29,467	$29,892	$30,317	$30,742	$31,168	$31,595	$29,381	
LICENSED DRIVERS	S	3490	4688	6699	8666	10574	11823	12984	4452	

7.6.2 Population And Housing Estimates Of California Cities And Counties - State Department of Finance

Useability: Limited

Relevant Indicators: Population

Smallest Aggregation: By City

Reporting Frequency: Semi-Annually

Composition of Data: Estimated (See Below)

Current Availability: Public information

Historic Availability: Yes

Cost: No charge

Contact: Elizabeth Hoag (916) 322-4651

Population Items. Data in columns one through four represent population counts. Column one has total population for the area. The second column represents the number of persons living in occupied housing units, or households. This household population includes persons living in mobile homes which is separated out and shown in column three. The final category under population is group quarters. This includes all persons in living arrangements, such as nursing homes, school dormitories, and military barracks, which are not households. The population in group quarters plus the population in households equals the total population for an area.

Methods. Population estimates are initially prepared for each city and the unincorporated portion of each county using the Housing Unit Method. These estimates are summed for each county and adjusted to county control figures. The county controls are prepared by using three separate estimating methods: Ratio Correlation (regression), Administrative Records method using Federal income tax returns, and a Composite Migration Method using driver license address changes. These county estimates are then controlled to a State total figure.

The state and county population estimates that are used as controls for January are interpolations of the July estimates, except data for births, deaths, and group quarters which are calculated as of January. The 1980 decennial census population, including all subsequent corrections, is the benchmark for all of the estimates. The county populations are estimated by adding the respective average population change, as measured by the methods available, to the previous year's figure. These are adjusted to a State control. A brief description of the Housing Unit and the three county methods follows:

City Estimates

Housing Unit Method. This method is used to estimate total housing units, occupied housing units, average household size, and persons not in housing units--the "group quarters" population. Data from the latest census are used to establish benchmarks for each of these elements. Housing units are estimated by adding new construction minus demolitions to the census benchmark of housing units. Occupied housing units are estimated by adding the change in residential electric customers to the benchmark data. Independently calculated housing units and occupied housing units are then compared to obtain a vacancy rate and to evaluate their reliability.

County Estimates

The county population estimates are developed by adding the average change in the results of the following independent methods to the April 1980 census population.

The Driver License Address Change Composite Migration Estimating Method (DLAC) is a method in which migration of the population under 18 years old is estimated using change in school enrollment, and migration of the population 18 to 64 years old is estimated using address changes on the California driver's license file.

The Ratio-Correlation Method relies upon a multiple correlation equation and changes in the distribution of four different series of data to estimate the observed relationship of changes in the data series to changes in the county population distribution within the State for the 1970-1980 decade.

The Administrative Records Method is a component method that uses administrative records (in this instance individual Federal income tax returns) in order to measure intercounty migration, and reported vital statistics in order to estimate natural increase. The tax returns are matched for the successive periods to determine the number of persons whose county of residence changed during the estimated period. A net migration rate based on the number of taxpayers under age 65 changing residence is derived; this rate is then applied to the under age 65 population. These estimates are then combined with the over 65 population and immigration from abroad including undocumented aliens.

Undocumented Aliens

These population estimates include annual adjustments made by the U.S. Department of Commerce for undocumented aliens who have entered California since the April 1, 1980 census. These adjustments have been incorporated into our State, county and city estimates for each year, starting in 1981.

Accuracy

The estimates and changes shown here are subject to estimating error. Variations from actual population trends are inherent in estimating

procedures because the correlation between the data series and population change is not perfect. The data series used are all affected by factors other than population change. The methods used to develop the estimates have been tested and modified through comparison with the results of census. The mean absolute difference of the average of the county estimates produced for April 1, 1980 census count was 2.9 percent. For cities the difference was 5.0 percent.

POPULATION OF CALIFORNIA CITIES, JANUARY, 1986 AND 1987

COUNTY CITY	TOTAL POPULATION 1-1-86	TOTAL POPULATION 1-1-87
LANCASTER	60,900	68,000
LA PUENTE	33,250	33,400
LA VERNE	27,850	29,150
LAWNDALE	26,500	27,050
LOMITA	20,000	20,150
LONG BEACH	396,600	406,200
LOS ANGELES	3,251,500	3,311,500
LYNWOOD	53,600	53,400
MANHATTAN BEACH	34,800	35,100
MAYWOOD	24,150	24,600
MONROVIA	33,000	33,550
MONTEBELLO	58,600	59,100
MONTEREY PARK	60,900	62,900
NORWALK	88,400	89,600
PALMDALE	23,550	33,100
PALOS VERDES ESTATES	14,950	15,050
PARAMOUNT	41,000	41,850
PASADENA	129,800	130,800
PICO RIVERA	59,200	59,300
POMONA	114,000	117,800
RANCHO PALOS VERDES	45,700	46,000
REDONDO BEACH	63,900	64,400
ROLLING HILLS	2,100	2,130
ROLLING HILLS ESTATE	7,850	7,900
ROSEMEAD	46,650	46,900
SAN DIMAS	28,850	29,600
SAN FERNANDO	19,750	20,250
SAN GABRIEL	32,750	33,700
SAN MARINO	13,900	13,900
SANTA FE SPRINGS	15,300	15,450
SANTA MONICA	95,100	96,100
SIERRA MADRE	11,100	11,150
SIGNAL HILL	8,025	8,175
SOUTH EL MONTE	19,100	19,000
SOUTH GATE	77,500	78,700
SOUTH PASADENA	24,200	24,400
TEMPLE CITY	31,500	32,050
TORRANCE	138,700	140,200
VERNON	85	90
WALNUT	20,950	23,750
WEST COVINA	92,000	93,400
WEST HOLLYWOOD	38,150	38,450
WESTLAKE VILLAGE	7,000	7,325
WHITTIER	72,800	73,900
UNINCORPORATED	1,040,800	1,061,100
MADERA	77,400	79,300
CHOWCHILLA	5,975	6,000
MADERA	26,600	26,900
UNINCORPORATED	44,850	46,350
MARIN	225,900	227,600
BELVEDERE	2,340	2,320
CORTE MADERA	8,425	8,450
FAIRFAX	7,350	7,325
LARKSPUR	11,350	11,350
MILL VALLEY	12,950	13,200
NOVATO	45,150	45,950
ROSS	2,730	2,750
SAN ANSELMO	12,000	12,000
SAN RAFAEL	45,000	45,600
SAUSALITO	7,525	7,550
TIBURON	8,050	8,225
UNINCORPORATED	63,100	62,900
MARIPOSA	13,400	13,850
UNINCORPORATED	13,400	13,850
MENDOCINO	73,700	74,700
FORT BRAGG	5,725	5,850
POINT ARENA	460	450
UKIAH	13,200	13,400
WILLITS	4,350	4,400
UNINCORPORATED	49,900	50,600
MERCED	162,700	166,400
ATWATER	20,650	21,300
DOS PALOS	4,210	4,260
GUSTINE	3,690	3,660
LIVINGSTON	6,425	6,650
LOS BANOS	12,700	12,800
MERCED	46,300	48,850
UNINCORPORATED	68,700	68,900
MODOC	9,400	9,325
ALTURAS	3,220	3,150
UNINCORPORATED	6,200	6,175
MONO	9,150	9,275
MAMMOTH LAKES	4,490	4,480
UNINCORPORATED	4,650	4,810

7.7 PARKING COSTS

LOS ANGELES CBD EMPLOYEE-EMPLOYER BASELINE TRAVEL STUDY - Barton Aschman Associates

Useability: Fair

Relevant Indicators: Parking costs

Smallest Aggregation: By Block

Reporting Frequency: A non-recurring report prepared for Los Angeles Community Redevelopment Agency

Composition of Data: Parking information was obtained from analysis of a sample of downtown employees. The final sample included completed questionnaires from 5,060 employees in 118 different establishments. The number of employees surveyed represented approximately 2.9 percent of the estimated population of about 174,000 office workers.

Current Availability: Public information

Historic Availability: One-time report

Cost: No charge

This one-time survey includes questions on travel time, travel patterns, auto ownership, travel distance, work schedules, mode choice, parking locations, parking costs, trip costs, parking policies, job classification, income level.

7.8 ECONOMIC INDICATORS

THE WALL STREET JOURNAL - RTD Library

Useability:	Highly useful
Relevant Indicator:	Economic Conditions
Smallest Aggregation:	National
Reporting Frequency:	As rates change
Composition of Data:	National sources
Historic Availability:	Yes
Current Availability:	Public Information
Cost:	No Charge

The Wall Street Journal may be used as the source of data on prime interest rates, Consumer Price Index, Index of Industrial Production, disposable income and Gross National Product.

8. SUMMARY AND NEXT STEPS

Tasks 1, 2 and 3 of the Before-and-After Study were designed to set the context for the more detailed study design and final data collection which will take place in later Tasks. Using specific criteria established in Task 1, a comprehensive list of eight potential indicators which could be used to measure monetary benefits to property owners was developed. The geographic areas for which data could theoretically be collected were also examined in Task 1. In addition to collecting data within the boundaries of the Benefit Assessment Districts, it was recommended that potential control areas be identified for the Wilshire/Alvarado station area only, because of the low probability of identifying a suitable control area for the Central Business District. Tasks 2 and 3 examined the availablity and useability of data sources which can be used to measure the indicators. The data sets evaluated included information for a variety of potential indicators, geographic boundaries, milestone dates, and costs as suggested by Task 1.

In Task 4 of the Before-and-After Study, the findings of Tasks 1, 2 and 3 will be used to refine the list of indicators, data sources and geographic areas which will actually be used in the final study design. The refinement will be based on the constraints and opportunities identified during the evaluation of data sources. Subsequent Tasks will examine analysis methodologies, alternative data base designs to implement the methodologies and will entail actual development and analysis of the Before-and-After data base.

APPENDIX C

TECHNICAL MEMORANDUM 88.4.5,

METRO RAIL BEFORE-AND-AFTER STUDY:

RESEARCH DESIGN, METHODOLOGY, VARIABLES

AND DATA COLLECTION PLAN

==========

GENERAL PLANNING CONSULTANT

TECHNICAL MEMORANDUM 88.4.5 (REVISED):

METRO RAIL BEFORE-AND-AFTER STUDY: RESEARCH DESIGN, METHODOLOGY, VARIABLES AND DATA COLLECTION PLAN

==========

Prepared for:

Southern California Rapid Transit District

Prepared by:

Schimpeler Corradino Associates
Cordoba Corporation
Hyra L. Frank & Associates

in association with

The Planning Group, Inc.

June, 1988

ACKNOWLEDGMENT

The General Planning Consultant wishes to acknowledge the contributions of Dr. Shant Agajanian in the development of the study methodology and techniques described in this document. As an independent consultant to the GPC on this project, Dr. Agajanian played a lead role in articulating the research problem and creating the research design and methodology for isolating Metro Rail impact on property value using predictive regression models and residuals analysis.

1.0 INTRODUCTION

The purpose of the Los Angeles Metro Rail Before-and-After Study is to examine the monetary benefits which accrue over time to property located in the vicinity of Metro Rail stations and to isolate the benefits which are directly attributable to the Metro Rail system. The study is further intended to identify benefits which may be linked to particular events associated with the development of the rail system (e.g., commencement of construction, commencement of operations, etc.). The study will attempt to advance the state of the art in benefit measurement through the scientific analysis of benefits that occur over time in the vicinity of Metro Rail stations. This knowledge will be useful in understanding the process by which benefits are derived and will advance knowledge of the methodology to evaluate land use impacts of transit systems in the United States.

The following tasks constitute the Before-and-After Study:

1) Identify Indicators of Benefit and Determine Area of Coverage
2) Identify Potential Sources of Data
3) Evaluate Useability of Data
4) Refine Indicators and Areas of Coverage
5) Design Data Base and Analysis Methodologies
6) Compile Data Base and Establish Update Procedures
7) Analyze Data and Develop Prototypical Case Studies

Tasks 1, 2 and 3 of the Study have been accomplished prior to the development of this Technical Memorandum. The results are contained in Technical Memorandum 88.4.1, Metro Rail Before-and-After Study: Analysis of Potential Monetary Benefit Indicators, Identification of Potential Data Sources and Evaluation of Data Useability.

This Technical Memorandum presents the findings of Tasks 4 and 5 of the Before-and-After study. The purpose of Tasks 4 and 5 is to develop the research questions, research design, methodology, data requirements and collection plan, basic data base design and software to be used in the Study. Detailed data base design will be undertaken in Task 6.

Several studies have attempted to examine the effect of transit systems located throughout the United States on property values, with mixed results. The BART Impact Program conducted multiple regression analysis on 12 BART station areas and found some small, but measurable effects on property value attributable to the BART system (MTC, 1978). The methodology used in this study is examined in this Technical Memorandum. The Atlanta Regional Commission issued several reports concerning property sales prices and numbers of sales in MARTA station areas, but did not attempt to separate the impact of the MARTA system from other factors influencing property values (Atlanta Regional Commission, 1978). The Washington Metropolitan Council of Governments examined commercial development activity (Cardwell, 1982) and employment activity (Cater, 1984) in Metro station areas as compared to the remainder of the Washington, DC region, but did not directly measure the influence of Metro on property value.

This study builds on this previous work and refines and expands the techniques available to isolate the impact of the transit system on changing property values from the many other factors which influence property value. The basic approach of this study is to:

1) Examine the factors which currently influence property values for different land uses and subareas of the Metro Rail station areas. This is done by developing pre-Metro Rail equations which reflect observed factors and patterns of influence on property values in station areas. These equations will be developed by observing property sales in a time frame during which Metro Rail would not be expected to influence property value. As such, these equations can be used to predict future sale prices as if Metro Rail had not occurred;

2) Obtain actual post-Metro Rail sales prices for parcels in the station areas. The study will predict prices for these parcels as if Metro Rail had not occurred using the equations above and compare the actual sales prices to the predicted prices. The difference between the actual and predicted sales prices is termed the "residual" change in property value.

3) Estimate the portion of the residual change in property value that is due to the influence of the property's distance to the Metro Rail station. This analysis will directly provide the magnitude of the change in property value due to Metro Rail.

The estimated amount of property value attributable to Metro Rail influence at that time can be quantified to assess the amount of direct monetary benefits received and can be analyzed spatially to assess the distribution of the impact within the MOS-1 study area. Steps two and three can be replicated for any post-Metro Rail period to allow for tracking impact over time.

The sections which follow examine in detail: 1) the research problem, research design and methodology to be used to address the research problem; 2) data requirements and data collection plan; and 3) basic data base design and software to be used to implement the methodology.

2.0 RESEARCH PROBLEM, RESEARCH DESIGN AND METHODOLOGY

This section examines the basic research problem posed by the study of transit-related monetary benefits and presents a research design and methodology to enhance the effectiveness of the analysis in isolating the influence of Metro Rail on the value of properties located in station areas.

2.1 RESEARCH PROBLEM

The ability to confidently and accurately estimate the direct monetary benefits of transit stations upon local properties has proven elusive. Property values in transit station areas are influenced by many economic factors, including the transit system. Conventional real estate appraisal techniques acknowledge other influential factors including: directional growth patterns, location, utility (or capacity to produce), size, corner influence, shape, thoroughfare conditions, exposure, character of business climate, plottage or assemblage, topography, obsolescence, and building restrictions and zones (California Department of Real Estate, 1987). Past studies have attempted to isolate and quantify direct and indirect benefits of transit stations upon local property values but have suffered from such problems as:

1) unscientific methods of investigation;
2) research design problems inherent in Before/After studies;
3) limits on time, resources and information.

Among these problems, the need to improve upon research design is most acute. Before/After studies of transit station impacts upon property values present particular methodological problems including:

1) Difficulty in introducing experimental or quasi-experimental research design due to the absence of suitably comparable exogenous control areas. This is due to the influence of location as a major determinant of property value and the unique attributes of location which are often unreplicable in any given urban area. If they could be used, control areas would allow for the identification and isolation of non-transit related factors on property value. However, as long as this problem of comparability exists, the insights to be gained from observation of control areas are limited. Because of the uniqueness of different areas in the city, the researcher could never be sure whether observations in the control area were reflective of similar conditions in the experimental area.

   At the same time, it is clearly necessary for the researcher to be able to determine the effects of these non-transit related factors in the station areas in order to confidently conclude that certain observed effects are related to the transit system, and not to other factors. This is the most perplexing problem associated with developing a study design for a research problem of this nature. The methodology described in this document is acutely aware of this problem and is designed to ensure that these factors are properly accounted for.

2) The effects of a transit improvement may be comparatively small in relation to other factors which influence property values.

3) The effects of a transit improvement may vary year-to-year in response to specific events associated with the development of the transit system and may result in a shift in trend rate and direction over the long-term.

The latter two effects were evidenced in the findings of the BART Impact Program which examined the effect of BART on property prices and rents (MTC, 1978). This study examined sale prices of properties in BART station areas in three time frames: before the BART construction period, during BART construction and after BART construction was completed. The study examined properties which sold during any two of these time frames (Before/During, During/After or Before/After). Regression analyses were performed on the ratios of the first and second sale prices to determine the factors which were influencing the total price differential between the two time frames in which the property sold. In the process, a number of problems were encountered, including:

1) The impacts of BART (where found) were small and their significance was easily lost in the error shadow of the most influential variables (location, market, etc.) (MTC, 1978).

2) The study was not longitudinal in that it only examined three general time periods (Before, During and After). It is possible that the effects of BART on property value may have occurred in smaller discrete time frames (e.g., immediately following system announcement, immediately following system funding, etc.). If this were the case, these effects would have been indistinguishable or undetectable using the BART methodology.

3) It was necessary to wait until several years after BART had begun operation before any results could be obtained. This time frame was required to identify sufficient numbers of parcels with sales in linked time periods to obtain sufficient statistical significance.

These research problems need to be overcome, to the extent possible, if the current research effort is to advance transit benefit impact methodology. The research design described in the following section is designed to build on the impact studies conducted elsewhere in the nation.

2.2 RESEARCH DESIGN

The proposed research design is aimed at providing accurate estimates of Metro Rail impacts on property value. Three characteristics of the proposed research design are especially critical to the goal of advancing transit benefit measurement methodology. First, the research design avoids the need for exogenous control areas by providing internal control for all exogenous factors. Second, it isolates Metro Rail impacts from other impacting variables for closer and more detailed examination. Finally, it allows for annual post-Metro Rail impact analysis in order to discern the time-critical dimension of Metro Rail impact. The null hypothesis throughout the research is that Metro Rail will have no significant effect upon changes in the value of properties in Metro Rail station areas.

The area to be studied will encompass the properties located within the benefit assessment districts established for the Minimum Operable Segment-1 (MOS-1) portion of the Metro Rail project. The 4.4-mile MOS-1 runs from Union Station to the Wilshire/Alvarado station. In 1985, under enabling authority granted by

the California state legislature, the Board of Directors of the Southern California Rapid Transit District established benefit assessment districts designed to finance approximately 10% of the cost of constructing the first segment of Metro Rail. Two districts were established, one for the four downtown Los Angeles stations (Union Station, Civic Center, 5th/Hill, 7th/Flower) and one at the Wilshire/Alvarado station.

Because the study methodology directly accounts for the factors which are influencing the value of property in the station areas (both Metro Rail-related and non-Metro Rail related), the use of control areas in this research design is not indicated and therefore not proposed.

The research design approaches the Before/After methodology differently from previous before/after studies of transit station impacts by attempting to isolate those impacts directly associated with development of the transit system. Earlier studies attempted to investigate impacts by simply comparing "before" and "after" conditions. The BART study analyzed the ratio between the sales prices for property which sold in two of three defined time frames: before, during and after BART construction (see Figure 1). The proposed Metro Rail approach investigates impacts by comparing two different conditions: (1) "after with Metro Rail" (actual sales prices) and (2) "after as if Metro Rail had not occurred" (predicted sales prices using equations developed for pre-Metro Rail sales). This approach does not require both before and after "linked" sales. With the ability to predict "after as if Metro Rail had not occurred" property values, the methodology can approximate the amount of post-Metro Rail property sale value which is due to the continuation of pre-Metro Rail trends and factors for any property. The difference between this predicted value and the actual post-Metro Rail property sales value is termed the "residual" impact value.

The proposed research design encompasses the following steps:

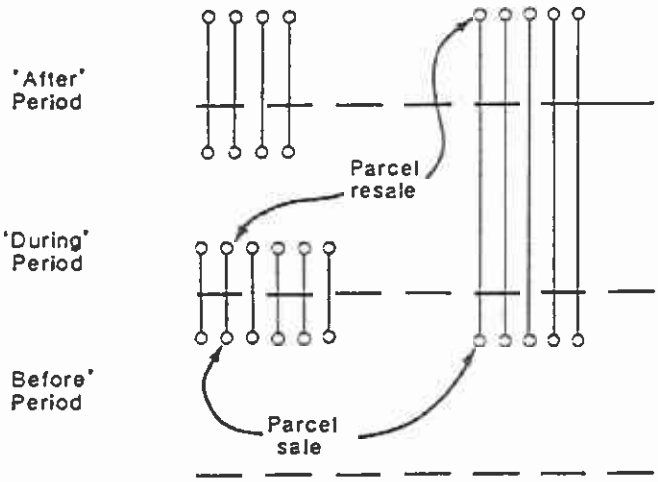
1) A set of multiple regression equations will be developed to estimate property value based upon pre-Metro Rail property sales. Separate pre-Metro Rail baseline predictive equations will be formulated for major land uses and geographic subareas, as appropriate. For instance, attempts will be made to develop separate equations for office, industrial and unimproved property in different locations in the study area, such as the Financial District, Chinatown, Central City East. Using these two key parameters (land use and geographic subarea) in combination will yield a matrix of potential scenarios for which predictive equations can be developed (e.g., office property in the Financial District, industrial property in the Union Station area, etc.). These equations will be developed in the smallest geographic area possible which will yield statistically significant results. This is expected to yield equations which reflect the greatest predictive accuracy. A prime concern in this analysis is that there be enough cases for each set of parameters to ensure confidence in the results obtained. If the initial set of geographic subareas does not contain enough cases to provide statistical significance, these subareas can be aggregated into larger geographic delineations (e.g., Financial District plus Civic Center, Chinatown plus Little Tokyo) until the required significance is achieved. As the geographic area increases in size, it can be expected that the predictive accuracy of the equations will decline, because of the increased complexity and diversity of factors introduced to the process. As a result,

FIGURE 1

DATA COLLECTION & PROCESSING

PHASE I: BART

for each BART station examined



Cases are linked pairs.

3 Periods- anticipatory

immediate

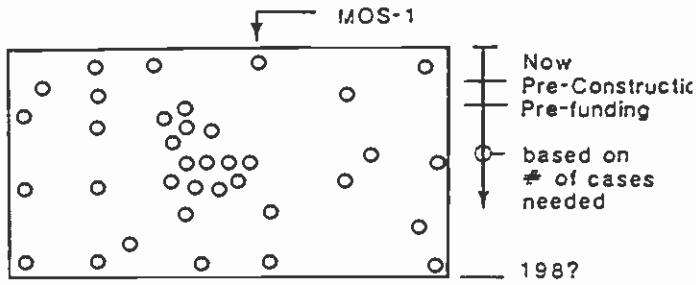
long term

Array of descriptive variables for each linked case

Unit of Analysis = $ increase at resale or derivitive thereof

PHASE I: METRO

A DATA



Cases: each non-exempt property sale

array of descriptive variables for each sale

Unit of Analysis = Sale Value

B PREDICTIVE EQUATION

-multiple regression technique

longitudinal variable values to produce annualized predictions based on trends through last year

Sale Value of Parcel in Year x = f (site characteristics) • f (locational characteristics) • f (market characteristics) • f (policy characteristics) f (year of sale)

these aggregations will need to be considered carefully to reflect, as practicable, similarities in location and market characteristics. This will work to maximize the predictive power of the equations which are ultimately developed.

The resulting equation(s) will capture, to the extent possible, significant pre-Metro Rail trends and factors which influence property value. The definition of the pre-Metro Rail time frame is central to this analysis. It is imperative that the pre-Metro Rail time frame be defined such that the property sales data for that time frame be free of the influence of Metro Rail, including speculative influence. This issue is discussed in further detail in section 2.3.1.2. Because they are designed to reflect no Metro Rail influence, the predictive equations developed in this step can be used to estimate the future price of properties in the station areas "as if Metro Rail had not occurred".

2) Data will be collected on actual property sales in station areas during the time frame following the defined pre-Metro Rail time frame. This data will provide the "after with Metro Rail" condition for the property.

3) The difference between the estimated price of properties "as if Metro Rail had not occurred" and the actual sales price "with Metro Rail" will be determined. This difference is referred to as the "residual" difference.

4) A second analysis will be conducted on this "residual" difference. Because of the manner in which the predictive equations were developed in Step 1, this residual value may contain any or all of three possible factors:

   a) Changes due to the introduction of Metro Rail. Because the predictive equation for property value "as if Metro Rail had not occurred" does not contain the Metro Rail influence on property value, the complete influence of Metro Rail on property value would be expected to be contained in the residual. This is critical to the analysis which is conducted in this phase.
   b) Changes due to new trends and factors not included in the pre-Metro Rail baseline predictive equation.
   c) Error in estimation of the pre-Metro Rail baseline predictive equation caused by changes in the influence of the variables contained in the equation.

This methodology is illustrated in Figure 2. It differs from the methodology used in the BART impact study in that it examines the difference between the actual and predicted property value (the "residual" difference in property value) while the BART impact study examined the total difference in the before and after property value (and found that the influence of BART on this total difference was small compared to the influence of other variables). In the Metro Rail methodology, much of the influence of these other variables will be accounted for and contained in the predicted property value and will thus never need to enter into the residual value analysis. With this methodology, the impacts of Metro Rail are expected to be considerably more discernible.

The focus of the residual impact analysis is the influence of Metro Rail on property value, item a) above. This research will examine the relationship between the residual value and distance from individual properties to the

FIGURE 2

ANALYSIS

PHASE II: BART

MULTIPLE REGRESSION — relative influence

Change in $ value of parcel = f (site) • f (location) • f (market) • f (BART) • f (other 'E')

Conclusion: IF f (BART), distance to station IS POSITIVE, coeffecient value AND SIGNIFICANT, good F ratio THEN BART HAD SOME IMPACT FOR THAT PERIOD

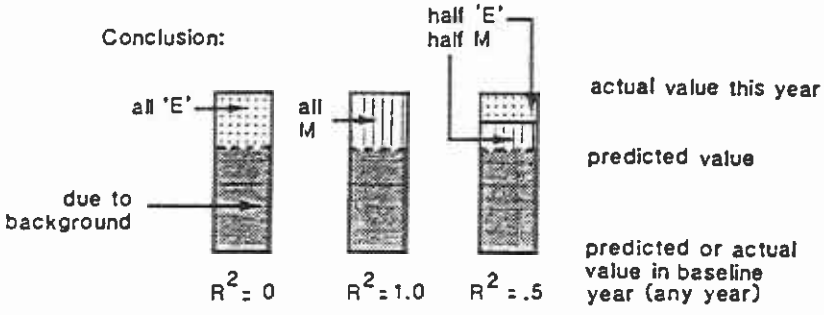
PHASE II: METRO

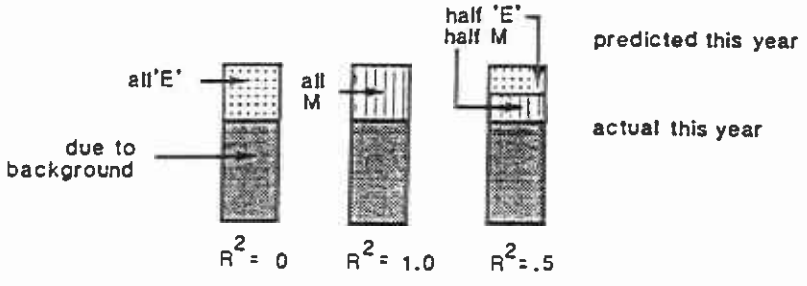
'RESIDUAL' IMPACT ANALYSIS

Bivariate Analysis

difference between actual and predicted parcel value this year = f (METRO) • f (other 'E')

Conclusion:





nearest Metro Rail station through the use of a bivariate analysis with the residual value as the dependent variable and distance from Metro Rail as the independent variable. Initially, walking distance from the nearest Metro Rail station will be used, under the hypothesis that benefit to property is related to the distance patrons are willing to walk to and from a transit station. Alternative behavioral explanations of proximity to Metro Rail (e.g., travel time savings) may also be developed and used as the independent variable in the analysis of residual values. As an economic representation of the impact of Metro Rail, this perceptual "distance" may prove to be a more accurate explanation of the influence of Metro Rail on property value than measured distance alone.

Existence of a correlation between residual value and distance from the Metro Rail station (either physical distance or other behavioral representation of distance) will be considered to be indicative of a Metro Rail impact. This is because only Metro Rail-related influences would be expected to demonstrate this relationship. Non-Metro Rail factors would be expected to be more randomly distributed throughout the study area. Should the relationship between residual value and distance to Metro Rail be significant, the research may conclude that the degree of residual property value explained by the distance to Metro Rail reflects the amount of direct monetary benefits received by property owners due to the location and operation of Metro Rail.

This approach provides specific benefits:

1) It emphasizes the impact of Metro Rail on property value by isolating those impacts in the residual value. Because the residual value is smaller than the total change in property value (the subject of the BART analysis), analysis of the residual value serves to highlight the influence Metro Rail may have and precludes the "swamping" effect of other variables which was experienced by the BART study.

2) Once the pre-Metro Rail equations are formulated to approximate post-Metro Rail sale prices "as if Metro Rail had not occurred," they will serve as a control to estimate most of the underlying non-Metro Rail influences affecting changes in actual property sales values. Essentially, by using the pre-Metro Rail equations to represent the property sales price "as if Metro Rail had not occurred", the predicted sales price will continue to reflect the non-Metro Rail factors which were influencing property values in the pre-Metro Rail period. To the extent that the same factors are contributing to property value in the post-Metro Rail period, those factors will be reflected directly in the predicted sales price. In the event that other factors (including Metro Rail) begin to influence property value in the post-Metro Rail period, the accuracy of the predictive equations will decline, but the difference in property sales price between what would have been expected based on past trends and what actually occurs based on the influence of new factors will be accounted for in the residual value. Then, in the analysis of residual value, the Metro Rail influence will be separated from the other non-Metro Rail related factors which are contained in the residual value.

   For instance, it can be hypothesized that property value may be a function of mortgage interest rates in the Los Angeles region. In the development of the pre-Metro Rail predictive equations, the importance of this factor in

influencing property value will be determined. Assuming that it is found to be a statistically significant determinant of property value, it will be contained in the pre-Metro Rail predictive equation. A predicted sales price (as if Metro Rail had not occurred) from this predictive equation will reflect the same degree of influence of mortgage interest rates on property value. If the relative influence of mortgage interest rates on property value does not change over time, the predicted sales price will reflect the total influence of mortgage interest rates. If, at the time for which a sales price is predicted, mortgage interest rates are influencing property to a greater or lesser degree, that difference will be reflected in the residual value. If the influence of mortgage interest rates was not statistically significant in the pre-Metro Rail period, but is significant in the post-Metro Rail period, then it will be reflected in the residual value, rather than the predicted sales price.

In any event, in the research design discussed in this paper, all factors which are influencing property value in the post-Metro Rail period will be accounted for, either in the predicted value (for factors which do not change over time in the way they affect property value) or in the residual value (for new factors such as Metro Rail, or changes in the manner in which the pre-Metro Rail factors affect property value). This is an important consideration because it is necessary to ensure that all factors which are influencing a property's value are accounted for in order to isolate the impact of Metro Rail from the influence of non-Metro Rail related factors. Most importantly, the methodology will reflect the actual factors at work in the area where benefits are being measured, thus eliminating the doubts which may arise if non-Metro Rail influences were estimated by observing an exogenous control area where the same forces may or may not be influential in the same way and to the same degree. Because this is the case, this approach eliminates the need for exogenous control areas since non-Metro Rail property value influences will have been accounted for.

3) With the pre-Metro Rail equations, the impacts of Metro Rail can be recalculated for any post-Metro Rail calendar year, enabling the tracking of impacts over time and allowing for analysis of correlations between Metro Rail-related changes in property value and events associated with the development of the Metro Rail system.

2.3 METHODOLOGY FOR RESIDUAL IMPACT ANALYSIS

The following sections describe the specific methodology to be used to implement the research design described above.

2.3.1 Phase I: Formulate Baseline Pre-Metro Rail Value Estimation Equations (One-Time)

The purpose of this phase is to develop a set of equations reflecting the factors currently influencing property values in Metro Rail station areas. These equations will model pre-Metro Rail property values and will be able to predict post-Metro Rail property values "as if Metro Rail had not occurred." These equations will be developed for differing land uses and different geographic subareas within the MOS-1 benefit assessment districts, as

appropriate. Recognizing the likely trade-off between the accuracy of the predictive equations and the size of the geographic area for which the equations are developed, the objective of this phase will be to model accurately, and with statistical significance, property values for all land uses and geographic subareas, using the minimum possible number of equations.

2.3.1.1 Unit of Analysis

The unit of analysis will be individual parcels within the MOS-1 benefit assessment districts which are not used for residential, government or non-profit purposes and which have a recorded sale during the pre-Metro Rail and/or post-Metro Rail time frames (see following section). Each parcel will be categorized by land use type (office, industrial, other commercial) and by subarea (e.g., east side industrial, Chinatown, Wilshire/Alvarado). Each parcel which has a recorded sale within the area will become a case. Only pre-Metro Rail cases will be used to formulate the baseline equations.

2.3.1.2 Analysis Timeframe

The analysis timeframe will be divided into five stages:

a) pre-Metro Rail (baseline): before announcement of route (1976-1983)
b) pre-funding: before announcement of financing (1984-1985)
c) pre-construction: before commencement of construction (1986)
d) construction: before station operation (1986-1992)
e) post-Metro Rail: after station operation (post 1992).

These time frames are considered appropriate in light of the events associated with planning and construction of MOS-1. The initial stages of developing a rail transit program for Los Angeles County began in 1974 with the passage of Proposition 5, which provided that a portion of state gasoline taxes be used for development of rail transit. Planning for a regional rail transit program in Los Angeles County began in the mid-1970's and the federal environmental alternatives analysis program for rail transit was begun in 1977. A preferred alternative of heavy rail transit from downtown to the San Fernando Valley was selected in 1978 and preliminary engineering commenced in 1979. The second phase of alternatives analysis and route finalization was held in 1981 and 1982 and the final system definition was completed in May, 1983. Later that year, the first funds were appropriated for construction of the MOS-1 segment.

The influence of the transit system on property sales and value is hypothesized to begin when the final route is selected. Prior to this time, it is considered likely that the uncertainty associated with the planning and alternatives analysis processes would preclude significant investment or speculation by the real estate market. For this reason, the final route and funding decisions made in 1983 are considered to provide the best benchmark for delineating the pre-Metro Rail time frame. The pre-Metro Rail predictive equations will be developed using property sales in 1983 and earlier. Preliminary analysis of sales data availability suggests that valid sales data points are available from the year 1976.

In 1984 and 1985, the final financing plan for MOS-1 was developed with the federal government. The establishment of the MOS-1 benefit assessment districts was also accomplished during this time frame. This period is considered to be the pre-funding time frame. In 1986, the funding plan for MOS-1 was completed and construction of MOS-1 commenced. The year 1986, therefore, is considered the pre-construction period for MOS-1. Construction is scheduled to be completed and operations are expected to commence in 1993.

An analysis of Metro Rail benefit will be conducted for each stage based upon the calendar year in which it occurs. Property sales data will be collected for each year and actual sales prices compared to prices predicted for that year using the pre-Metro Rail predictive equations. Thus, impacts resulting from the announcement, funding and construction will also be able to be estimated. Pre-funding, pre-construction and construction impacts will also be able to be estimated to improve the techniques for estimating post-Metro Rail impacts.

2.3.1.3 Predictive Equations

A set of predictive equations will be formulated to estimate property value for any calendar year by each land use and for each subarea. As noted earlier, aggregation of geographic subareas may be necessary to yield predictive equations with adequate statistical significance. Property sales value data from 1976 to 1983 will be used to develop the equations. The equations will be derived as follows:

a) use of multiple-regression technique
b) use of "property sale value" as the dependent variable
c) use of "year of sale" as a control independent variable
d) use of the site, locational; market and policy characteristics as independent variables (see Chapter 3 for complete listing of items)

This would produce a multiple regression equation which can be specified as:

Sale Price of Case = f (year of sale) + f (site features) + f (locational features) + f (market features) + f (policy features)

This standard equation, which is used widely for mass appraisals (Mark and Goldberg, 1988), can be specified as:

$$Y = B_0 + B_1 X_1 + B_2 X_2 + \ldots + B_n X_n + u$$

where Y = Sale price
X = a variable
B = coefficient to be estimated
n = the number of variables contained in the equation
u = the error term.

The specific independent variables selected are expected to vary by land use and subarea. To identify the variables best able to predict sales price, a factor analysis of the pre-Metro Rail cases would be undertaken by land use and subarea. The technique of combining factor analysis and regression analysis has been found to be useful in reducing the problems associated with

multicollinearity among the many variables to be examined in the course of this analysis. The factor analysis is designed to group highly related variables in a data matrix and thereby reduce a large number of variables, which may be highly correlated, into a smaller number of underlying factors (Morton, 1977).

A full cross correlation matrix will be developed to display the relationships between all independent variables. Where a number of variables are found to be related, only one would be used in the equation to eliminate multicollinearity among the independent variables in the equation. Multicollinearity occurs when two independent variables in the equation affect the dependent variable in essentially the same manner. For instance, the height of a building and the square footage of the building may both serve to impact the property value in the same way. If two multicollinear variables are contained in the same equation, the regression equation obtained may contain nonsense coefficients that differ significantly in size and direction (sign) than would be expected. Subsequent refinement of the equations will be conducted using curve fitting techniques to improve the R^2 statistic to the highest significant level.

Where necessary, the use of dummy variables to represent qualitative property conditions at the time of sale will be explored. Although less desirable than quantitative data because of the discrete, rather than continuous, nature of these variables, dummy variables will be included in the equations to the extent that they improve the R^2 for the equation. Dummy variables to be included in the predictive equations will be determined as the equations are developed.

Internal control checks will be conducted to assure significant coefficient values, avoid problems of multicollinearity, heteroschedasticity and avoid other problems associated with the multiple-regression technique. These checks will include Analysis of Variance (ANOVA) and F-test to determine the significance of the regression, T-tests to determine the significance of the computed coefficients in the regression equation and analysis of residuals for normal distribution and random variance to satisfy the assumptions of regression analysis. If enough cases are available, the data base will be randomly split into two parts and tests performed to ascertain that the two parts are statistically similar. Qualitative checks of the data will be made in conjunction with the analysis of outliers as the equations are developed. Because using ratios, percentages and actual values in the same regression equation can cause distortion, ratio values (e.g., FAR) are not proposed to be used in the analysis.

2.3.1.4 Use of Equation

The formulation of the predictive equation will be based upon sales cases preceding the announcement of the Metro Rail alignment (1976-1983). These cases will produce a "baseline" equation which reflects property value determinants in the pre-Metro Rail period. Use of these equations to project property values for a subsequent period will be considered to be an indication of change in property value "as if Metro Rail did not occur". This key output in the form of a pre-Metro Rail predictive equation for each use by each sub-area is central to the research design.

2.3.2 Phase II: Estimate Impacts of Metro Rail (Repeated Process)

The purpose of this phase is to systematically assess the full impact of Metro Rail upon property values. This phase can be repeated for every calendar year in the post-Metro Rail period. Presented below is an annual iteration. The analysis described below can be performed for every property which is sold during the post-Metro Rail period.

2.3.2.1 Calculation of "Residual" Value

It will be necessary to develop an estimate of residual property value for each case with a recorded sale in the post-Metro Rail calendar year of analysis. To obtain this estimate, the following steps will be employed:

a) list the "actual" sale price for each case which sold in the calendar year.

b) estimate the calendar year sales price "as if Metro Rail had not occurred" using the pre-Metro Rail estimation equation obtained as described above.

c) subtract the actual sales price from the estimated sales price to obtain the "residual" change in property value.

d) do this for each case and each land use for each subarea.

Calendar year periods can be combined if more cases are needed to obtain statistically significant residual impact results.

2.3.2.2 Residual Impact Analysis

Once the array of residual property values are determined, a bivariate analysis will be conducted to regress the residual value against distance to Metro Rail (either walking distance or a behavioral representation of distance to Metro Rail, as discussed earlier). This analysis will reveal the strength of association between a parcel's residual property value and its proximity to the nearest Metro Rail station.

2.3.2.3 Interpretation of Results

The R^2 statistic from the simple bivarate regression will indicate the amount of contribution that proximity to the station has upon residual values of MOS-1 properties. For instance, if the R^2 for this equation is 50%, it can be concluded that 50% of the residual value is caused by Metro Rail. By extension, it can be concluded that the direct monetary benefit to local property resulting from Metro Rail is the amount equivalent to the proportion of the residual value explained by the independent variable (distance to Metro Rail station). This estimated amount will be considered the rise in property values within the benefit assessment district attributable directly to Metro Rail location and operation.

This interpretation also implies that any influence other than Metro Rail upon the residual will appear in the error term of the bivariate equation. This will reflect either error in the equation used to predict value "as if Metro Rail had not occurred" or new trends and conditions not associated with distance to Metro Rail that have emerged in the post-Metro Rail period.

2.3.2.4 Controls

The above interpretations are correct only if no multicollinearity among variables exists. There are two areas in which multicollinearity could conceivably impact upon the conclusions drawn as a result of the analysis: (1) in the development of the pre-Metro Rail predictive equations or (2) in the bivariate analysis of residual value.

In the case of the development of pre-Metro Rail predictive equations, it is safe to assume that the entire influence of Metro Rail is contained in the residual value of the property as long as there is no variable in the pre-Metro Rail predictive equation which influences property value in the same manner as Metro Rail. If such a variable were to be contained in the predictive equation, it is possible that the predictive equation would reflect some influence of Metro Rail in the estimation of property value "as if Metro Rail had not occurred" and the residual value of the property would be understated.

In the case of the bivariate analysis of residual value, it is safe to assume that the amount of residual value which correlates with distance from Metro Rail is the result of Metro Rail <u>if</u> no other variables in the residual analysis are influencing property value in a manner similar to Metro Rail.

A control test will be undertaken which will examine property value as a function of distance to the Metro Rail station in the pre-Metro Rail period and compare it to the residual analysis in the post-Metro Rail period to determine whether they are derived from the same source. The methodology to be used is as follows: The null hypothesis will be that the two analyses are measuring the same phenomenon (i.e., a Metro Rail influence is occurring in both the pre- and post-Metro Rail periods). Since the influence in the pre-Metro Rail period is most likely not Metro Rail (because of the manner in which the pre-Metro Rail period was defined), it must be another factor which is acting in the same manner as Metro Rail. Two regression equations will be developed, one for each of the pre-Metro Rail and post-Metro Rail conditions. Confidence interval regression coefficients will be established to test whether the two equations are statistically different. If either falls within the range of the confidence interval, the null hypothesis will be rejected and the correlation between residual value and distance to Metro Rail will be presumed to be reflective of the influence of Metro Rail on property value.

2.3.2.5 Plotting Metro Rail Impacts on Property Values

Once satisfied that the attributed values to Metro Rail impact are significant and credible, the impact values can be plotted to spatially display the impact gradient for the given calendar year by land use and compute the benefits in aggregate for all non-exempt properties.

3.0 DATA REQUIREMENTS AND COLLECTION PLAN

In order to conduct the analysis using the methodologies described above, it is necessary to first identify the dependent and independent variables in the equations to be developed. In Technical Memorandum 88.4.1, both dependent and independent variables were grouped together under the term "indicator." For the sake of clarity, this term will be supplanted by the terms "dependent" and "independent" variables. The predictive equations to be developed will take the general form as indicated in Figure 3.

3.1 DEPENDENT VARIABLES

The purpose of the research design and methodology presented in the preceding sections is to determine the effect of Metro Rail on property values. Therefore, property value is the primary dependent variable to be used in the predictive equations to be developed. Reported property sales in the pre- and post-Metro Rail time periods in the study area will constitute the statistical universe for this analysis.

Lease rates, capitalized to property value, may be used as a potential surrogate for property value in cases where infrequency of property sales does not provide enough cases to ensure reasonable confidence in the predictive equations and residual values calculated. It is not expected that this will be required. However, should it become necessary, standard appraisal techniques for estimating the value of a property based on the income generated by the property will be used for this calculation. These steps include:

1) The potential gross income from the property will be estimated based on the square footage of the building and the annual lease rate per square foot.

2) The gross income will be adjusted for the estimated vacancy rate and estimated operating expenses. This provides the net annual income for the property.

3) The net annual income is divided by a capitalization rate to determine the value of the property. The capitalization rate is the rate of return on investment which investors demand before actually investing in a project. Should use of lease rates as a surrogate for property value become necessary, real estate industry sources (brokers, mortgage lenders, etc.) will be consulted to determine the appropriate capitalization rate to be used.

3.2 INDEPENDENT VARIABLES

The list of independent variables to be potentially included in the pre-Metro Rail predictive equation must be sufficiently inclusive to ensure that the major factors which could affect property value are considered. At this point in time, it is uncertain which of the factors contained in the lists which follow will be found to be most influential on property value. This will be determined in the Analysis phase, Task 7, of the Before-and-After Study.

Property values are influenced by many factors. However, these factors can be grouped into four broad categories:

BASIC STRUCTURE OF MULTIPLE REGRESSION EQUATIONS

VALUE OF DEPENDENT VARIABLE	IS A FUNCTION OF INDEPENDENT VARIABLES			
	SITE CHARACTERISTICS	LOCATION CHARACTERISTICS	MARKET CHARACTERISTICS	POLICY CHARACTERISTICS
o PROPERTY VALUE/SALES PRICE-DAMAR o LEASE RATES-BOMA GUIDE	o PARCEL SIZE-BADD o IMPROVEMENT o SIZE-BADD o AGE-DAMAR o YEAR REHABILITATED-DAMAR o CONDITION-DAMAR (Bldg.Class) o USE-BADD o PARKING SPACES-DAMAR/CRA o HEIGHT-BOMA GUIDE/DAMAR	o ACCESS TO PROPERTY o DISTANCE FROM METRO-CALCULATED o BUS USAGE-RTD o STREET FRONTAGE-COUNTY ASSESSOR o DISTANCE FROM FREEWAY-CALCULATED o SURROUNDING AMENITIES o SURROUNDING LAND USE o SURROUNDING PARKING AGGREGATE LAND USES IN SURROUNDING BLOCKS AND ASSIGN TO PARCELS o CRIMES IN AREA-LAPD	o REGIONAL & NATIONAL MARKET CONDITIONS-US GOVT, SCAG, WALL STREET JOURNAL, STATE DEPT. OF FINANCE o GNP o PRIME INTEREST RATE o CPI FOR LA o CONSTRUCTION COST INDEX o FOREIGN EXCHANGE INDEX o REGIONAL UNEMPLOYMENT RATE o EMPLOYMENT CALIFORNIA STATE EMPLOYMENT DEVELOPMENT DEPT o POPULATION-STATE DEPT. OF FINANCE (LA COUNTY DEPT OF REGIONAL PLANNING) o BACKGROUND PARKING COST-CRA o OFFICE VACANCY RATE-COLDWELL BANKER	o REDEVELOPMENT AREA/SUBAREA-CRA MAPS o ZONING-BADD/DAMAR o CRA INVESTMENT BY SUBAREA-CRA o PROVISION OF PARKING-ZONING CODE/CRA o SPECIFIC PLAN DESIGNATED LAND USE/DENSITY-LADOP o GENERAL PLAN DESIGNATED LAND USE/DENSITY-LADOP o PROPOSITION U AFFECTED-ZONING CLASSIFICATION

BADD- BENEFIT ASSESSMENT DATA BASE
CRA- LOS ANGELES COMMUNITY REDEVELOPMENT AGENCY
LADOP-CITY OF LOS ANGELES DEPARTMENT OF PLANNING

FIGURE 3

1) Site Characteristics
2) Location Characteristics
3) Market Characteristics
4) Policy Characteristics

Each of these factors are discussed in the following sections in greater detail, including the components of the factors and the hypothesized effect of each factor on property value. In the process of developing the predictive equations for land uses and subareas, the actual importance of each factor and component in predicting property value will be ascertained and only the most important factors will be included in the final predictive equations which are developed.

3.2.1 Site Characteristics

Site characteristics are the characteristics of the individual properties within the benefit assessment districts. The components of site characteristics which may be included in the pre-Metro Rail predictive equation are:

1) Parcel Size - the value of the property may clearly be related to the size of the parcel. The larger the parcel, the higher the property value.
2) Improvement Characteristics - the value of the property may be related to whether or not the property is improved and the characteristics of the improvements located on the property, including:
   a) Size - the larger the improvement, the higher the property value.
   b) Age - the newer the improvement, the higher the property value. This may also be true for rehabilitated improvements, which may have higher property value than similar improvements which have not been rehabilitated. A formula for weighting the impact of improvements on property value may be developed if necessary to increase the accuracy of the predictive equations.
   c) Condition - if the improvement is deteriorated, the property value may be lower than a property containing an improvement in good condition.
   d) Use - the property value may relate to the use(s) of the property and the income generated by those uses.
   e) Number of Parking Spaces - the number of parking spaces provided may contribute to the ease of use of the property and may enhance or detract from property value.
   f) Height - the height of the improvement (in stories) is indicative of the income-generating capability of the property and thus may reflect property value.

3.2.2 Location Characteristics

Location characteristics are the characteristics of the property relative to other properties in the area. Location factors exert a strong influence on property values. The components of location characteristics to be examined in the development of the pre-Metro Rail predictive equations include:

1) Access to the Property - accessibility to the property is a major determinant of value. It can be expected that if access to a particular property is good, the value of that property will be higher than a similar property with poorer access. Components of accessibility include:

a) Distance from nearest Metro Rail station - this component will be used as an independent variable in the bivariate analysis of residual property value and as a control for multicollinearity in the development of the pre-Metro Rail predictive equations. As discussed above, it is important that no influence of Metro Rail be included in the pre-Metro Rail predictive equations. In addition to measured physical distance to the Metro Rail system, behavioral models for measuring proximity to Metro Rail (travel time savings, cost savings) may also be developed.
b) Bus Usage - this component will be measured as the number of passenger boardings and alightings (on and offs) measured at bus stops in proximity to the property. The higher the bus patronage, possibly the greater the accessibility to the property and thus the higher the property value.
c) Street Frontage - the street(s) which the property fronts may affect the property value. Frontage on "desirable" streets may enhance property value.
d) Average distance to the nearest freeway on and off-ramps - this measure of access to freeways may reflect enhanced property value resulting from improved accessibility to the property. Alternatively, closeness to the freeway may also have a negative effect by introducing factors such as noise and congestion which may depress property value.

2) Surrounding Amenities, Surrounding Land Use, Surrounding Parking - these factors represent the "linkage" of properties to supporting facilities. The availability of other services and supporting land uses may enhance property value by improving the income-generating potential of the property.
3) Crime statistics - the number of crimes reported in the vicinity of the property may be an indicator of the relative safety and security of the area, which may influence property value.

3.2.3 Market Characteristics

Market characteristics reflect the level of economic activity in the area in which a property is contained. The underlying level of economic activity is a significant determinant of property value because it affects the level of income which can be generated by any specific property. In a strong market area, property values are generally also strong. Where market activity is depressed, property values tend to be similarly depressed. The following components of market characteristics will be examined for potential inclusion in the pre-Metro Rail predictive equation(s):

1) Regional and National Market Conditions - a number of indicators can be used to represent these larger economic trends, including:
   a) Gross National Product - property values would be expected to rise as the economy grows.
   b) Prime Interest Rate - as interest rates rise, economic activity slows and rises in property values would be expected to be dampened.
   c) Consumer Price Index (CPI-U for LA/Long Beach region) - as inflation rises, interest rates also tend to rise with the same dampening effect on property values as noted above.
   d) Construction Cost Index - as construction costs rise, construction activity would be expected to decline. This would affect the income generating capability of property and negatively affect property value.

e) Foreign Exchange Rates - foreign investment is a major factor in downtown Los Angeles. The level of foreign exchange rates may influence the amount of foreign investment in downtown properties and thus may affect property value.
f) Unemployment rate - the unemployment rate is an indicator of background economic activity which could conceivably impact property value.

2) Employment and Population - as employment and population rise in a particular area, the potential for increased economic activity rises and property values would also be expected to rise.
3) Vacancy rates - the vacancy rate for office space is an indicator of demand and economic activity which may contribute to income-generating capacity of property and property value.
4) Background Parking Cost - parking costs may enhance or depress economic activity. It would be expected that higher parking costs would discourage economic activity and depress property value. Alternatively, higher parking costs could reflect high levels of economic activity and thus enhanced property value.

3.2.4 Policy Characteristics

Policy characteristics are the characteristics stemming from public policy and regulations which may affect the development of a particular property. The components of policy characteristics to be examined in the development of the pre-Metro Rail predictive equations include:

1) Redevelopment Area/Subarea - location of a property in a redevelopment area or a subarea of a redevelopment area may influence the property value since public investment may be concentrated in these areas.
2) Zoning - the zoning of the property will determine the potential development of the property and thus the overall income-generating potential of the property.
3) CRA Investment by Subarea - the level of public investment in a particular area may influence property value positively by providing improved amenities in the area. The level of public investment may also be indicative of a depressing effect on property value because public investment is often concentrated in areas which experience the greatest degree of problems.
4) Parking Requirements - the regulations governing provision of parking for a particular property may influence property value. Increased parking requirements may limit the income generating potential of property by reducing the income generating square footage of the property.
5) Specific Plan Designated Land Use/Density - Specific Plans supercede zoning and determine the potential development of the property and thus the income-generating potential of the property.
6) General Plan Designated Land Use/Density - the General Plan does not directly regulate the development of property. However, the City of Los Angeles is under court order to change zoning to conform with the General Plan which, in the long run, will increase the significance of this factor in determining the potential development of the property and thus the income-generating potential of the property.

7) Proposition U affected - in 1986, the voters of Los Angeles reduced the height limit on specified properties in the City, based on the zoning classification. Any property affected by this growth control would have its development potential reduced which would affect the income-generating potential of the property and thus the property value.

3.2.5 Sort/Aggregation Codes

In addition to the independent variables listed above, the following information will be coded for each parcel in the A1 and A2 benefit assessment districts to allow parcels to be sorted and aggregated for purposes of developing the best possible pre-Metro Rail predictive equations.

1) Los Angeles County Assessor's mapbook-page-parcel identifier. A parcel number is assigned to each piece of property in Los Angeles County and constitutes a legal description of the property.
2) Zip Code
3) Census Tract
4) Los Angeles Police Department Zone. The LAPD has divided the city into a series of zones to track actual and reported crimes in different areas of the city. Roughly 35 of these zones are located in the study area.
5) Traffic Analysis Zone (SCAG 1325 zone system)
6) Benefit Assessment District (downtown or Wilshire/Alvarado)

Each of the hypotheses presented in the preceding sections will be tested in the course of developing the pre-Metro Rail predictive equations. Only the independent variables which exhibit the highest correlation to actual property values and the most significance in predicting property value will be included in the predictive equations. To conduct this analysis and develop the predictive equations, data needs to be collected on both the dependent and independent variables. Using these data, the regression model can be constructed and calibrated. In the following section, the data collection plan for collecting each of these data items is outlined.

3.3 DATA COLLECTION PLAN

In the examination of potential data sources and evaluation of data useability conducted in Tasks 2 and 3 of the Before-and-After Study, the universe of potential data sources was identified. From that evaluation, the following data sources are recommended for use in the remaining tasks of the Before-and-After Study. This selection was made on the basis of completeness, reliability, availability, cost, and ease of use. At least one source is provided for each dependent and independent variable listed in Section 3.2 above.

1) DAMAR - DAMAR is an on-line computerized real estate information service which sells information comprised of data from the County Assessor and "member input." Members consist of two real estate organizations: the California Market Data Collective, which is limited to residential properties, and the Society of Real Estate Appraisers, which includes commercial properties. DAMAR receives information from both sources on a daily basis. In addition to its on-line subscription services, DAMAR could provide special runs of specified information. Such a run was ordered for this study and included the following fields for all parcels located in the A1 and A2 benefit assessment districts:

Field	Purpose/Data Provided
SITUS	Situs Address/Reference
APN	Parcel Number/Reference
USE	Land Use Cross Check
TRANSFER DATE	Most Recent Sale Date
PRICE	Most Recent Sale Price
PRIOR SALE	Previous Sale Date
PRIOR AMT	Previous Sale Price
BLDG CLASS	Building Construction Classification
ZONING	Zoning Cross Check
YRBLT/EFF	Year Built
# STORIES	Height
PARK TYPE	Type of Parking Facilities/Cross Check
PARK SPACES	Number of Parking Spaces
COMMENTS	Descriptive Comments for Property
PHYS CHARS	Physical Characteristics of Property

This data was received in a diskette format and joined with the Before-and-After data base. Although this system could conceivably have provided two previous sales prices, thereby providing two data points for each property, numerous gaps in the data were found, necessitating additional manipulation to provide estimates for the missing data from the DAMAR data which was provided. The methodology and results of this analysis are provided in Technical Memorandum 88.4.7. The benefit assessment data base, an alternative source for this information, could have provided only one previous sale price and therefore only one data point. With the need to maximize the number of data points to provide for a reasonable confidence level for the analysis, DAMAR still offered the advantage. DAMAR also provided the additional information listed above. DAMAR also conducts additional research into some sales which provided full value of property transactions, including trades, in some cases where it would have been otherwise unavailable.

2) Building Owners and Managers Association Office Market Guide - contains address by address lease rate information on office space in buildings of 20,000 square feet or more. The following years' data is available from BOMA: 1985, 1986, 1987, 1988. Can also provide information on year built and height of buildings for cross check purposes.

3) Benefit Assessment Data Base - the benefit assessment data base can be used to provide the following data: parcel numbers of all parcels contained in the benefit assessment districts, parcel size, improvement size, square footage by land use, census identifiers, zip code, zoning.

4) CRA's Projstat Data Base - This in-house data base maintained by the CRA tracks major renovations and construction and public investment in CRA project areas. Can also provide cross check on height, FAR and development cost for major projects. Available without charge from the CRA. Available from 1985.

5) Business Pattern Data - Central City Association - contains employment information aggregated by zip code for downtown Los Angeles. This report compares 1982 and 1984 employment data and is based on information obtained from the U.S. Department of Commerce.

6) CRA: Development Rights Transfers. The CRA file on the transfer of development rights documents development rights transfers activity. This information is available to RTD without charge.

7) US Government (Department of Commerce; Bureau of Labor Statistics; Council of Economic Advisors), Wall Street Journal, State Department of Finance: California Statistical Abstract - to be consulted to obtain prime interest rate, GNP, CPI-U for LA/Long Beach region, Construction Cost Index data, unemployment rate, foreign exchange index.

8) SCRTD On and Off Counts - provides counts of passenger boarding and alightings at bus stops in downtown Los Angeles, aggregated by census tract. This data is available for the following years: 1984, 1985, 1986, 1987.

9) Los Angeles County Assessor maps - contains maps of all properties in the study area with street frontages.

10) To be measured for every property in the benefit assessment districts - walking distance to the nearest Metro Rail station portal; average distance from nearest freeway on- and off-ramps

11) Downtown News Quarterly Commercial Real Estate supplement - provide cross check data on square footage, development cost, parking facilities for selected projects in downtown.

12) Los Angeles Police Department - tracks reported and actual crimes in zones located throughout the city. Data is available for the entire time period of the study (1976 to present).

13) To be calculated for each property - land uses and parking in block in which property is located and for one block surrounding property.

14) CRA Maps and Annual Work Programs - identify properties within Redevelopment Areas and subareas and level of CRA investment in each subarea

15) General Plans for Central City and Westlake Community Areas - identify general plan designated land use and density for each property

16) Specific Plans - identify specific plan designated land use and density for each property contained within an adopted Specific Plan area

17) Coldwell Banker - Coldwell Banker produces an annual report entitled Office Vacancy Index of the United States which can provide office vacancy information for downtown Los Angeles from 1979 to the present. This publication is available at no charge.

18) Parking Price Survey, Downtown Los Angeles, Community Redevelopment Agency - a one-time survey (1986) of parking cost in downtown Los Angeles which can provide background parking cost information.

19) California Employment Development Department - provides annual employment information by employment category code, aggregated at the County level. Data is available to the mid-1970's.

20) Los Angeles County Department of Regional Planning - issues quarterly reports of population for Los Angeles County aggregated at the County Statistical area level. Available to 1975.

21) State Board of Equalization - an additional research question which has been suggested would involve the collection of data to determine trends in retail sales in Metro Rail station areas. Data on sales by individual businesses, aggregated to protect privacy, can be furnished by the State Board of Equalization. Data could be collected for aggregates of 10-15 businesses in various areas throughout the CBD and Wilshire/Alvarado for a reasonable cost. Suggested locations would include:

a) Financial District (e.g., Broadway Plaza, Citicorp Plaza)
b) Pershing Square
c) Civic Center
d) Broadway
e) Little Tokyo
f) Chinatown
g) West of Harbor Freeway
h) Wilshire/Alvarado

It would be necessary to manually identify the individual businesses and addresses to the State Board of Equalization in order to proceed with this project. These data could be examined and reported in a case study format. As a non-random (judgment) sample, a statistically valid analysis would not be possible for retail sales, however, subjective conclusions could be drawn from the observations made from the data.

4.0 BASIC DATA BASE DESIGN AND ANALYSIS SOFTWARE

The data collected as outlined in the previous sections will be entered into a data base of recorded sales for all properties contained within benefit assessment districts A1 and A2. Basically, the data base will contain a separate record for each recorded sale containing the characteristics for the parcel (e.g., size, access, land use, distance from Metro Rail et al.) and the economic and background conditions at the time of the sale. The record will also contain the identifiers for each parcel described in the previous sections. This basic data base organization allows for maximum opportunity to aggregate and disaggregate data and to sort data sets for differing characteristics of parcels (e.g., produce a data set to develop a regression equation for all parcels in Little Tokyo, etc.). Since SPSS/PC+ will be used to conduct the regression analysis, the data base will be developed using SPSS/PC+.

The specific structure of the data base (e.C[e field sizes, file organization, etc.) cannot be discerned with confidence at this time. Rather, this will be dependent upon the form and format of the data collected and will become more clear as the data is collected and the data base is built in Task 6. Documentation produced for this data base (Technical Memorandum 88.4.7) will contain the detailed data base structure.

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APPENDIX D

TECHNICAL MEMORANDUM 88.4.7,

METRO RAIL BEFORE-AND-AFTER STUDY:

DATA BASE DEVELOPMENT, ORGANIZATION AND STRUCTURE

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TECHNICAL MEMORANDUM 88.4.7 (REVISED)

METRO RAIL BEFORE-AND-AFTER STUDY: DATA BASE DEVELOPMENT, ORGANIZATION AND STRUCTURE

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Prepared for

Southern California Rapid Transit District

Prepared By

Schimpeler Corradino Associates
Cordoba Corporation
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in association with

The Planning Group

June, 1988

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1.0 INTRODUCTION

The purpose of the Metro Rail Before-and-After Study is to examine the monetary benefits which accrue over time to property located in the vicinity of Metro Rail stations and to isolate the benefits which are directly attributable to the Metro Rail system. The study is further intended to identify benefits which may be linked to particular events associated with the development of the rail system (e.g., commencement of construction, commencement of operations, etc.). The study will attempt to advance the state of the art in benefit measurement through the scientific analysis of benefits that occur over time in the vicinity of Metro Rail stations. This knowledge will be useful in understanding the process by which benefits are derived and will advance knowledge of the methodology to evaluate land use impacts of transit systems in the United States.

The following tasks constitute the Before-and-After Study:

1) Identify Indicators of Benefit and Determine Area of Coverage
2) Identify Potential Sources of Data
3) Evaluate Useability of Data
4) Refine Indicators and Areas of Coverage
5) Design Data Base and Analysis Methodologies
6) Compile Data Base and Establish Update Procedures
7) Analyze Data and Develop Prototypical Case Studies

Tasks 1 through 5 of the Study have been accomplished prior to the development of this Technical Memorandum. The results of Tasks 1, 2 and 3 are contained in Technical Memorandum 88.4.1, Metro Rail Before-and-After Study: Analysis of Potential Monetary Benefit Indicators, Identification of Potential Data Sources and Evaluation of Data Useability. The results of Tasks 4 and 5 of the Study are contained in Technical Memorandum 88.4.5, Metro Rail Before-and-After Study: Research Design, Methodology, Variables and Data Collection Plan. In these tasks, the data sources were refined and the most promising sources to carry out the methodology were identified.

This Technical Memorandum presents the results of Task 6 of the Before-and-After Study. The purpose of Task 6 is to develop the data base required to implement the methodology developed in Task 5. While the basic structure of the data base was outlined in Technical Memorandum 88.4.5, this Technical Memorandum is designed to provide further technical details concerning the data base structure, format and updating and to document the development of the Before and After Study data base. Additional refinement of the data sources to fit the data base structure are also described in this document.

The sections which follow examine in detail: 1) the data base organization and integration with the study methodology; 2) the process used to develop the data base; 3) specifications for the data base structure and data elements and 4) updating procedures for the data base.

2.0 DATA BASE ORGANIZATION

In order to effectively implement the study methodology, the data base organization must be related to the requirements of the methodology and tailored to fit the form in which the data are available. The sections which follow provide a brief summary of the study methodology and describe the basic organization of the data base.

2.1 STUDY METHODOLOGY

A detailed description of the research design and methodology for the study can be found in Technical Memorandum 88.4.5, Metro Rail Before-and-After Study: Research Design, Methodology, Variables and Data Collection Plan. The methodology to be used in this Study is designed to refine and expand the techniques available to isolate the impact of the transit system on changing property values from the many other factors which also influence property value.

Previous studies which have attempted to determine the impact of a transit system on land use and property value have done so by comparing "before transit" and "after transit" conditions for properties located in station areas. Unlike these previous studies, the methodology to be used in this study will attempt to isolate the impact of the Metro Rail system on property value by first calculating two different values for properties located in the vicinity of Metro Rail stations: 1) property value "as if Metro Rail had not occurred" and 2) property value with Metro Rail; and second by closely analyzing the difference between the two (residual value).

The first value ("as if Metro Rail had not occurred") will be calculated by developing predictive equations using property sales data in the pre-Metro Rail period. A multiple regression technique will be used to derive these equations. The predictive equations will be based upon actual pre-1984 data reflecting factors which influence values of properties located near Metro Rail stations. [The pre-Metro Rail period is defined as the time frame in which Metro Rail would be expected to have no impact on property value and has been hypothesized to be the time period prior to the selection of the final rail route. Using this criterion, the pre-Metro Rail period has been defined to be 1983 and prior years.] Because these equations would be expected to reflect no influence of Metro Rail, the equations can be applied, using current conditions, to any property in the study area in the post-Metro Rail period (1984 and beyond) to estimate the expected property value if Metro Rail had not been built.

The second value ("with Metro Rail") will be determined by collecting actual market value for properties which sold in the post-Metro Rail period. The projected property value "as if Metro Rail had not occurred" will be determined for all properties which have a sale point in the post-Metro Rail period using the predictive equations. These two values will then be compared and an analysis conducted on the differential between the expected and actual values (termed the "residual" value).

This second stage of analysis will involve development of a bi-variate regression equation with residual value as the dependent variable and distance to the nearest Metro Rail station as the independent variable. The proportion of the residual value which can be correlated to distance from the Metro Rail station will be considered to be attributable to the influence of the Metro Rail

system and, subject to additional control tests described in detail in Technical Memorandum 88.4.5, has been determined to be a direct measure of the impact of Metro Rail on property value.

2.2 STUDY AREA

The area to be studied includes properties in the vicinity of the first five stations of the Metro Rail system. These stations constitute Minimum Operable Segment-1 (MOS-1) of the full Metro Rail project. MOS-1 is 4.4 miles in length and runs between Union Station and the Wilshire/Alvarado station. In 1985, the SCRTD Board of Directors, under state authority, established two benefit assessment districts in the vicinity of these five stations, in order to fund approximately 10% of the cost of constructing MOS-1. These districts were designated A1 (Central Business District) and A2 (Wilshire/Alvarado). The boundaries of these benefit assessment districts will also be used to define the study area for the Before and After Study (see Figure 1).

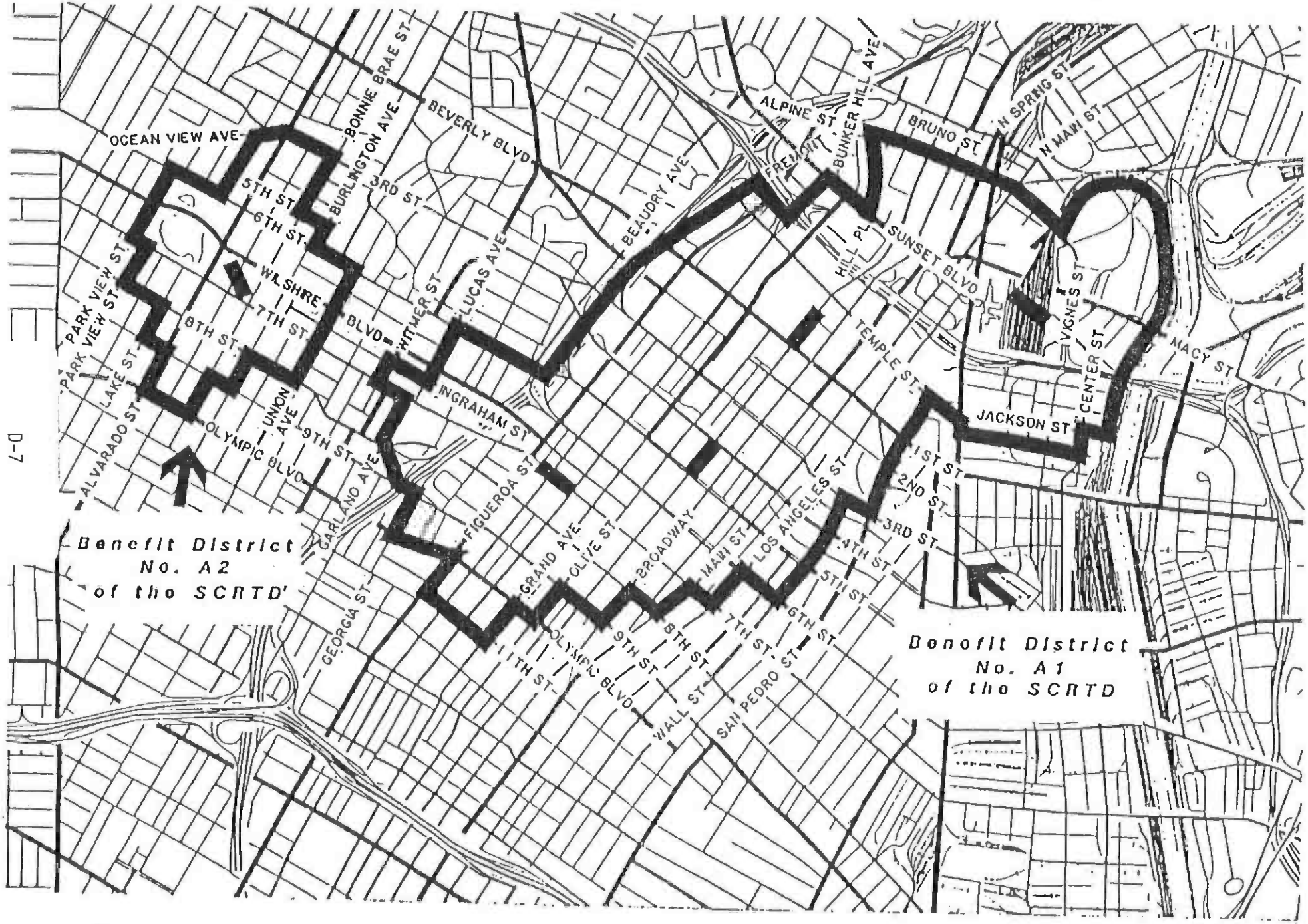
2.3 DATA BASE ORGANIZATION

In order to accomplish the methodology described in Section 2.1 above, it is necessary to organize a data base which supports the development of the predictive equations and the residuals analysis. This section describes the principles used to develop the Before and After study data base. Chapter 3 describes the development of the data base. Chapter 4 provides detailed technical specifications for the data base.

As with any research program of this nature, the sources of data to support the methodology are important considerations. Ideally, to support the Before and After Study methodology, a data source will possess two characteristics: 1) it will be disaggregated to very small geographic divisions, in order to allow for distinctions to be drawn between different areas of the Central Business District and Wilshire/Alvarado areas and 2) it will be available in consistent format dating to the early to mid-1970's in order to accurately reflect historic conditions and changes which have occurred over time. The sources used to develop the data base which are described later in this document and in Technical Memorandum 88.4.5 reflect the best available combination of the two factors (e.g., larger geographic divisions have been accepted when the data was consistently available for historic time periods (as in the case of population, employment); lack of time series data has been accepted when very detailed data was available for small geographic divisions (as in the case of parking costs)).

2.3.1 Dependent Variable

The dependent variable for the analysis is property value, as measured by recorded sales prices (market value) of privately owned, non-residential properties in the study area. The unit of analysis for the study is an individual property with a recorded sale. A separate record has been established for each recorded sale within the study area, which contains the fields described in Chapter 4. The data contained in each record is designed to reflect the condition of the property at the time of the sale. This will allow for determination of the effect of actual conditions on actual sales price in order to produce the most accurate predictive equations.



BENEFIT ASSESSMENT DISTRICTS

RTD

JANUARY, 1985

FIGURE 1

2.3.2 Independent Variables

The list of independent variables to be potentially included in the pre-Metro Rail predictive equations must be sufficiently inclusive to ensure that the major factors which could affect property value are considered. Property values can be potentially influenced by many factors. For purposes of organizing the Before and After study data base, these factors have been grouped into four categories: 1) Site Characteristics; 2) Location Characteristics; 3) Market Characteristics and 4) Policy Characteristics (see Figure 2). Detailed examination of the potential impacts of these characteristics and their individual components can be found in Technical Memorandum 88.4.5.

2.4 DATA BASE SOFTWARE

The Before and After Study data base has been developed in SPSS/PC+ format as this software will be used to calculate the predictive regression equations and conduct the residuals analysis. All variables which will be needed to conduct this analysis are included in one file, which has been named BAS888.SYS. The process used to develop this file is described in the following chapter.

BASIC STRUCTURE OF MULTIPLE REGRESSION EQUATIONS

VALUE OF DEPENDENT VARIABLE	IS A FUNCTION OF INDEPENDENT VARIABLES			
	SITE CHARACTERISTICS	LOCATION CHARACTERISTICS	MARKET CHARACTERISTICS	POLICY CHARACTERISTICS
o PROPERTY VALUE/SALES PRICE-DAMAR o LEASE RATES-BOMA GUIDE	o PARCEL SIZE-BADD o IMPROVEMENT o SIZE-BADD o AGE-DAMAR o YEAR REHABILITATED-DAMAR o CONDITION-DAMAR (Bldg.Class) o USE-BADD o PARKING SPACES-DAMAR/CRA o HEIGHT-BOMA GUIDE/DAMAR o ASSESSED VALUE-BADD	o ACCESS TO PROPERTY o DISTANCE FROM METRO-CALCULATED o BUS USAGE-RTD o STREET FRONTAGE-COUNTY ASSESSOR o DISTANCE FROM FREEWAY-CALCULATED o SURROUNDING AMENITIES o SURROUNDING LAND USE o SURROUNDING PARKING o AGGREGATE LAND USES IN SURROUNDING BLOCKS AND ASSIGN TO PARCELS o CRIMES IN AREA-LAPD o DISTANCE FROM LIGHT RAIL-CALCULATED	o REGIONAL & NATIONAL MARKET CONDITIONS-US GOVT, SCAG, WALL STREET JOURNAL, STATE DEPT. OF FINANCE o GNP o PRIME INTEREST RATE o CPI FOR LA CONSTRUCTION COST INDEX o FOREIGN EXCHANGE INDEX o REGIONAL UNEMPLOYMENT RATE o EMPLOYMENT CALIFORNIA STATE EMPLOYMENT DEVELOPMENT DEPT o POPULATION-STATE DEPT. OF FINANCE (LA COUNTY DEPT OF REGIONAL PLANNING) o BACKGROUND PARKING COST-CRA o OFFICE VACANCY RATE-COLDWELL BANKER	o REDEVELOPMENT AREA/SUBAREA-CRA MAPS o ZONING-BADD/DAMAR o CRA INVESTMENT BY SUBAREA-CRA o PROVISION OF PARKING-ZONING CODE/CRA o SPECIFIC PLAN DESIGNATED LAND USE/DENSITY-LADOP o GENERAL PLAN DESIGNATED LAND USE/DENSITY-LADOP o PROPOSITION U AFFECTED-ZONING CLASSIFICATION

BADD- BENEFIT ASSESSMENT DATA BASE
CRA- LOS ANGELES COMMUNITY REDEVELOPMENT AGENCY
LADOP-CITY OF LOS ANGELES DEPARTMENT OF PLANNING

FIGURE 2.

3.0 DEVELOPMENT OF THE BEFORE AND AFTER STUDY DATA BASE

In order to implement the study methodology, it is necessary to collect data on both the dependent and independent variables for each analysis unit (individual property sale). BAS888.SYS contains 1180 property sales and associated data for each sale. The following sections describe the process used to develop BAS888.SYS. This process is illustrated in Figure 3. An accompanying set of hard copy printouts which document each of the working files described in the following sections has been prepared to support this Technical Memorandum and to illustrate the development of the data base. These printouts will be subsequently referred to as the Supporting Documentation for the Before and After Study Data Base.

3.1 BENEFIT ASSESSMENT DATA BASE

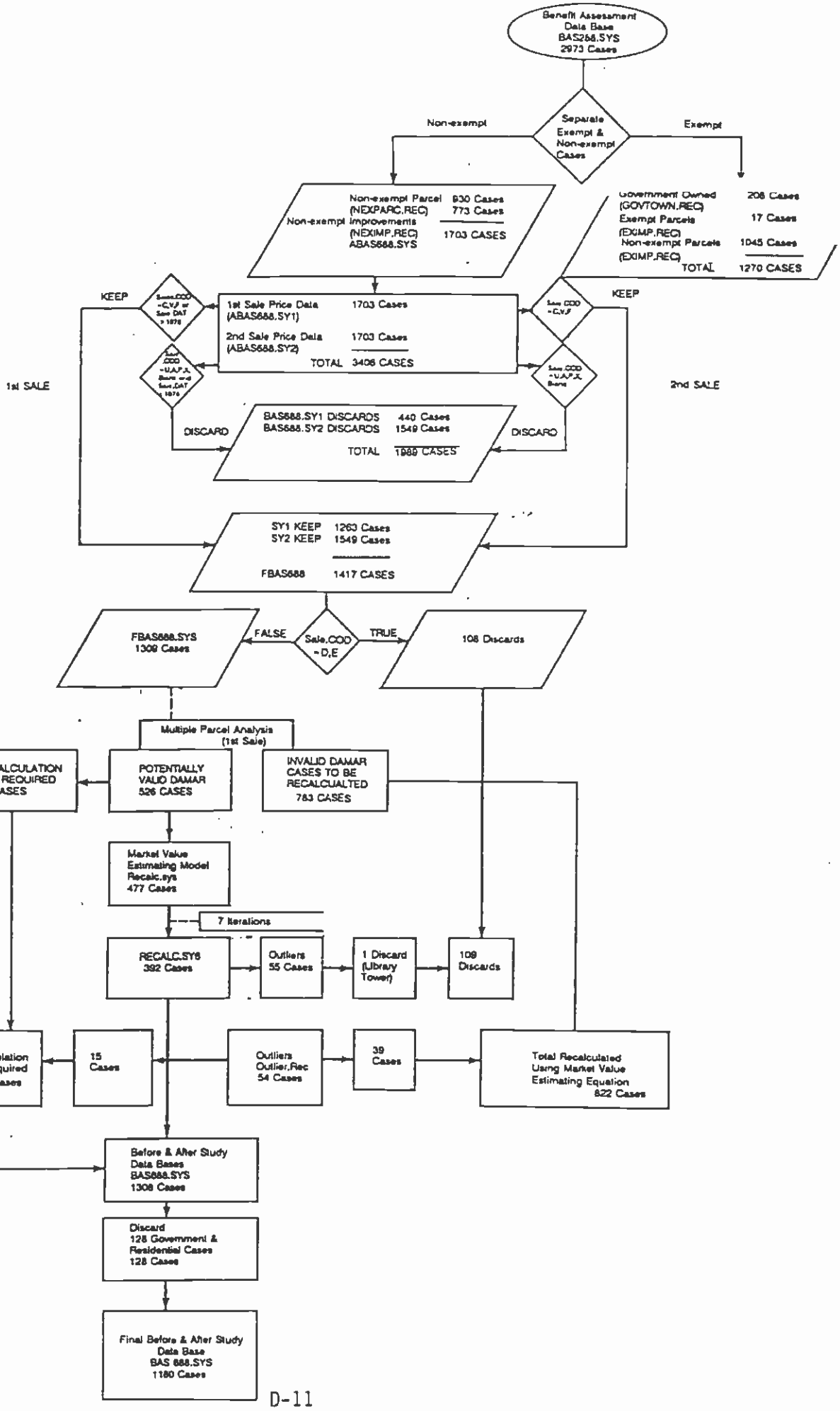
The SCRTD Benefit Assessment data base was used as the baseline data source for the Before and After Study data base. In order to implement the special assessment program in the MOS-1 benefit assessment districts, a dedicated data base containing detailed land use information was compiled. Of particular importance, the benefit assessment data base contains parcel-by-parcel identifiers and information on every property located within benefit assessment districts A1 and A2. The Benefit Assessment data base, updated through February, 1988, was used to establish the baseline Before and After Study data base. This data base had been matched to the February, 1988 version of the Los Angeles County Assessor's secured file. Because the boundaries of the Before and After Study area are coincident with Benefit Assessment Districts A1 and A2, this data base therefore contained a complete list of valid properties located in the Before and After study area.

The Benefit Assessment Data Base is maintained in dBase III+ format. The information from this data base was converted to SPSS/PC+ format using the TRANSLATE FROM command in SPSS/PC+. A total of 2973 properties were downloaded from this data base, with following associated information:

- Assessor's Parcel Number and components (mapbook, page and parcel numbers)
- Benefit Assessment District designator
- Census tract
- Situs address
- Parcel size
- Square footage of improvement by land use
- Zoning

The file OBAS288.SYS, containing this information, was created by this process. Section 1 of the Supporting Documentation lists the parcels contained in OBAS288.SYS as a result of this download. The next step in the process involved removing exempt properties from the data base.

FIGURE 3


Benefit Assessment Data Base BAS268.SYS 2973 Cases
Separate Exempt & Non-exempt Cases
Non-exempt
Exempt
Non-exempt Parcel 930 Cases (NEXPARC.REC) 773 Cases
Non-exempt Improvements (NEXIMP.REC) 1703 CASES
ABAS688.SYS
Government Owned 208 Cases (GOVTOWN.REC)
Exempt Parcels 17 Cases (EXIMP.REC)
Non-exempt Parcels 1045 Cases (EXIMP.REC)
TOTAL 1270 CASES
KEEP
1st Sale Price Data 1703 Cases (ABAS688.SY1)
2nd Sale Price Data 1703 Cases (ABAS688.SY2)
TOTAL 3406 CASES
KEEP
1st SALE
2nd SALE
DISCARD
DISCARD
BAS688.SY1 DISCARDS 440 Cases
BAS688.SY2 DISCARDS 1549 Cases
TOTAL 1989 CASES
SY1 KEEP 1263 Cases
SY2 KEEP 1549 Cases
FBAS688 1417 CASES
FBAS688.SYS 1309 Cases
FALSE
Sale.COD -D,E
TRUE
108 Discards
Multiple Parcel Analysis (1st Sale)
RECALCULATION NOT REQUIRED 79 CASES
POTENTIALLY VALID DAMAR 526 CASES
INVALID DAMAR CASES TO BE RECALCUALTED 783 CASES
Market Value Estimating Model Recalc.sys 477 Cases
7 Iterations
RECALC.SYS 392 Cases
Outliers 55 Cases
1 Discard (Library Tower)
109 Discards
Recalculation Not Required 94 Cases
15 Cases
Outliers Outlier.Rec 54 Cases
39 Cases
Total Recalculated Using Market Value Estimating Equation 822 Cases
Before & After Study Data Bases BAS688.SYS 1308 Cases
Discard 128 Government & Residential Cases 128 Cases
Final Before & After Study Data Base BAS 688.SYS 1180 Cases

3.2 REMOVAL OF EXEMPT PROPERTIES FROM OBAS288.SYS

The unit of analysis for the Before and After Study is an individual, privately-owned, non-residential property with a recorded sale. The distinction of privately-owned, non-residential properties is related to the structure of the benefit assessment program. In establishing this program, the SCRTD Board of Directors established three exemptions from benefit assessment. These are:

1) Residential properties
2) Publicly owned and used properties
3) Non-profit owned and used properties

If these properties were to be included in the study, the effect of Metro Rail on properties subject to benefit assessment could potentially be distorted. For this reason, the study methodology excludes exempt properties. Because the Benefit Assessment data base maintains complete information on all properties located in benefit assessment districts A1 and A2, it was necessary to subdivide OBAS288.SYS in order to separate exempt and non-exempt properties. Using the SPSS/PC+ SELECT function, OBAS288.SYS was divided into five separate working files: (1) Government owned properties; (2) Properties containing all exempt improvements; (3) Properties containing non-exempt improvements; (4) Properties containing all exempt parcels and (5) Properties containing non-exempt parcels. For each group, a specific set of criteria was established to extract the appropriate cases from OBAS288.SYS. The following is a list of these criteria, including the SPSS/PC+ commands and working files created.

File Name	Description	SPSS/PC+ Commands
GOVTOWN.REC (208 cases)	Properties owned by the government	SELECT IF (PARCLNOPC ≥ 900)
EXIMP.REC (1045 cases)	Properties with only exempt improvements (i.e. residential, institutional, or non-profit)	SELECT IF (PARCLNOPC < 900) SELECT IF (U_TOTAL > 0) SELECT IF ((U_RESIDE = U_TOTAL) OR (U_INSTGO = U_TOTAL) OR (U_NONPRO = U_TOTAL))
NEXIMP.REC (773 cases)	Properties with non-exempt improvements (i.e. improvements other than residential, institutional, or non-profit)	SELECT IF (PARCLNOPC < 900) SELECT IF (U_TOTAL > 0) SELECT IF ((U_RESIDE NE U_TOTAL) AND (U_INSTGO NE U_TOTAL) AND (U_NONPRO NE U_TOTAL))
EXPARC.REC (17 cases)	Unimproved properties of only institutional land	SELECT IF (PARCLNOPC < 900) SELECT IF (U_TOTAL = 0) SELECT IF (U_PRCLTO = U_INSTLA) SELECT IF ((U_PRCLTO = 0) AND (U_PRCLTO NE U_INSTLA))

NEXPARC.REC (930 cases)	Unimproved properties other than institutional land	SELECT IF (PARCLNOPC < 900) SELECT IF (U_TOTAL = 0) SELECT IF (U_PRCLTO NE U_INSTLA) SELECT IF ((U_PRCLTO = 0) AND (U_PRCLTO = U_INSTLA))

Total Exempt Cases: 1270 (Government owned + All exempt improvements + All exempt parcels)

Total Non-exempt Cases: 1703 (Non-exempt improvements + Non-Exempt Parcels)

Total Cases: 2973

EXPLANATION OF VARIABLES (Complete descriptions of these variables can be found in Chapter 4)

PRCLNOPC - Assessor's three digit parcel number (last three digits in the full assessor's parcel number (XXXX-XXX-XXX). By definition, any parcel number 900 or above is owned by a government agency.

U_TOTAL - Total square footage of improvements on a property. If U_TOTAL equals 0, the parcel is unimproved. If U_TOTAL is greater than zero, the parcel contains improvements.

U_PRCLTO - Total square footage of parcel

U_RESIDE - Square footage of improvements in residential use. If U_RESIDE is equal to the total square footage of improvements on the property, the property is exempt.

U_INSTGO - Square footage of improvements for institutional/government use. If U_INSTGO is equal to the total square footage of improvements on the property, the property is exempt.

U_NONPRO - Square footage of improvements for non-profit use. If U_NONPRO is equal to the total square footage of improvements on the property, the property is exempt.

U_INSTLA - Square footage of unimproved institutional land. If U_INSTLA is equal to the total square footage of parcel on the property, the property is exempt.

Printed results of these operations can be found in Sections 2 and 3 of the Supporting Documentation. The properties which were identified as government owned, all exempt improvements or all exempt parcels were excluded from further analysis. Properties containing non-exempt improvements and non-exempt parcels (files NEXIMP.REC and NEXPARC.REC) were combined to create the file ABAS688.SYS, containing 1703 records (see Printout in Section 3 of the Supporting Documentation). The next step in the development of the Before and After Study data base required merging real estate sales information into ABAS688.SYS.

3.3 INTEGRATION OF DAMAR CORPORATION DATA BASE

The primary source of real estate market information was determined to be the data base maintained by the DAMAR Corporation (see Technical Memorandum 88.4.5 for a more complete description of this data source). This data base reportedly could provide two sales data points for each property (most recent sale price and prior sale price). Data on property sales and building characteristics was ordered from the DAMAR Corporation for the following Assessor's mapbook numbers: 5136, 5138, 5139, 5141, 5142, 5143, 5144, 5148, 5149, 5151, 5154, 5161, 5173, 5407, 5408, 5409. This data was obtained in a diskette (ASCII) format. This data was extracted from the ASCII files and converted to SPSS/PC+ format using the ASCII Read function contained in the Data Entry Module of SPSS/PC+.

3.3.1 Merging of DAMAR Data with ABAS688.SYS

By downloading complete Assessor's mapbooks, more properties were contained in the downloaded file than were in ABAS688.SYS. The DAMAR data consisted of 6256 total cases, each of which was expected to contain two sales data points. To integrate the relevant cases into ABAS688.SYS, the following fields were first extracted from the DAMAR data file:

Sales Price
Sale Code
Sale Date
Reference Document
Document Type
Prior Sale Date
Prior Sale Price

In order to merge the two files (ABAS688.SYS and DAMAR), a field was created in ABAS688.SYS which reformatted the parcel number for each property in ABAS688.SYS to the format XXXX-XXX-XXX. This field was required to match the format used in the DAMAR file and was designated PARCELNR. With this field to match on, the DAMAR file was integrated with ABAS688.SYS using the JOIN MATCH function of SPSS/PC+. The text of this operation was: JOIN MATCH FILE 'ABAS688.SYS' /TABLE 'DAMAR688.DAT' /BY PARCELNR.

3.3.2 Analysis of DAMAR Data Accuracy and Sufficiency

After the DAMAR data had been merged into ABAS688.SYS, considerable inadequacies with the market value data were found. Although most properties had data entries for Sale Date and Prior Sale Date, many properties were discovered to have missing entries for Most Recent Sales Price, Prior Sales Price or both. The validity of some data which was provided was also questionable. For purposes of the discussion which follows, the Most Recent Sale will be referred to as the 1st Sale and the Prior Sale will be referred to as the 2nd Sale.

To conduct a preliminary evaluation of the validity of the DAMAR data, the DAMAR-reported market value data were compared to a market value for each property which was computed from assessed valuation. In the State of California, assessed value can potentially be a direct surrogate for market value because of the requirements of Proposition 13. Proposition 13, passed in 1978, requires that the assessed value for any property which sold after 1978 be set equal to the market value of the property. The primary indicator of the

market value of a property is the sales price. However, if the County Assessor determines that the reported sale price is not reflective of the market value (as would be the case in a property trade, for instance), then the County Assessor will determine the market value of the property, using standard property assessment procedures. Once the market value is determined, it can be increased by a maximum of 2 per cent per year, unless subject to reassessment. Reassessment of property value occurs either 1) when the property is sold again or 2) when a change in the property occurs as a result of development, alteration, rehabilitation or demolition. In these cases, the County Assessor is authorized to reevaluate the assessed value of the property. This assessed value can only be increased 2 per cent per year from that point, until the property is subject to reassessment once again.

Because it is the basis from which the property tax is computed, the assessed value of a property is regularly and accurately maintained and the County Assessor's information on assessed value is considered very reliable. Within the context of Proposition 13 described above, an estimate of the market value of any property in the year of sale can be obtained by discounting the assessed value for any property by 2 per cent annually from the year of assessment to the year in which a sale is reported. For instance, if the assessed value is for year 1987 and the year of sale is 1982, the assessed value discounted by 2 per cent per year for 5 years (or assessed value / 1.02^5) will provide the estimated market value at the time of sale. This estimated market value will be the actual market value for the property at the time of sale, if the basis for the assessed value has not been recomputed in the interim as a result of the conditions described above.

Using the Proposition 13 formula, estimated market value was calculated for every property in ABAS688.SYS for which a sale date in 1978 and beyond was reported. The working fields CALCSALE (for comparison to 1st sale price) and CALCPRSA (for comparison to 2nd sale price) were created in ABAS688.SYS. The results of these calculations can be found in printout section 3 of the Supporting Documentation. Because property assessments prior to 1978 were not directly related to market value, it was not considered reliable to estimate market value for these properties from current assessed value.

A visual comparison of DAMAR-reported market value and estimated market value was made. Out of 3406 potential data points (1703 X 2), approximately 200 were found to have DAMAR-reported market values which could be considered valid (Sale Code C - Confirmed or V - Verified). DAMAR reported market values for approximately 400 additional properties with Sale Code F (Full). The visual examination suggested that while some of these reported values correlated with the estimated market values, others could not be considered credible. For example, the DAMAR-reported market value for parcel number 5148007016 was Ω2500, even though the property contained a 9000 square foot improvement. The same inconsistency was found for other properties, regardless of the DAMAR-reported validity code (e.g., A-approximate, P-partial, U-unconfirmed).

This analysis suggested that the simple application of the Proposition 13 formula could not provide a confident estimate of market value. As a result, it was decided to undertake an additional statistical analysis in order to 1) objectively evaluate and separate the valid DAMAR-reported market values from inaccurate DAMAR data and 2) determine whether the remaining DAMAR data (invalid and missing data points) could be supplemented and used in the Before and After

Study analysis phase. This would be accomplished by developing a model from the valid DAMAR data points to represent the observed relationship between reported market values and assessed value.

3.3.3 Disaggregation of First and Second Sales Data Points

Prior to proceeding with the development of this model, it was necessary to convert ABAS688.SYS from a data base with one record for each property (containing 1st and 2nd sales data) to a data base with one record for each sale. A two step process was used to disaggregate ABAS688.SYS.

3.3.3.1 Developing Individual Records with 1st Sale Data

The variables for Prior Sale Date, Prior Sale Amount and Prior Sale Code were deleted from ABAS688.SYS, leaving only the data for the most recent sale for each of the 1703 parcels. This file was saved as ABAS688.SY1.

3.3.3.2 Developing Individual Records with 2nd Sale Data

Creating individual records from 2nd sale data was more complicated. First, the variables for Most Recent Sale Date, Amount, Code, Reference and Document were deleted from ABAS688.SYS, leaving only the 2nd sale data for each of the 1703 parcels. This data consisted only of 2nd sale price, date and code since DAMAR does not report a document type or reference number for 2nd sales.

Second, the SPSS/PC+ COMPUTE function was used to transform the 2nd sale data to match the data fields of the 1st sale data. The formulas used in this transformation were:

```
COMPUTE SALE_PRI = PRSALPRI
COMPUTE SALE_COD = PRSALCOD
COMPUTE SALE_DAT = PRSALDAT
```

As noted earlier, DAMAR does not report document type or reference number for 2nd sales. Therefore, it was decided to code those data fields so as to more easily identify the 2nd sale data for a property. This was accomplished using the formulas:

```
COMPUTE REFERENC = 0
COMPUTE DOCUMENT = XX
```

Any record containing these codes is thus easily discernible as a 2nd sale. The fields PRSALPRI, PRSALCOD and PRSALDAT were then deleted, leaving only the 2nd sale data for the 1703 properties, with data fields identical to those in ABAS688.SY1. This file was then saved as ABAS688.SY2. Section 4 of the Supporting Documentation contains the results of the disaggregation of ABAS688.SYS into ABAS688.SY1 and ABAS688.SY2.

3.3.4 Aggregation of Sales-Based Records

Development of ABAS688.SY1 and ABAS688.SY2 yielded two files containing 1703 records with one property sale each. These two files were analyzed further to separate potentially valid market value data points (data points which were either valid as reported or could possibly be recalculated using the model which

was to be developed) from invalid and irretrievable market value data points. Because of the differences between the 1st and 2nd sale data and their relationship to the current assessed value of a property, different criteria were used to identify valid data points from ABAS688.SY1 and ABAS688.SY2.

3.3.4.1 Valid Data Points from ABAS688.SY1

The following criteria were used to identify potentially valid market value data points from ABAS688.SY1:

1. DAMAR Sale Code C, V or F - The visual comparison of reported market value and market value estimated from the current assessed value suggested that market values for properties with reported sale codes C (Confirmed) and V (Verified) were closely correlated with the estimated market value for those properties. These codes were accepted as prima facie evidence of a potentially valid data point. Market values for properties with reported sale code F (Full) were considered potentially valid, even though the correlation between reported market value and estimated market value was not as strong. In these cases, it was expected that the statistical analysis would establish whether a data point with the F sale code was credible on that basis alone.

2. Sale Date 1978 or later - assuming that an adequate model could be developed to predict market value at time of sale from current assessed value, these data points, if not established to be valid on their own merit, could potentially be recalculated using the model. Because the relationship between current assessed value and market value at time of sale is known to exist only in the post-Proposition 13 period, the year in which Proposition 13 was adopted was used as a cutoff for these data points.

The remaining records data points from ABAS688.SY1 were considered to be invalid and irretrievable because 1) the DAMAR-reported sale code was not inherently credible (i.e., P (Partial), U (Unconfirmed), A (Approximate)) and 2) the property had last sold before 1978 and, as a result, could not credibly be recalculated from its current assessed value.

The following results were obtained from application of these criteria to ABAS688.SY1:

Potentially valid data points - 1263 (file SY1KEEP.REC)
Invalid data points - 440 (file SY1DISC.REC)

Total data points from ABAS688.SY1 - 1703

3.3.4.2 Valid Data Points from ABAS688.SY2

The following criteria were used to identify potentially valid market value data points from ABAS688.SY2:

1. DAMAR Sale Code C, V or F - The visual comparison of reported market value and market value estimated from the current assessed value was more difficult for market values associated with 2nd sales. This was because the basis for the assessed value would have, by definition,

changed since the 2nd sale occurred (as a result of the 1st, or most recent, sale of the property). In order to recalculate the 2nd sale, the assessed value at the time of the most recent sale would need to be known. Since the County Assessor reports only the most current assessed value for a property, this element of information could not be known for 2nd sales.

The critical issue, therefore, for evaluating the potential veracity of 2nd sale market value data points was the credibility of the sale code. Based on the evaluation outlined above for ABAS688.SY1, sale codes C (Confirmed) and V (Verified) were accepted as prima facie evidence of a potentially valid data point. Since the validity of sale code F was expected to be established in the statistical analysis and model development, these cases were also considered potentially valid at this point.

All remaining market value data points in ABAS688.SY2 were determined to be invalid since recalculation of estimated market value from current assessed value was considered unreliable.

The following results were obtained from application of these criteria to ABAS688.SY2:

Potentially valid data points - 154 (file SY2KEEP.REC)
Invalid data points - 1549 (file SY2DISC.REC)

Total data points from ABAS688.SY2 - 1703

The results of the analyses of ABAS688.SY1 and ABAS688.SY2 are contained in section 5 of the Supporting Documentation.

The potentially valid data points from ABAS688.SY1 and ABAS688.SY2 (files SY1KEEP.REC and SY2KEEP.REC) were merged to form one file of all potentially valid market value data points. This file contained 1417 records and was named FBAS688.SYS (see Section 5 of Supporting Documentation). This file was used to develop the model for estimating market value for properties where DAMAR data did not provide valid market value. In the process, valid DAMAR-reported market value data was identified by statistical analysis. The following section describes the development of the model.

3.4 DEVELOPMENT OF MODEL FOR ESTIMATING MARKET VALUE

Using FBAS688.SYS, a model was developed to estimate market value for properties based on current assessed value. This model was designed to be similar to the Proposition 13 formula for estimating market value, but more refined to reflect the observed differences between reported and estimated market value. These differences were caused by adjustments to the current assessed value caused by changes to the property (construction, demolition, rehabilitation, etc.) since the time of sale. Since the amount of adjustment to assessed value for any individual property is difficult to determine, the model would allow for the confident estimation of market value data for properties where no other market value data was available.

Development of the model was a multi-step process. These steps were:

1. Maximize the number of market value data points which could be used to develop the model by evaluating the DAMAR-reported market values for property transactions in which more than one property was involved.
2. Identify additional invalid data points and remove from further consideration.
3. Determine the data points to be used to develop the model.
4. Develop the model using a multiple regression technique and outliers analysis.

3.4.1 Multiple Property Transactions Analysis

One of the problems found in the DAMAR-reported market value data involved cases of multiple property sales transactions. In some of these cases, by comparing the reported market value with the market value estimated using the Proposition 13 formula, it could be seen that either: 1) the total market value of the transaction had been reported for one of the properties involved in the transaction or 2) the total market value of the transaction had been reported for each of the properties involved in the transaction. In any event, the reported total market value had not been split among the properties involved in the transaction, while the estimated market value reflected this split.

Common sales dates, reference numbers and transaction documents were used to identify properties involved in multiple property transactions. To correct cases where the total reported market value had not been split among the properties involved in the transaction, the total reported market value was divided among the properties in the same proportion as the estimated market values of the properties involved in the transaction. For example:

Two properties are involved in a transaction.

	Reported Market Value	Estimated Market Value	Corrected Reported Market Value
1.	$100,000	$60,000	$60,000
2.	0	$40,000	$40,000

In some cases, the match was not exact, however, the reported market value would be split in the same proportional manner.

	Reported Market Value	Estimated Market Value	Corrected Reported Market Value
1.	$110,000	$60,000	$66,000
2.	0	$40,000	$44,000

In this second case, the analysis assumed that the reported market value for the total transaction was correct and that the basis for the estimated market value (current assessed value) had changed since the sale of the properties. This difference would then be accounted for in subsequent steps of the model development process.

The purpose of this analysis was to identify additional valid market value data points. The analysis was used in the evaluation of 1st sales only, since the estimated market value for purposes of comparing 2nd sales data was not reliable. In addition, since reference numbers are not provided for 2nd sales, properties involved in a multiple transaction cannot be discerned with confidence. Any 1st sale, regardless of sale code, was evaluated in this analysis, as long as an estimated market value was available (i.e., sale in 1978 or after).

Properties identified in this analysis were re-coded with sale code 'A' to indicate that the reported market value had been modified as a result of multiple property transaction analysis and could, by definition, be considered to be a potentially valid DAMAR market value data point. A total of 182 data points were identified as a result of this analysis.

3.4.2 Discards

Additional cases could now be identified as invalid data points. The multiple property transaction analysis could conceivably have provided some confidence in reported market value data points with sale code F, if enough F codes could have been explained as multiple property transactions. However, the analysis was not conclusive and no additional procedures were identified which could have conceivably explained the inconsistencies among the F-coded data points. For this reason, it was concluded that a reported market value with sale code F could not, in and of itself, be considered reliable.

As a result, 2nd sale market values with sale code F were automatically considered invalid since no other verifying information was available and, as 2nd sales, they could not be reliably recalculated. These sales were recoded with sale code D to mark them for deletion from further analysis.

Additional invalid data points were identified in cases where DAMAR had reported identical data for the 1st and 2nd sales. In these cases, the 1st sale data was considered valid and the duplicate 2nd sale record was identified for deletion by recoding sale code to E.

A total of 108 records were identified as invalid as a result of this analysis. These cases are identified in Section 6 of the Supporting Documentation.

3.4.3 Determination of Data Base for Model Development

From the remaining 1309 data points, the data base for developing the model to estimate market value was determined. This required the following steps:

3.4.3.1 Identification of Set-Asides

First, valid data points were identified which could not be used to develop the model. These were data points in which the connection between market value at the time of sale and current assessed value was known to have been broken. Two criteria were used to identify these data points:

1. A confirmed land use change (construction, demolition, renovation) had occurred between the time of sale and current assessed value. In these cases, the basis for the current assessed value would have been

adjusted as a result of the change. For example, if a market value were reported for an unimproved property in 1984 and a building built on that property in 1986, the current (1987) assessed value would be known to be unreflective of the market value at the time of the sale. In these cases, the land use description of the property was changed to reflect the condition at the time of the sale (unimproved) and the property would be "set aside" for use in further analysis, but not used in the development of the model. These properties were coded with sale code G to indicate that a confirmed land use change had occurred.

2. 2nd sale with sale code C or V - as a result of the comparison of reported market values and market values estimated using the Proposition 13 formula, these sale codes were determined to provide direct evidence of a valid market value data point. Since the basis for the current assessed value would have been modified for these properties by the most recent sale, the connection between the reported market value and the current assessed value was known to have been broken in these cases and they could not be used in the development of the model. Nonetheless, these data points were valid and were set aside for use in later analysis of the Before and After Study. These properties were coded with sale code B.

A total of 79 cases were identified by this analysis and are identified in Section 6 of the Supporting Documentation. These cases were removed from the remaining 1309 data points and set aside for future use.

3.4.3.2 Identification of Initial Data Base for Developing Model

Of the remaining data points, the initial data base for developing the model was identified. One criterion was used:

Sale Code C, V, A or F and Sale Date in 1978 or later. In order to model the relationship between 1) reported market value and 2) estimated market value based on current assessed value, the data points must contain data believed to be valid for both variables. The requirement for sale code C, V, A or F was designed to include only the most reliable DAMAR-reported market value data. The requirement for sale date in 1978 or later ensures that a data point in the model development data base will contain an estimated market value based on current assessed value.

A mention of the inclusion of reported market value data with sale code F is worthy at this point. In Section 3.4.2 above, it was noted that the general reliability of F-coded market value data could not be established. At the same time, the comparison of reported market value and estimated value using the Proposition 13 formula indicated that many of the F-coded reported values appeared to be accurate. Inclusion of the F-coded values in the model development process was determined to be an effective means of separating the valid and invalid F-coded reported values. This would be accomplished using the analysis of outliers described in the following sections.

Application of this criterion resulted in an initial data base for model development containing 447 cases. Of note, this criterion, coupled with previous screening of the data, would result in the inclusion of 1st sale data only (all 2nd sale data points would already have been recoded with either sale

code D in the identification of discards (section 3.4.2) or sale code B in the identification of set-asides (section 3.4.3.1). This is significant because inclusion of 2nd sale data points in the model development data base could distort the model since the estimated market values for 2nd sales are unreliable. The initial data base for developing the market value estimating model was designated RECALC.SYS. This file is contained in section 6 of the Supporting Documentation. The remaining 783 cases were set aside to be recalculated after the model was developed.

3.4.4 Development of Market Value Estimating Model

The market value estimating model was developed using a multiple regression technique and an iterative procedure. The multiple regression used reported market value as the dependent variable and estimated market value based on assessed value as the independent variable. A linear relationship between the two variables (reported market value and estimated market value) was demonstrated, however, significant clustering at the lower values was observed. The logarithmic transformation of these variables was used to reduce the magnitude of the variables used and enhance the linearity of the function. The resulting model reflected LOG_{10}(REPORTED MARKET VALUE) as the dependent variable and LOG_{10}(ESTIMATED MARKET VALUE) as the independent variable. The associated variable names in RECALC.SYS were LOGSALE (reported market value) and LOGCALC (estimated market value).

The iterative procedure used to develop the regression equation employed the following steps:

1. The SPSS/PC+ REGRESSION function was used with LOGSALE as the dependent variable and LOGCALC as the independent variable. This function provided evaluative statistics for the regression. These included: the coefficient of determination (R^2) for the model which SPSS/PC+ was able to develop from the data provided; analysis of variance, F value and significance for the regression; T value for the regression coefficient and constant; and the distribution of the residuals from the regression.

2. These statistics were analyzed to assess the accuracy of the regression model. The following criteria were used:

   a) The primary measure of goodness of fit was the coefficient of determination (R^2). R^2 indicates the amount of variation in the dependent variable (reported market value) that is explained by the relationship between the dependent and independent (estimated market value) variables. The R^2 for the sample of cases used to develop the model tends to be an optimistic estimate of how well the model fits the population. The statistic Adjusted R^2 attempts to correct R^2 to more closely reflect the goodness of fit of the model in the population. Therefore, one of the objectives in the process of developing the model was to maximize the Adjusted R^2.

   b) The F-test tests the hypothesis that there is no linear relationship between the dependent and independent variables. If this hypothesis can be rejected, then confidence can be placed in the linear relationship represented by the regression model. In

the F-test, SPSS/PC+ constructs an analysis of variance (ANOVA) table and calculates the sum of squares for the regression and the sum of squares for the residuals (see Appendix A for an example of an ANOVA table). The F statistic is equal to the Mean Square of the Regression divided by the Mean Square of the Residual. The F distribution indicates the probability associated with any given F value. If the probability associated with the F value for the regression is low, then the hypothesis that there is no linear relationship between the dependent and independent variables can be rejected. The F statistic and probability associated with F (listed as F and Signif F in Appendix A) were checked in each iteration of model development.

c) Another test of the hypothesis that there is no linear relationship between the dependent and independent variables is the t-test. This test uses the null hypothesis that the coefficient of the independent variable (the slope of the regression line) is zero. If this hypothesis can be rejected, the linear relationship demonstrated in the regression can be considered valid. The t statistic is the ratio between the coefficient and the standard error of the coefficient (listed as T, B and SE B, respectively, in Appendix A under "Variables in the Equation"). The t distribution provides the probability associated with a particular t value (listed as Sig T in Appendix A). If this probability is small, the hypothesis that there is no linear relation between the dependent and independent variables can be rejected. These statistics were also examined at each step in the development of the model.

d) The residuals from the regression were also evaluated. The residual value for each data point is the difference between the observed value for the dependent variable (the DAMAR-reported market value) and the value which is predicted using the regression model. For a regression to be valid, the assumption that the residuals are normally distributed must be met. SPSS/PC+ plots the residual values overlaid with a normal curve. This plot was examined at each step to determine whether the residual value plot approximated the normal curve.

e) Finally, the coefficient of the independent variable was subjectively evaluated to ensure that it reflected the expected relationship between the dependent and independent variables. Because the Proposition 13 formula would be expected to provide a very close estimate of the market value of the property at the time of sale, a nearly 1:1 ratio between the dependent and independent variables was expected to be be reflected in the model. This was observed to be true as the coefficient was observed to be in the .98-.99 range throughout the development of the model.

3. SPSS/PC+ also identified the 10 data points (outliers) which evidenced the poorest fit with the regression model (i.e., the largest residual values). An analysis of the outliers was conducted. By showing up as an outlier, a different relationship between the reported market value

and the current assessed value than would be expected was indicated for that data point. The primary cause of these outliers was considered to be invalid DAMAR-reported market value data.

Each outlier was analyzed individually to determine the validity of the DAMAR-reported data. It was found that each outlier could be explained by one of three conditions: 1) based on comparison with other properties in the immediate area, it was apparent that the DAMAR-reported market value was not consistent with property values in the area and therefore invalid, or 2) a land use change could be confirmed which would establish that the connection between assessed value and market value would have changed as a result of revision of the assessed value (similar to the analysis described in section 3.4.3.1) or 3) in a few cases, a typographical or data entry error could be identified.

After the outliers had been analyzed, individual data points were processed as follows: Condition 1 - these data points were added to the file of 783 cases to be recalculated using the market value estimating model and coded with sale code R to identify them as recalculated outliers; Condition 2 - these data points were added to the 79 set-asides identified earlier and coded with sale code G; Condition 3 - these data points were corrected and left in the data base for continued use in the development of the model.

4. With the outliers removed or corrected, the process was repeated from step 1 until the marginal increases in R^2 from successive iterations became negligible. Although the process could have continued and some outliers remained, the model developed in this iteration was considered the best regression model which could be developed from the available data. Development of the model required 6 iterations of the steps outlined above. In the process, 55 outliers were identified and removed from the data base. The treatment of these 55 cases is presented in the following section. From the initial 447 cases, 392 data points remained which were used to derive the market value estimating model.

The model which was developed as a result of this process was:

LOGSALE = (.98323 * LOGCALC) + .10093

The final regression statistics for this model were:

Adjusted R^2 .97758

F Test

F Value required for 99% confidence	6.68
F Value achieved	17049.44322
Signif F	.0000

T-Test

T-value required for 99% confidence	2.6
T-value achieved for independent variable	129.43
Sig T	.0000

The complete statistical results of the final model can be found in Appendix A.

3.5 TREATMENT OF OUTLIERS

As noted above, in the process of developing the final market value estimating model, 55 outliers were identified and removed from the data base. The grounds for removal of these points were either 1) the DAMAR-reported market value was not valid based on comparison of similar properties in the same area or 2) a confirmed change in property status had occurred which demonstrated that the expected relationship between reported market value and current assessed value would have been altered. In both cases, evidence was obtained that the data points were inappropriate for use in developing the model. Figure 3 presents the evaluation and disposition of the 55 outliers.

TREATMENT OF OUTLIERS
Figure 4

PARCEL NO.	SALE DATE	REPORTED PRICE	ASSESSED VALUE	EVALUATION
5138002004	861231	225000	1057740	1
5138002022	861231	1032000	4155480	1
5138013008	870626	367000	1045979	1
5139008007	870707	120500	459000	1
5141016004	870728	197066	32272	4 - Under construction
5141016005	870728	153265	25099	4 - Under construction
5141016006	870728	1822338	298430	4 - Under construction
5141016007	870728	1963122	321485	4 - Under construction
5141016008	870728	164208	26891	4 - Under construction
5141018002	780417	23000	101763	2
5141021010	820730	72500	193213	1
5142003019	820601	891689	455810	1
5142005003	791203	586500	41177	1
5142012021	780607	55000	239399	4 - Land use changed
5142012024	820330	1218440	4578252	1
5143025028	801202	2900000	35743401	4 - Improved
5143026019	840330	1000	2868553	2
5144001019	811125	200000	17117112	4 - Improved
5144002023	850208	32000	1220066	2
5144005027	811215	600000	64727230	1
5144007041	810400	600000	2419364	1
5144012020	810722	13500	678036	2
5144012023	831208	54000	364385	1
5144012028	861223	562000	2586720	4 - Land use change
5144012029	861223	562000	2602020	1
5144012031	861223	1668500	5110200	1
5144013033	830719	3720030	9357307	4 - Renovation
5144013035	781206	411000	2107735	1
5144015033	800930	1910000	20650671	1
5144015042	780724	315500	173709	1
5144021035	840405	1000010	5406279	4 - Renovation
5144021043	870615	10000000	69972000	1
5148003001	780223	40000	102583	2
5148007016	841108	2500	451011	2
5148018009	870603	2400000	88078	1
5149006003	870707	450000	82608	3
5149015003	861230	679000	1663110	1
5149018005	861222	3000000	1088764	1
5149019015	870715	706078	236959	4 - Land use changes
5149019016	870715	1354922	454710	4 - Land use changes
5149024005	861230	350000	2092855	1
5149024007	820917	684000	4344880	1
5149028010	840206	8500000	2751540	1
5149033010	780526	500000	4064970	1
5149034003	800923	384500	1723194	1
5151001025	831213	1501500	67455123	4 - Improved
5151015013	821001	4666040	216184761	4 - Improved
5151018018	840324	54500540	18399338	5

5154029024	810626	146350	940186	1
5161025002	810818	350000	873877	1
5161026019	810805	45000	118756	1
5173015011	870708	615000	160229	1
5407023018	820810	17000	58514	2
5408027008	820126	85000	892094	2
5409016021	780407	17500	168992	2

EXPLANATION

1 - Invalid DAMAR-reported market value: Assessed value is consistent with comparable parcels in the area (SALE_COD = 'R')

2 - Invalid DAMAR-reported market value: Reported sale price is clearly unreasonable for the size and land use of the parcel (SALE_COD = 'R')

3 - Invalid DAMAR-reported market value: This is a special case (Pershing Square Center project) which appears to have been originally involved in a multiple property transaction. Since the property was purchased the improvements located on the property at the time of sale were demolished, thus negating the use of the current assessed value for multiple property transaction analysis. However, the current assessed value for the property is comparable to other unimproved properties in the area and may be validly used as the basis for estimating the value of the property using the model. (SALE_COD = 'R')

4 - Confirmed change in property status (Adjust land use data; SALE_COD = 'G')

5 - This is another special case (Library Tower). The reported market value is inconsistent with comparable properties in the area while the property is currently under construction and the assessed value has been adjusted to reflect the partial completion of construction. As such, neither the reported market value nor the current assessed value are considered valid. This data point was coded with sale code D, deleted from the data base and added to the cases to be discarded (see section 3.4.2).

In summary, the 55 outliers were processed as follows: 15 reported market values were confirmed and added to the 79 set-asides; 39 were determined to result from invalid DAMAR data and added to the 783 data points to be estimated from the model and one additional case (Library Tower) was identified as a discard. At the conclusion of the analysis and model development procedures described in the previous sections, the 1417 cases from FBAS688.SYS had been subdivided as follows:

Valid DAMAR data points		486
Used to develop estimating model	392	
Validated market value	94	
Invalid DAMAR data points to be estimated using model		822
Discards		109
Total		1417

These files are contained in section 7 of the Supporting Documentation.

3.6 APPLICATION OF MARKET VALUE ESTIMATING MODEL

The model was applied to the 822 data points for which estimated market value was to be calculated, using the SPSS/PC+ COMPUTE function. The formula which was used was:

COMPUTE SALE_PRI = 10**((.98323 * LOGCALC) + .10093) [or $10^{LOGSALE}$]

At the same time, these data points were coded with a Source Code (value = 'C') to indicate that the source of the market value data point was: Calculated from the market value estimating model.

3.7 DEVELOPMENT OF FINAL BEFORE AND AFTER STUDY DATA BASE

The 486 valid DAMAR data points (392 used to develop the market value estimating model and 94 set-asides) were combined with the 822 cases for which market value at the time of sale had been estimated. The resulting file was named BAS888.SYS, and contained 1308 data points. Prior to developing this file, the 486 valid DAMAR data points were coded with Source Code D to indicate that the source of the data was valid DAMAR information.

One additional test was required before the data base could be finalized. As noted earlier, the benefit assessment data base version which was used to provide the baseline information for the Before and After Study data base had been updated through February, 1988. As a result, subsequent changes to this data base were not reflected in BAS888.SYS. These changes were identified and used to update BAS888.SYS. In the process, an additional 128 data points were identified which were either residential or owned by government and therefore exempt. These cases were coded with sale code S (if residential) or T (if government-owned) and removed from BAS888.SYS, leaving a final total of 1180 validated data points with which to proceed to the next task of the Before and After Study, the development of predictive equations. The subsequently discarded data points and the final Before and After Study data base can be found in sections 7 and 8 of the Supporting Documentation, respectively.

4.0 DATA BASE STRUCTURE

This chapter provides a detailed technical description of the records contained in the Before-And-After Study data base (BAS888.SYS). Individual records are maintained on each validated data point (i.e., a property sale meeting the criteria described in the preceding chapter). The data fields described in the following sections are maintained for each record. The fields are related to the data organization described in Chapter 2. The information contained in the record is designed to reflect the condition of the property at the time of the sale in order to determine the effect of the actual property conditions on the reported sales price. This will allow for the development of the best predictive equations. The information to be contained in each field, the format of the field and the source of information are described for each data field.

4.1 DATA FIELDS FOR DEPENDENT VARIABLE - PROPERTY VALUE

The dependent variable for the analysis is property value, as measured by validated market value, of properties in the study area (MOS-1 benefit assessment districts). The unit of analysis for the study is an individual property with a validated market value. The following fields are used to reflect property value:

Field Name	Type of Field	Characters
SALE_PRI	Numeric	9

Description: Property Sales Price; the sales price in whole dollars or the estimated market value for the property at the time of sale (based on the current assessed value of the property as described in the preceding chapter). Source: DAMAR Corporation Data Base or estimated from the model described in the preceding chapter.

SALE_COD	Character	1

Description: An indication of the accuracy of the reported sales price. Valid codes are as follows:

- A - Revised as a result of multiple parcel analysis (see section 3.4.1)
- B - DAMAR 2nd sale with sale code C or V (see section 3.4.3.1)
- C - DAMAR 1st sale-Confirmed
- D - Invalid data point; discarded (see section 3.4.2)
- E - Duplicate DAMAR 2nd sale; discarded (see section 3.4.2)
- F - DAMAR 1st sale-Full
- G - Valid data point; confirmed change in property status; set aside (see section 3.4.3.1)
- P - DAMAR 1st sale-Partial
- R - Outlier for which property value has been estimated from the model (see section 3.5)
- S - Parcels subsequently found to be residential; discarded (see section 3.7)
- T - Parcels subsequently found to be government owned; discarded (see section 3.7)
- U - DAMAR 1st sale-Unconfirmed
- V - DAMAR 1st sale-Verified

Source: DAMAR Corporation Data Base and revisions as described in preceding chapter.

SALE_DAT Numeric 6

Description: Sale date for the property. Would report date Offer to Purchase was signed, escrow was opened, loan papers originated, etc. May be different from Recording Date. Format is YYMMDD.
Source: DAMAR Corporation Data Base

DOCUMENT Character 2

Description: The type of transaction document on file for the property. Valid codes are:

AD - Administrator's Deed	AF - Affadavit
AN - Assignment Deed	AS - Agreement of Sale
CD - Correction Deed	CO - Condominium Deed
CR - Corp. Grant Deed	CS - Contract of Sale
DC - Declaration	DE - Deed
DG - Deed of Guardian	EX - Executor's Deed
GD - Grant Deed	GF - Gift Deed
ID - Individual Grant Deed	IT - Interspousal Deed
JT - Joint Tenancy Deed	PA - Public Auction Deed
PD - Partnership Grant Deed	PR - Personal Rep Deed
PT - Partial Interest	QC - Quitclaim Deed
RC - Receiver's Deed	RD - Redemption Deed
SD - Sheriff's Deed	TD - Trustee's Deed
WD - Warranty Deed	

Source: DAMAR Corporation Data Base

REFERENC Numeric 10

Description: The reference number of the transaction document on file for the property.
Source: DAMAR Corporation Data Base

SOURCE Character 1

Description: The source of the reported market value for the property. Valid codes are:

C - Calculated from market value estimating model (as described in section 3.6).
D - Valid DAMAR-reported data point

Source: This code was derived in the process of evaluating the DAMAR property value data as described in sections 3.6 and 3.7.

4.2 PARCEL IDENTIFIERS

These fields are used to identify, sort and aggregate properties in the study area. These fields are also used to translate data which is aggregated in accordance with different zone systems to provide the relevant information for the zone in which a property is located. The following fields are used to reflect parcel identifiers:

Field Name	Type of Field	Characters
PARCELNO	Numeric	10

Description: Full 10-digit Assessor's parcel number for the property maintained by the Los Angeles County Assessor. The Assessor uses a hierarchical mapbook-page-parcel system to identify every property in Los Angeles County. The Assessor's parcel number constitutes a legal description for the property.
Source: Benefit assessment data base

PRCLNOBK	Numeric	4

Description: 4-Digit Assessor's mapbook number. The first level in the mapbook-page-parcel numbering system, the mapbook number describes the largest geographic area in which the property is located.
Source: Benefit assessment data base (see Appendix B for mapbooks located in study area).

PRCLNOPG	Numeric	3

Description: 3-Digit Assessor's page number. The second level in the mapbook-page-parcel numbering system, the page number describes the geographic subarea within the mapbook area in which the property is located.
Source: Benefit assessment data base

PRCLNOPC	Numeric	3

Description: 3-Digit Assessor's parcel number. The third level in the mapbook-page-parcel numbering system, the parcel number describes the individual parcel within the geographic subarea within the mapbook area in which the property is located.
Source: Benefit assessment data base

PARCELNR	Character	12

Description: Full 10-digit Assessor's parcel number for the property formatted with hyphens between the book, page and parcel numbers (XXXX-XXX-XXX). The purpose of this field is to provide a match with the parcel number format used by the DAMAR Corporation in order to allow for merging of data bases.
Source: This field was derived by combining the fields PRCLNOBK, PRCLNOPG and PRCLNOPC, with intervening hyphens.

REDEV	Numeric	2

Description: The redevelopment project area in which the property is contained. A two-digit code is used to identify the redevelopment area, if any, in which the property is located. If the property is not located in a redevelopment area, this field is blank. Valid codes are:

01 - Central Business District
02 - Chinatown
03 - Little Tokyo
04 - Bunker Hill

Source: Redevelopment Area maps provided by the Los Angeles Community Redevelopment Agency (CRA) (see Appendix C).

REDEVSUB Numeric 2

Description: The subarea within the Central Business District Redevelopment Project in which the property is located. This field is applicable only to properties located within the CBD Redevelopment Project. This field is blank for all other properties. Valid codes are:

01 - Central City East
02 - Civic Center
03 - Broadway
04 - Spring Street
05 - Main Street
06 - Financial Commercial Core
07 - South Park
08 - Central Library

Source: Central Business District redevelopment project area maps provided by CRA (see Appendix D).

SCAGZONE Numeric 4

Description: The Southern California Association of Governments (SCAG) has divided the SCAG 6-county region into 1325 analysis zones. Seventeen of these zones are located within the Before-and-After study area. This field contains the SCAG zone number in which the property is located.
Source: Base map provided by SCAG which contains the boundaries of the 1325 zone system (see Appendix E for zones in study area).

CENSTRAC Numeric 6

Description: The census tract in which the property is located.
Source: Benefit assessment data base

LAPDZONE Numeric 3

Description: The Los Angeles Police Department (LAPD) has divided the city into a series of zones (roughly the size of census tracts) to track actual and reported crimes in different areas of the city. This field contains the LAPD zone number in which the property is located.
Source: Base maps provided by LAPD (see Appendix F).

BAD_DIST Character 2

Description: The SCRTD benefit assessment district in which the property is located (see Figure 1, p.4). Valid codes are:

A1 - Benefit District A1, Central Business District
A2 - Benefit District A2, Wilshire/Alvarado

Source: Benefit assessment data base

4.3 SITE CHARACTERISTICS

These fields contain descriptive information concerning individual properties and improvements located on properties. The following fields are used to reflect site characteristics:

Field Name	Type of Field	Characters
SITUS_NU	Numeric	5

Description: Situs address number
Source: Benefit assessment data base and DAMAR Corporation data base

SITUS_FR	Character	3

Description: Fractional portion of situs address number, if any
Source: Benefit assessment data base and DAMAR Corporation data base

SITUS_DI	Character	1

Description: Street Direction, if any
Source: Benefit assessment data base and DAMAR Corporation data base

SITUS_ST	Character	32

Description: Street Number and Name
Source: Benefit assessment data base and DAMAR Corporation data base

SITUS_UN	Character	8

Description: Unit identification, if any
Source: Benefit assessment data base and DAMAR Corporation data base

SITUS_CI	Character	24

Description: City and State
Source: Benefit assessment data base and DAMAR Corporation data base

SITUS_ZI	Character	9

Description: Zip code
Source: Benefit assessment data base and DAMAR Corporation data base

U_PRCLTO	Numeric	8

Description: Square footage of parcel for the property
Source: Benefit assessment data base

U_OFFICE	Numeric	7

Description: Square footage of improvements in office use located on the property.
Source: Benefit assessment data base

U_HOTEL Numeric 7

Description: Square footage of improvements in hotel use located on the property.
Source: Benefit assessment data base

U_RETRES Numeric 7

Description: Square footage of improvements in retail or restaurant use located on the property.
Source: Benefit assessment data base

U_SERVIC Numeric 7

Description: Square footage of improvements in service use located on the property.
Source: Benefit assessment data base

U_INDUWA Numeric 7

Description: Square footage of improvements in industrial, warehouse or wholesale use located on the property.
Source: Benefit assessment data base

U_GARAGE Numeric 7

Description: Square footage of improvements in use as parking garage located on the property.
Source: Benefit assessment data base

U_PARKIN Numeric 7

Description: Square footage of parcel in use as parking lot located on the property.
Source: Benefit assessment data base

U_VACLAN Numeric 7

Description: Square footage of vacant parcel located on the property.
Source: Benefit assessment data base

U_INSTGO Numeric 7

Description: Square footage of improvements in use for government purposes located on the property.
Source: Benefit assessment data base

U_RESIDE Numeric 7

Description: Square footage of improvements in residential use located on the property.
Source: Benefit assessment data base

U_INSTLA Numeric 7

Description: Square footage of parcel supporting an exempt improvement (e.g., residential parking lot) located on the property.
Source: Benefit assessment data base

U_NONPRO Numeric 7

Description: Square footage of improvements in use for non-profit purposes located on the property.
Source: Benefit assessment data base

U_VACCOD Numeric 7

Description: Square footage of improvements which have been evaluated as vacant due to code located on the property.
Source: Benefit assessment data base

U_RESHOT Numeric 7

Description: Square footage of improvements which have been evaluated as residential hotel use located on the property.
Source: Benefit assessment data base

U_UPDATE Numeric 7

Description: The last date the square footage information listed in the U_ fields described above was updated.
Source: Benefit assessment data base

U_TOTAL Numeric 7

Description: The total square footage of improvements located on the property. Derived by summing the following fields described above: U_OFFICE, U_HOTEL, U_RETRES, U_SERVIC, U_INDUWA, U_GARAGE, U_INSTGO, U_RESIDE, U_NONPRO, U_VACCOD, U_RESHOT.
Source: Derived value specifically for this data base

LAND_YR1 Numeric 2

Description: The assessment year for property land valuation.
Source: Benefit assessment data base

LAND_VAL Numeric 9

Description: The assessed value of land for the property in the assessment year.
Source: Benefit assessment data base

IMPRV_YR Numeric 2

Description: The assessment year from property improvement valuation.
Source: Benefit assessment data base

IMPRV_VA Numeric 9

Description: The assessed value of improvements on the property in the assessment year.
Source: Benefit assessment data base

ASSES_VA Numeric 9

Description: The total assessed value of the property in the assessment year. Derived by summing the fields LAND_VAL and IMPRV_VA.
Source: Value derived specifically for this data base

YEARBLT Numeric 4

Description: The year of original construction of improvements on the property. When more than one structure is located on the property, this is the year built of the dominant structure.
Source: DAMAR Corporation data base

YRREHAB Numeric 2

Description: This year reflects the present condition of the improvements on the property, which would reflect remodeling, upgrade, addition, etc.
Source: DAMAR Corporation data base

BLDGCLSS Character 1

Description: Fire Insurance Building Classification Code. Valid Codes are as follows:

A - buildings having fireproofed structural steel frames carrying all wall, floor and roof loads. Wall, floor and roof structures are built of non-combustible materials.
B - buildings having fireproofed reinforced concrete frames carrying all wall, floor and roof loads. Wall, floor and roof structures are built of non-combustible materials.
C - buildings having exterior walls built of a non-combustible material such as brick, concrete block or poured concrete. Interior partitions and roof structure are built of combustible material. Floor may be concrete or wood frame.
D - buildings having wood or wood and steel frame.
S - specialized buildings that do not fit in any of the above categories.

Source: DAMAR Corporation data base

PARKTYPE Character 1

Description: The type of parking provided on the property. Valid codes are:

A - Attached	E - Basement	P - Paved	Y - Yes
B - Built-in	F - Off-Site	Q - Adequate	Z - Garage
C - Carport	G - Open	R - Roof	K - Covered
D - Detached	H - None	U - Unimproved	S - Subterranean

Source: DAMAR Corporation data base

PARKSPCE Numeric 3

Description: The total number of designated parking spaces.
Source: DAMAR Corporation data base

STORIES Numeric 3

Description: The actual number of stories in the primary structure.
Source: DAMAR Corporation data base

UNITS Numeric 4

Description: The actual number of units in relation to the reported land use. Could be apartment units, hospital beds, service station bays, theater seats, trailer park spaces, etc. The number reported would be the total of all structures if of similar use. For condominiums, this indicates the number of units in the entire condominium building.
Source: DAMAR Corporation data base

BLDGS Numeric 3

Description: Total number of buildings on the property.
Source: DAMAR Corporation data base

4.4 LOCATION CHARACTERISTICS

These fields contain descriptive information concerning individual properties which relates to access to transportation services and conditions surrounding the property. The following fields are used to reflect location characteristics:

METRDIST Numeric 4

Description: The walking distance, in feet, from the nearest Metro Rail station portal measured along the street to the nearest boundary of each property in the study area.
Source: The distance to each property has been measured specifically for this study

LITRDIST Numeric 4

Description: The walking distance, in feet, from the nearest light rail station station portal measured along the street to the nearest boundary of each property in the study area. The light rail stations in the study area are co-located with Metro Rail stations at 7th and Flower and Union Station.
Source: The distance to each property has been measured specifically for this study

FRONT1 Character 2

Description: The street on which the property fronts. Valid codes are:

Code	Street Name	Code	Street Name	Code	Street Name
AA	Alameda	GR	Grand	SF	Santa Ana Fwy
AL	Alvarado	HA	Harlem	SH	Shatto St.
AP	Alpine	HE	Hewitt	SP	Spring St.
AS	Aliso	HF	Harbor Freeway	ST	St. Paul
AV	Avila	HI	Hill	SU	Sunset
BA	Bauchet	HO	Hope	SV	St. Vincent
BB	Bonnie Brae	HP	Hill Place	TE	Temple
BH	Bunker Hill	HW	Hollywood Fwy	UN	Union
BI	Bixel	IN	Ingraham	VI	Vignes
BN	Beacon	JA	Jackson	WA	Wall St.
BO	Boyd	KE	Keller	WD	Werdin
BR	Broadway	LA	Los Angeles St.	WE	Westlake
BU	Burlington	LE	Lebanon	WI	Wilshire
BY	Beaudry	LI	Little St.	WL	Weller
CA	Clara	LK	Lake St.	WN	Winston
CE	Center	LP	Lindley Place	YA	Yale
CL	Cleveland	LU	Lucas	1	First Street
CO	Commercial	LY	Lyon St.	2	Second Street
CP	Cottage Place	MA	Main St.	3	Third Street
DI	Diamond	MC	Macy St.	3P	Third Place
DU	Ducommun	MD	Maryland	4	Fourth Street
FA	Florida	ME	Mercury Ct.	5	Fifth Street
FC	Frank Court	MP	Maple	6	Sixth Street
FI	Figueroa	NH	New High	7	Seventh Street

FL	Flower	OL	Olympic	8	Eighth Street
FR	Francisco	OR	Ord	8P	Eighth Place
FT	Fremont	OV	Olive	9	Ninth Street
GA	Garey	PA	Parkview	11	Eleventh Street
GE	Georgia	PE	Pembrooke Ln.		
GO	Golden	SA	San Pedro St.		

Source: Determined for each property from LA County Assessor's maps

FRONT2
FRONT3
FRONT4
FRONT5 — Character — 2

Description: If a corner location or if the property fronts on more than two streets, the additional streets on which the property fronts. If the property is not a corner location or fronts on only one street, this field will be blank. Valid codes are the same as for field FRONT1.
Source: Determined for each property from LA County Assessor's maps

BOARDS — Numeric — 6

Description: Measure of bus usage in the vicinity of each property. The total count of bus passengers on and off at bus stops in the Central Business District has been maintained by the SCRTD since 1984 and was available aggregated by census tracts. This data source provided a relative measure of the varying levels of bus usage in different areas of the CBD. This field contains the measured number of bus passengers boarding in the census tract in which the property is located. For sale years 1984 through 1987, the field contains the value for the sale year. If the sale year is prior to 1984, this field contains the value for 1984.
Source: SCRTD-maintained counts of bus passenger ons and offs at bus stops in the Central Business District, aggregated by Census tract, from 1984.

ALIGHTS — Numeric — 6

Description: Measure of bus usage in the vicinity of each property. The total count of bus passengers on and off at bus stops in the Central Business District has been maintained by the SCRTD since 1984 and was available aggregated by census tracts. This data source provided a relative measure of the varying levels of bus usage in different areas of the CBD. This field contains the measured number of bus passengers alighting daily in the census tract in which the property is located. For sale years 1984 through 1987, the field contains the value for the sale year. If the sale year is prior to 1984, this field contains the value for 1984.
Source: SCRTD-maintained counts of bus passenger ons and offs at bus stops in the Central Business District, aggregated by Census tract, from 1984.

BUSMILES — Numeric — 5

Description: Measure of bus service in the vicinity of each property. This field contains the scheduled bus miles in the census tract (one bus traveling one mile through the census tract equals one bus mile) in which the property is located. This data source provided a relative measure of varying levels of bus service in different areas of the CBD. This information has also been

maintained by SCRTD for years 1984 through 1987. For sale years 1984 through 1987, the field contains the value for the sale year. If the sale year is prior to 1984, this field contains the value for 1984.

PASMILES Numeric 5

Description: Measure of bus service in the vicinity of each property. This field contains the number of passenger miles in the census tract (one passenger traveling one mile through the census tract equals one passenger mile) in which the property is located. This data source provided a relative measure of varying levels of bus service in different areas of the CBD. This information has also been maintained by SCRTD for years 1984 through 1987. For sale years 1984 through 1987, the field contains the value for the sale year. If the sale year is prior to 1984, this field contains the value for 1984.

FONDIST Numeric 4

Description: Measured distance, in feet, along the street from the closest freeway on-ramp to the boundary line of the property closest to that on-ramp.
Source: This distance was measured specifically for each property in this study

FOFFDIST Numeric 4

Description: Measured distance, in feet, along the street from the closest freeway off-ramp to the boundary line of the property closest to that off-ramp.
Source: This distance was measured specifically for each property in this study

AVFWYDST Numeric 4

Description: The average of the value in the fields FONDIST and FOFFDIST, rounded to the nearest foot. The formula used in this calculation was:
(FONDIST + FOFFDIST) / 2.
Source: This value was derived specifically for this study

SURROFC Numeric 7

Description: The total square footage of office space in the area surrounding the property. This is defined as the square footage of office improvements which are located in the Assessor's mapbook-page containing the property plus the total square footage of office improvements in all Assessor's mapbook-pages immediately adjacent to the property. The derivation of this value is described in detail in section 4.7.1.
Source: Derived from information contained in the benefit assessment data base

SURRRET Numeric 7

Description: The total square footage of retail/restaurant space surrounding the property. This value was derived as described in section 4.7.1, using the sum total of retail square footage (field U_RETRES) for each Assessor's mapbook page.
Source: Derived from information contained in the benefit assessment data base

SURRINDU Numeric 7

Description: The total square footage of industrial/warehouse space surrounding the property. This value was derived as described in section 4.7.1, using the sum total of industrial/warehouse square footage (field U_INDUWA) for each Assessor's mapbook page.
Source: Derived from information contained in the benefit assessment data base

SURRPARK Numeric 7

Description: The total square footage of parking facilities surrounding the property. This value was derived as described in section 4.7.1, using the sum total of parking square footage (fields U_GARAGE and U_PARKIN) for each Assessor's mapbook page.
Source: Derived from information contained in the benefit assessment data base

SURRGOVT Numeric 7

Description: The total square footage of government-used facilities surrounding the property. This value was derived as described in section 4.7.1, using the sum total of government square footage (field U_INSTGO) for each Assessor's mapbook page.
Source: Derived from information contained in the benefit assessment data base

SURRRES Numeric 7

Description: The total square footage of residential facilities surrounding the property. This value was derived as described in section 4.7.1, using the sum total of residential square footage (field U_RESIDE) for each assessor's mapbook page.
Source: Derived from information contained in the benefit assessment data base

CRIMES Numeric 6

Description: The number of total actual and reported crimes in the Los Angeles Police Department zone for the property in the year of sale. The crimes included in this total include: Burglary, Robbery, Murder, Rape, Assault, Bunco, Theft.
Source: LAPD public records which report the number and types of actual and reported crimes, aggregated according to the LAPD zone system.

4.5 MARKET CHARACTERISTICS

These fields contain descriptive information concerning the market conditions in the area where the property is located. National/regional and local market conditions are both reflected. This information is keyed to the year of the recorded sale in order to ensure that the market conditions which would have influenced the sale price are properly reflected. The following fields are used to reflect market characteristics:

4.5.1 National and Regional Economic Conditions

GNP	Numeric	4
GNP_CHG	Numeric	9+1 decimal place
GNP_PCT	Numeric	9+1 decimal place
GNP_ADJ	Numeric	9+1 decimal place

Description: The level of the gross national product in current dollars in the year the property has a recorded sale; GNP_CHG is the absolute change in the level of GNP since the preceding year; GNP_PCT is the percentage change in GNP since the preceding year; GNP_ADJ is the percentage change in GNP from the preceding year, adjusted for inflation by subtracting the change in the consumer price index for the year (see field CPI_PCT).
Source: US Department of Commerce, Bureau of Economic Analysis

PIR	Numeric	2+2 decimal places
PIR_CHG	Numeric	9+1 decimal place
PIR_PCT	Numeric	9+1 decimal place

Description: The average level of the prime interest rate in the year in which the property has a recorded sale; PIR_CHG is the absolute change in the prime interest rate since the preceding year; PIR_PCT is the percentage change in the prime interest rate since the preceding year.
Source: US Department of Commerce, Bureau of Economic Analysis

CPI	Numeric	4+2 decimal places
CPI_CHG	Numeric	9+1 decimal place
CPI_PCT	Numeric	9+1 decimal place

Description: The level of the consumer price index for the LA-Long Beach urbanized area at end of the year in which the property has a recorded sale; CPI_CHG is the absolute change in the CPI since the preceding year; CPI_PCT is the percentage change in the CPI since the preceding year.
Source: US Department of Commerce; California State Department of Finance

BCI	Numeric	5+2 decimal places
BCI_CHG	Numeric	9+1 decimal place
BCI_PCT	Numeric	9+1 decimal place

Description: The level of the index of construction costs for the Los Angeles region in the year in which the property has a recorded sale; BCI_CHG is the absolute change in the building cost index since the preceding year; BCI_PCT is the percentage change in the building cost index since the preceding year.
Source: Engineering News Record magazine (ENR) maintains an index of construction costs designed to measure the combined effect of wage and price

changes on the value of the construction dollar (called the Building Cost Index or BCI), dating to 1938. It is a weighted aggregate index of constant quantities of structural steel, portland cement, lumber and skilled labor. Separate indices are maintained for 20 different urban areas. The index for Los Angeles is used in this study.

FER	Numeric	2+5 decimal places
FER_CHG	Numeric	9+1 decimal place
FER_PCT	Numeric	9+1 decimal place

Description: An index of international currencies is used to track the value of the US dollar relative to other currencies. The index tracks exchange rates as the market rates in the countries concerned, reported by their central banks. This field will reflect the value of the index at the end of the year in which a sale is recorded. FER_CHG is the absolute change in the foreign exchange rate index since the preceding year; FER_PCT is the percentage change in the foreign exchange rate index since the preceding year.
Source: International Financial Statistics journal

UNEMPLOY	Numeric	4+1 decimal place
UNEM_CHG	Numeric	9+1 decimal place
UNM_PCT	Numeric	9+1 decimal place

Description: The unemployment rate for the Los Angeles/Long Beach region at the end of the year for which the property has a recorded sale; UNEM_CHG is the absolute change in the unemployment rate since the preceding year; UNM_PCT is the percentage change in the unemployment rate since the preceding year.
Source: California Statistical Abstract, California State Department of Finance; Annual Planning Information, California Employment Development Department

4.5.2 Local Economic Conditions

OFCVAC	Numeric	2+1 decimal place
VAC_CHG	Numeric	9+1 decimal place

Description: The measured vacancy rate for office space in downtown Los Angeles in the year of sale; VAC_CHG is the absolute change in the office vacancy rate since the preceding year.
Source: Coldwell Banker Office Building Real Estate Data

OFFABSRB	Numeric	7

Description: The square footage of office space absorbed in the appropriate market subarea in which the property is contained in the year of sale. The market subareas to be used are: downtown Los Angeles for the CBD station areas and Mid-Wilshire, Park Mile and Miracle Mile for the Wilshire/Alvarado station.
Source: Economic Research Associates, Real Estate Development Potential in the Metro Rail Corridor

INDEMPL	Numeric	3+1 decimal place
IND_CHG	Numeric	9+1 decimal place
IND_PCT	Numeric	9+1 decimal place

Description: This field contains the industrial employment in Los Angeles County, in thousands, in the year of sale. This is the number reported by the State Employment Development Department under SIC codes 20-39 (see Appendix G); IND_CHG is the absolute change in industrial employment since the preceding year; IND_PCT is the percentage change in industrial employment since the preceding year.
Source: California Employment Development Department

RETEMPL	Numeric	3+1 decimal place
RET_CHG	Numeric	9+1 decimal place
RET_PCT	Numeric	9+1 decimal place

Description: This field contains the retail employment in Los Angeles County, in thousands, in the year of sale. This is the number reported by the State Employment Development Department under SIC codes 52-59 (see Appendix G); RET_CHG is the absolute change in retail employment since the preceding year; RET_PCT is the percentage change in retail employment since the preceding year.
Source: California Employment Development Department

FINEMPL	Numeric	3+1 decimal place
FIN_CHG	Numeric	9+1 decimal place
FIN_PCT	Numeric	9+1 decimal place

Description: This field contains the total employment in Los Angeles County in Finance, Insurance and Real Estate (FIRE), in thousands, in the year of sale. This is the number reported by the State Employment Development Department under SIC codes 60-67 (see Appendix G); FIN_CHG is the absolute change in FIRE employment since the preceding year; FIN_PCT is the percentage change in FIRE employment since the preceding year.
Source: California Employment Development Department

SERVEMPL	Numeric	3+1 decimal place
SERV_CHG	Numeric	9+1 decimal place
SERV_PCT	Numeric	9+1 decimal place

Description: This field contains the total services employment in Los Angeles County, in thousands, in the year of sale. This is the number reported by the State Employment Development Department under SIC codes 70-89 (see Appendix G); SERV_CHG is the absolute change in services employment since the preceding year; SERV_PCT is the percentage change in services employment since the preceding year.
Source: California Employment Development Department

GOVTEMPL	Numeric	3+1 decimal place
GOVT_CHG	Numeric	9+1 decimal place
GOVT_PCT	Numeric	9+1 decimal place

Description: This field contains the total government employment in Los Angeles County, in thousands, in the year of sale. This is the number reported by the State Employment Development Department under GOVERNMENT (see Appendix G);

GOVT_CHG is the absolute change in government employment since the preceding year; GOVT_PCT is the percentage change in government employment since the preceding year.
Source: California Employment Development Department

POP	Numeric	6
POP_CHG	Numeric	9+1 decimal place
POP_PCT	Numeric	9+1 decimal place

Description: Each quarter, the County of Los Angeles publishes a bulletin with population estimates for small statistical areas in the County. The Central Business District and Wilshire/Alvarado benefit assessment districts are located within two adjacent statistical areas designated by the County as "Central Area". This field contains the reported population for the Central Area from the first quarter of each year. Data was available for the following years: 1976 through 1980; 1984 through 1987. Linear interpolation was used to fill in the years 1981 through 1983. POP_CHG is the absolute change in population since the preceding year; POP_PCT is the percentage change in population since the preceding year.
Source: Quarterly Bulletin, County of Los Angeles, Department of Regional Planning.

PRK_AVMN	Numeric	1+5 decimal places

Description: The average initial parking rate per minute in the vicinity of the property. The derivation of this value is described in section 4.7.2.
Source: Parking Price Survey, Downtown Los Angeles, Community Redevelopment Agency, September, 1986.

PARK_MAX	Numeric	3+4 decimal places

Description: The average maximum daily parking rate in the vicinity of the property. The derivation of this value is described in section 4.7.2.
Source: Parking Price Survey, Downtown Los Angeles, Community Redevelopment Agency, September, 1986.

PARK_MON	Numeric	4+2 decimal places

Description: The average monthly parking rate in the vicinity of the property. The derivation of this value is described in section 4.7.2.
Source: Parking Price Survey, Downtown Los Angeles, Community Redevelopment Agency, September, 1986.

PARK_SO	Character	1

Description: The source of the reported average per minute, maximum and monthly rates reported in the previous three fields. The derivation of this value is described in section 4.7.2.
Source: Parking Price Survey, Downtown Los Angeles, Community Redevelopment Agency, September, 1986.

4.6 POLICY CHARACTERISTICS

These fields contain descriptive information concerning the public policy and regulatory conditions associated with the property. The following fields are used to reflect policy characteristics:

ZONING	Character	15

Description: The zoning classification for the property
Source: Los Angeles County Assessor data as reflected in the benefit assessment data base

ZONE1 ZONE2	Character	3

Description: The zone governing the potential use of the property. The zoning classification contained in field ZONING consists of two components: 1) zone and 2) height district. This field contains the zone governing the property (e.g., C1, R4, etc.). For some properties, the zoning classification contains two zones (e.g., commercial and residential). In these cases, the second zone is reflected in the field ZONE2.
Source: Derived from the zoning classification for the property.

HEIGHT1 HEIGHT2	Numeric	1

Description: The height district governing the potential development of the property. The zoning classification contained in field ZONING contains two components: 1) zone and 2) height district. This field contains the height district governing the property (1, 2, 3 or 4). For some properties, the zoning classification contains two zones/height districts (e.g., C4-4-R5-4). In these cases, the second height district is reflected in the field HEIGHT2.
Source: Derived from the zoning classification for the property.

SPPLAN	Numeric	2

Description: The specific plan-designated land use for the property. If the property is not within an adopted specific plan area, this field will be blank. As of September, 1988, Specific Plans had not yet been adopted for any of the Before and After Study station areas.
Source: City of Los Angeles Department of Planning specific plan area maps

SPPLANYR	Numeric	2

Description: The year of adoption of the specific plan for which a land use designation is contained in field SPPLAN. If the property is not within an adopted specific plan area, this field will be blank. As of September, 1988, Specific Plans had not yet been adopted for any of the Before and After Study station areas.
Source: City of Los Angeles Department of Planning

GENLPLAN Numeric 2

Description: The general plan-designated land use for the property. A two-digit code is used to describe the designated land use. Valid codes are:

Housing
01 - Low Medium density
02 - Medium
03 - High Medium
04 - High
05 - Very High

Commerce/Parking
06 - Community
07 - Regional Center

Industry/Parking
08 - Light
09 - Heavy

Commerce
10 - Limited
11 - Highway Oriented
12 - Community
13 - Regional Center

Industry
14 - Commercial/manufacturing
15 - Limited
16 - Light
17 - Heavy

Public Use
18 - Civic Center
19 - Recreation or School Site
20 - Other Public Land
21 - Open Space
22 - Privately Owned

Other Public and Quasi-public
23 - Quasi-public (Private School/Hospital, etc.)
24 - Public (Maintenance yard, administrative center, etc.)

Alternate Use
25 - Housing - high medium and/or commerce/parking and/or open space
26 - Housing - high and/or commerce/parking - regional center and/or open space
27 - Housing - very high and/or commerce/parking - regional center
28 - Housing - very high and/or industry/parking - light
29 - Commerce/parking - regional center and/or industry/parking - light
30 - Community commercial and/or public
31 - Community commercial and/or light industry
32 - Heavy industry and/or public

Source: City of Los Angeles Department of Planning. For Central Business District properties: Central City Community Plan and Central City North Community Plan; for Wilshire/Alvarado properties: Westlake Community Plan

GENPLNYR Numeric 2

Description: The year in which the General Plan applicable to the property was adopted.
Source: City of Los Angeles Central City, Central City North and Westlake Community Plans.

STAPLNYR Numeric 2

Description: The year in which a Station Area Plan applicable to the property was adopted. As of September, 1988, no Station Area Plans have been formally adopted in the Before and After Study station areas.
Source: City of Los Angeles Department of Planning

PARK_REQ Numeric 3

Description: The number of parking spaces required to be provided on the property, based on the square footage of improvements, use and zoning classification of the property. If the property is unimproved, this field is 0. The derivation of this value is discussed in detail in section 4.7.3. For properties with special parking requirements as a result of development agreements with CRA, the field reflects the actual requirement for the project.
Source: Parking requirements for each zoning category obtained from "Generalized Summary of Zoning Regulations, City of Los Angeles" (LADOP) (see Appendix H). CRA's PROJSTAT data base will be used to determine the requirement for properties with CRA development agreements.

PROP_U Numeric 1

Description: In 1986, the voters of the City of Los Angeles passed Proposition U, which amended the City Charter to reduce the allowable development density of properties located in Height District 1. In this data base, properties located in Height District 1 are coded '1' in this field. This indicates that the property had its development potential reduced by Proposition U. Properties located in any other Height District are coded '0' which indicates that the development potential of the property was not affected by the provisions of Proposition U.
Source: Zoning classification for the property

TDR Numeric 1

Description: In the Central Business District Redevelopment Project, development density for each property is limited to a Floor Area Ratio (F.A.R) of 6:1. In order to develop any property at a density greater than 6:1, development rights must be transferred to that property from another property located elsewhere in the CBD Redevelopment Project. The Community Redevelopment Agency is responsible for administering the transfer of these development rights from less intensely developed properties to support development of larger projects. This field indicates whether a property has been involved in a development rights transfer, either as a donor site or a recipient site. The field will be coded '1' if the property has been involved in such a transaction and '0' if it has not.
Source: Community Redevelopment Agency

CRAINVES Numeric 9

Description: The cumulative level of public investment in the redevelopment area/subarea in which the property is contained through the year of sale. For properties located in the CBD redevelopment project area, the budgeted expenditure in the project subarea where the property is located is used. For all other properties, the budgeted expenditure in the redevelopment area is used (Bunker Hill, Little Tokyo, Chinatown).
Source: Annual Work Programs for redevelopment projects of the Community Redevelopment Agency.

4.7 METHODOLOGIES FOR DERIVATION OF SPECIFIED DATA BASE FIELDS

In the case of some data base fields in the Before and After study data base, special methodologies were needed to evaluate a data source in order to provide useful data for the study. The purpose of this section is to describe the data fields and methodologies used for this purpose. Three data fields required development of a special methodology to derive their values: 1) surrounding land use; 2) parking costs and 3) parking requirements.

4.7.1 Derivation of Surrounding Land Use Totals

The purpose of the surrounding land use data fields is to provide a quantitative means of describing the character of the area surrounding a particular property. For example, examining the combination of these data fields can allow for differentiation between properties located in predominantly office areas, properties located in predominantly industrial areas and properties located in diverse, mixed areas. The surrounding parking field also provides an indication of the availability of parking facilities in the area. This data can provide insight into the "linkage" between the property and surrounding amenities and facilities. In the development of the predictive equations in the next task of the Before and After Study, the significance of this factor in determining property value will be evaluated.

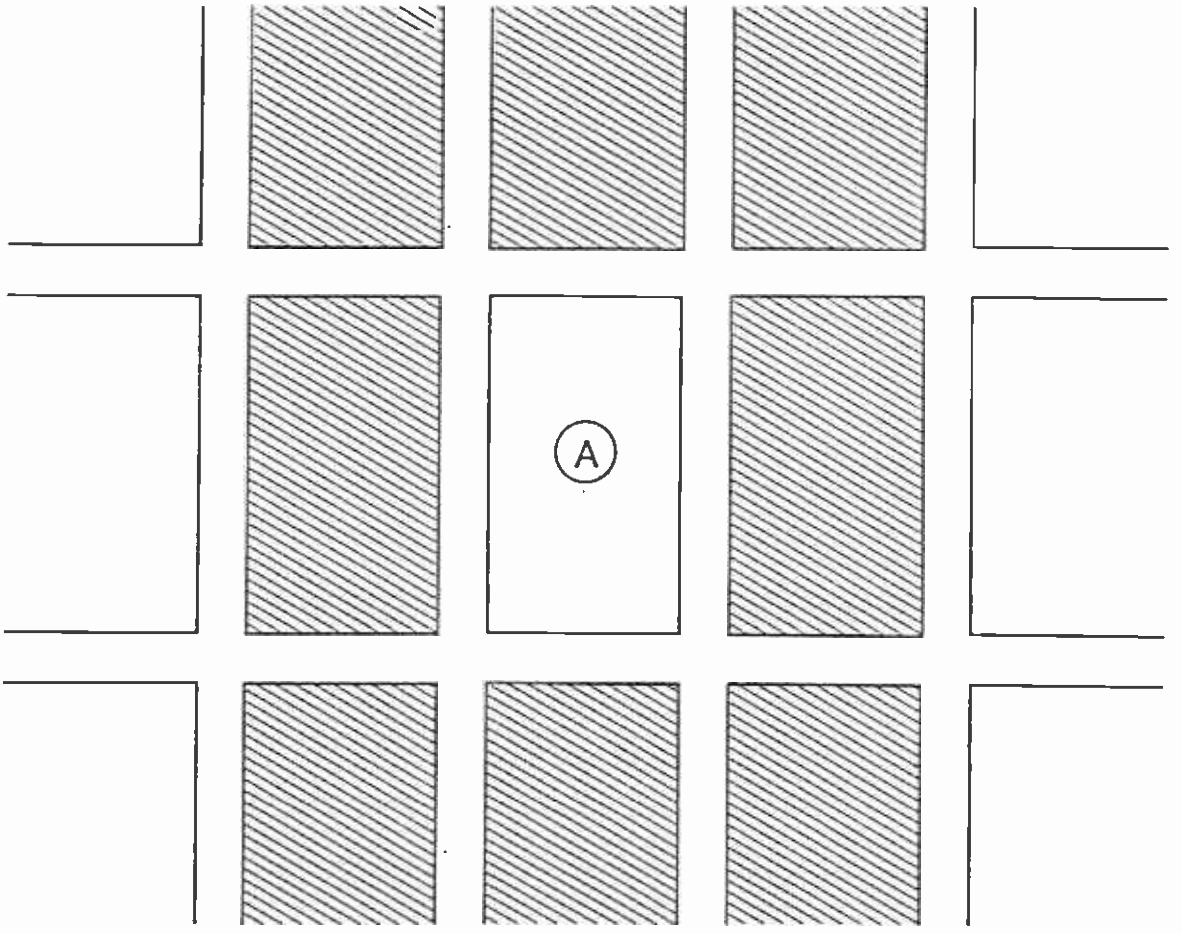
The following methodology was used to calculate the values of the surrounding land use fields. This methodology was applied to each Assessor's mapbook/page, which roughly corresponds to a city block. The fields were calculated for each block and then entered for all properties located in that block. Figure 5 illustrates the blocks used in the calculation of surrounding land use for any given block. These calculations were performed for the following land uses: office (field U_OFFICE); retail/restaurant (field U_RETRES); industrial/warehouse/wholesale (field U_INDUWA); parking (fields U_PARKIN and U_GARAGE); residential (field U_RESIDE) and government (field U_INSTGO).

1. For each block (Assessor's mapbook/page) in the study area, the immediately adjacent blocks were identified.
2. For each block, the sum total of the land use square footage from the fields listed above was calculated from each property located in the block.
3. For each block (and associated set of adjacent blocks) identified in Step 1, the total land use square footages from Step 2 were summed. The values obtained were entered for each property located in that block.

The source of the land use square footages for individual properties was the benefit assessment data base, updated through August, 1988. This data base contained all properties in the study area, including exempt properties. Because of the requirement to maintain current land use data on all properties in the benefit assessment districts, this data base was considered to contain the most accurate data available for purposes of measuring surrounding land uses.

FIGURE 5

CALCULATION OF SURROUNDING LAND USE FOR BLOCK "A"



The square footage of surrounding office use for block "A" is equal to: the total square footage of office space in all properties in block "A" plus the total square footage of office in the shaded blocks.

The same calculation is performed for retail, industrial, parking, government and residential uses.

4.7.2 Derivation of Parking Cost Inputs

Parking cost data was obtained from a 1986 survey of parking costs in downtown Los Angeles commissioned by the Community Redevelopment Agency. This study measured parking costs in a portion of the Central Business District Redevelopment Project Area on a property-by-property basis. Appendix I indicates the area covered by the survey.

Potential sources of parking cost data were exhaustively examined and found to be sparse to non-existent. The 1986 survey was found to provide the best information available, however, it should be recognized from the outset that this survey is not an ideal source of information to support the study methodology. There are two reasons for this: 1) it is a one-time study which cannot measure changes in relative parking costs in different areas of the city over time and 2) it only covers a portion of the study area. The survey does have the advantage, however, of providing current information and very fine distinctions in parking costs within the area which it did cover. As such, it is considered to be preferable to a subjective assessment of parking costs (e.g, high, medium, low) in different areas of the CBD. Additionally, the relative differential in parking costs in different areas of the CBD, although not static, probably would not be expected to experience considerable change over time. Overall, even with the acknowledged limitations of this information source, it is highly preferable to the alternatives. In view of the limitations, methodologies were developed to extract the most information possible from the survey. These are described in the remainder of this section.

The study was a complete survey of all parking facilities located in the western portion of the CBD Redevelopment Project in 1986. Parking facilities typically offer a variety of parking rates varying with the duration of parking facility use. In the survey, the following information was collected and reported for each facility: Operator, Address, Initial Rate per 20/30 Minute Period, Maximum Daily Rate, Cost of Validations and Monthly Rate. These data were reported for each parcel and were listed by assessor's mapbook and page number, roughly equivalent to a city block (see Appendix J).

4.7.2.1 Use of Survey Data

The relevant survey data for the Before and After Study were: Initial Rate per 20/30 Minute Period, Maximum Daily Rate and Monthly Rate. For each block (Assessor's mapbook/page) surveyed, a set of average rates was developed as follows:

1. Initial Rate per Minute - a parking facility typically charges a specified rate for the initial time period of use, which is usually expressed as $X per each 20 minutes or $X per each 30 minutes. To standardize the difference between these two methods of establishing the initial rate, the rates were converted into cost per minute (e.g., $1.00 each 20 minutes = $.05 per minute, $1.00 each 30 minutes = $.033 per minute). The mean of these values for all facilities located within a block was calculated and assigned as the average initial rate per minute for the block. For facilities for which no initial per minute rate was listed, parking was assumed to be provided at no cost and an initial rate of 0 was used in the calculation of the mean. An exception to this was made in the Civic Center area where parking for

which no cost was listed was assumed to be for government employees only and these facilities were excluded from the calculation of the mean per minute rate.

2. Maximum Daily Rate - the initial rate is charged until a maximum daily rate for the facility is reached. The mean maximum daily rate of all facilities located in a block was calculated for each block.

3. Monthly Rate - as an alternative to the maximum daily rate, some facilities offer a monthly parking rate. The mean value of all reported monthly rates in the block was calculated for each block. If no monthly rate was reported for a facility, it was assumed that no monthly rate was offered at that facility and it was not included in the calculation of the mean.

These calculations were performed for each block located in the Before and After study area and used directly as the average parking costs for all properties located in that block. The properties in BAS888.SYS which reflect average parking costs measured directly in the survey were coded 'S' (determined by survey) in the field PARK_SO.

4.7.2.2 Estimation of Parking Costs for Blocks with No Parking Facilities

Within the survey area, several blocks were found for which no survey information was reported. It was assumed that no parking facilities were located on these blocks at the time of the survey. A methodology was developed to estimate the average parking costs for those blocks.

Since these blocks were surrounded by blocks which were surveyed, the mean of the parking costs from the surrounding blocks was used for the no-data blocks. This was premised on the theory that, if no parking facilities were located on a particular block, customers would park in the surrounding blocks when patronizing the businesses on the block without parking facilities. The blocks used in the calculation of these means were:

Block with No Reported Survey Data	Surveyed Blocks Used in Calculation of Mean Parking Costs
5138 001	5138 013, 5139 007, 5144 020
5138 002	5138 012, 5144 021
5138 003	5138 004, 5144 022
5143 004	5143 006, 5143 007, 5143 008
5143 020	5143 006, 5143 007, 5143 008
5143 021	5143 006, 5143 007, 5143 008, 5143 022
5143 023	5143 022, 5143 025
5143 024	5143 022, 5143 025
5143 027	5143 025, 5143 026, 5143 022
5143 028	5143 025, 5143 026, 5143 006
5149 016	5149 015, 5149 025, 5149 018, 5149 019
5149 017	5149 018, 5149 019, 5149 009, 5149 010
5149 022	5149 020, 5149 023, 5149 036, 5149 037
5149 030	5149 031, 5149 029, 5151 025, 5149 026
5149 033	5149 032, 5149 026, 5149 035, 5144 003
5149 034	5149 035, 5149 036, 5149 027, 5149 023

5151 014	5151 015, 5151 018, 5151 011
5151 017	5151 025, 5151 018, 5151 015, 5149 029
5151 024	5151 025, 5151 026, 5151 023, 5144 005

The properties which reflect average parking costs which were calculated as described above were coded 'A' (determined by averaging) in the field PARK_SO.

4.7.2.3 Estimation of Parking Costs for Blocks Located Outside Survey Area

The survey data suggested that parking costs were highest in the Financial Core area of downtown and declined as distance from the downtown core increased. In some cases where properties were located just outside the edge of the survey area, primarily in the eastern sector of the study area, it could be reasonably hypothesized that this trend would continue. A methodology was used to estimate parking costs for these blocks which extrapolated the trend from the adjacent blocks which were surveyed and applied it to the blocks located outside the survey area. The blocks used in this analysis were:

Surveyed Blocks	Blocks for which Parking Costs were Estimated
5144 004, 003, 002, 001	5148 021
5149 035, 036, 037	5148 020, 019, 017, 018, 016
5149 026, 025, 024, 023, 022	5148 009, 008, 010, 007
5149 010, 015, 019, 018, 020	5148 001, 002, 003
5149 010, 009, 008, 007, 006	5161 026, 024, 023, 025, 015, 016

The parking costs for these blocks were coded 'E' (determined by extrapolation) in the field PARK_SO.

Using the methodologies described in the previous sections, parking cost data could be obtained for a major portion of the downtown area. All properties located in a block for which data was available reflect the average parking costs which were calculated by one of the three methods. However, some areas of downtown and the entire Wilshire/Alvarado area were not covered by the survey and also could not be reasonably estimated from the data available. For instance, it was not considered reliable to estimate parking costs in Chinatown by extrapolating trends from the Civic Center area. As a result, some parts of the Before and After Study area do not reflect parking costs data. In these cases, the parking cost fields (PRK_AVMN, PARK_MAX, PARK_MON, PARK_SO) will be blank.

4.7.3 Derivation of Parking Requirements

The required number of parking spaces for each property in BAS888.SYS was derived from the requirements established in the Los Angeles City Zoning Code (see Appendix H). The calculated value is based on the total square footage of improvement and the zoning classification of the property. The requirements established by the City are:

1. For commercial and industrial uses, one parking space is required per 500 square feet of improvement.
2. For residential uses, 2 parking spaces are required per unit.

For properties with zoning C1, C2, C4, C5, CR, CM, M3 and M4, the parking requirement was calculated using the formula:

PARK_REQ = Total improvement square footage / 500.

For properties with zoning R4, R5, R4P and R5P, residential unit size was assumed to be 800 square feet. The parking requirement was calculated using the formula:

PARK_REQ = (Total improvement square footage / 800) * 2.

For unimproved properties, these formulas will yield a parking requirement of 0.

5.0 UPDATE PROCEDURES

The methodology described in Chapter 2 of this document may be repeated for future years by creating new records based on property sales occurring after the original data base was created. This section outlines the procedures to be used in this updating process. Because some of the updating requirements cannot be known until the predictive equations are developed in Task 7 of the Before and After Study, these procedures will be updated in the documentation produced for that Task.

Updating the Before and After Study data base requires three steps: 1) identify the property sales data points which have occurred since the last updating for inclusion in the data base, 2) collect updated information on the variables contained in the predictive equations and 3) develop predicted property value using the predictive equation and perform the residuals analysis.

5.1 IDENTIFY PROPERTY SALES DATA POINTS

The property sales data points to be included in the updated Before and After Study data base should be identified using the following procedure:

1. Obtain information on property sales occurring in the Assessor's mapbooks comprising the study area since the last update.
2. Ascertain the sales which occurred inside the study area.
3. Remove sales in the study area which involve exempt properties.
4. Determine validity of DAMAR-reported market value data for non-exempt properties.
5. Create individual records for valid, non-exempt market value data points.

It would be expected that an annual updating cycle would identify 100-200 new sales data points each year. The most cost effective method of performing the steps outlined in the following sections would appear to be manual processing.

5.1.1 Identify Property Sales Since Last Update

The data base originally created for the Before and After study contains records based on property sales through 1987. To accomplish the first step in the updating process, property sales subsequent to year 1987 would need to be obtained from the DAMAR Corporation. SCRTD is a subscriber to the DAMAR INCOMNET on-line real estate information service. Using this service, sales for any given time period can be obtained. The following parameters should be used in this process:

1. Use the commercial and industrial data base
2. COUNTY-STATE — LOS ANGELES CA
3. APN — (the following assessor's mapbooks make up the Before and After Study area: 5136, 5138, 5139, 5141, 5142, 5143, 5144, 5148, 5149, 5151, 5161, 5173, 5407, 5408, 5409 - a separate run should be made for each mapbook number)
4. DATE — 8801+

No additional search parameters are required. The results of these searches should be printed in the Detail Format. Using these criteria, all market value data points in 1988 in all Assessor's mapbooks comprising the study area will be identified. In subsequent updates, the time frame for the search can be adjusted by modifying the DATE criterion to reflect the date of the last updating performed.

5.1.2 Ascertain Sales Which Occurred in Study Area

The previous step identified sales occurring in complete Assessor's mapbook areas, a considerably larger geographic area than the Before and After Study area. The sales identified would need to be matched against the parcel numbers of properties in the study area.

The most updated version of the benefit assessment data base would be necessary to ensure that the most current parcel numbers would be matched with the list of property sales. Properties with recent sales which also matched the latest benefit assessment data base would be included as new records in the Before and After study data base. The latest information on these properties for parcel size, improvement square footage, situs address, and other information from the benefit assessment data base would need to be copied to the record from the benefit assessment data base.

5.1.3 Remove Data Points Involving Exempt Properties

By examining the land use data from the benefit assessment data base, exempt properties can be quickly identified. These are properties in which all improvement square footage is either residential (U_RESIDE), institutional/government (U_INSTGO) or non-profit (U_NONPRO) or properties in which the total parcel square footage is designated as institutional land (U_INSTLA). These properties should be removed from the data base.

5.1.4 Determine Validity of DAMAR-reported Market Value Data

The reported market value data for the data points which remain should be examined for validity. The reported sale code should be first examined to determine the reported validity of the information. Properties with sale code C or V can be included in the data base with high confidence. The assessed value of the property can be a second check on the reported market value, as discussed in Chapter 3. The Detail format printout will contain the assessed value for the property. Since the properties identified will have been sold recently, the reported market value should be close, if not identical to, the assessed value for the property. If there are major discrepancies between the reported market value and the assessed value for the property, the data point should be discarded.

5.1.5 Create Records for Validated Data Points

Once a final list of valid, non-exempt properties in the study area has been created, the remaining information needed to use the predictive models and perform the residuals analysis must be added to each record. Collection of updated information for the predictive models is discussed in the following

section. To conduct the residuals analysis, the distance to the nearest Metro Rail station would need to be calculated for each property and entered in the record for that property.

The sale price, sale code, sale date, reference and transaction document information from DAMAR would need to be manually entered for each record. Because the previous sale information would already have been processed in the development of the original Before and After Study data base, prior market value data is not of concern in the updating process. Remaining parcel identifiers for the property, including redevelopment area/subarea, SCAG zone, LAPD zone and benefit assessment district designation would need to be manually entered for each property. At the completion of this process, the new records can be added to the existing Before and After Study data base.

5.2 COLLECTING UPDATED INFORMATION FOR PREDICTIVE MODELS

Once the basic data for each property has been entered, predicted market values can be developed for each property using the predictive model applicable to the property characteristics (e.g., financial district office property, Union Station industrial property etc.). In order to run these models, the variables associated with each property for which a market value is to be predicted and reflected in the applicable model must be updated to reflect current conditions. For instance, if the key determinants of property value for office properties in the financial district were determined to be: height, office vacancy rate, average distance from the freeway and parking cost, then those fields would need to be updated for every office property in the financial district. Because different models will be developed for differing land uses and geographic subareas, the variables which must be updated for each property will vary depending on the predictive model to be used. A complete list of the variables which must be continuously updated and recurring sources of information required will be determined and provided in the documentation of Task 7 of the Before and After study.

5.3 CALCULATE PREDICTED PROPERTY VALUE AND CONDUCT RESIDUALS ANALYSIS

The final step in the updating cycle will involve application of the predictive models and residuals analysis using the procedures which will be provided in the documentation of Task 7 of the Before and After study.

```
REGRESSION VARIABLES LOGSALE LOGCALC /STATISTICS R ANOVA COEFF CI
/DEPENDENT LOGSALE /METHOD FORWARD /RESIDUALS.
```

Page 4 SPSS/PC+ 8/16.88

* * * * MULTIPLE REGRESSION * * * *

Listwise Deletion of Missing Data

Equation Number 1 Dependent Variable.. LOGSALE

Beginning Block Number 1. Method: Forward

Page 5 SPSS/PC+ 8/16/88

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. LOGSALE

Variable(s) Entered on Step Number
1.. LOGCALC

Multiple R	.98876
R Square	.97764
Adjusted R Square	.97758
Standard Error	.09635

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	158.32250	158.32250
Residual	390	3.62159	.00929

F = 17049.44322 Signif F = .0000

Page 6 SPSS/PC+ 8/16/88

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. LOGSALE

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
LOGCALC	.98323	7.53009E-03	.96843	.99803	.98876
(Constant)	.10093	.04302	.01634	.18551	

---------- in ----------

Variable	T	Sig T
LOGCALC	130.574	.0000
(Constant)	2.346	.0195

End Block Number 1 All requested variables entered.

Page 7 SPSS/PC+ 8/16/88

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. LOGSALE

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	3.7862	8.4674	5.6825	.6363	392
*RESID	-.3179	.3102	.0000	.0962	392
*ZPRED	-2.9801	4.3765	.0000	1.0000	392
*ZRESID	-3.2984	3.2192	.0000	.9987	392

Total Cases = 392

Outliers - Standardized Residual

Case #	*ZRESID
197	-3.29841
239	-3.29509
385	3.21921
386	3.21421
119	3.19425
327	3.18056
178	-3.16458
329	3.14748
107	3.04578
166	3.00762

Histogram - Standardized Residual

```
MExp N     (* = 3 Cases,    . : = Normal Curve)
4  .30   Out *
6  .60  3.00 **
1 1.53  2.67 .
3 3.50  2.33 ***!
4 7.15  2.00 *.
3 13.1  1.67 *  .
5 21.5  1.33 **    .
8 31.6  1.00 ***       .
8 41.6   .67 *****        .
8 49.1   .33 ***************:
8 51.9   .00 ***************:::::::::::::::::::::::::::::::::::::::::::::::::::::
8 49.1  -.33 ***************:::::::::::
8 41.6  -.67 *******      .
9 31.6 -1.00 ***       .
8 21.5 -1.33 ***    .
7 13.1 -1.67 **  .
3 7.15 -2.00 *.
3 3.50 -2.33 *
2 1.53 -2.67 *
5  .60 -3.00 **
2  .30   Out *
```


Normal Probability (P-P) Plot
Standardized Residual

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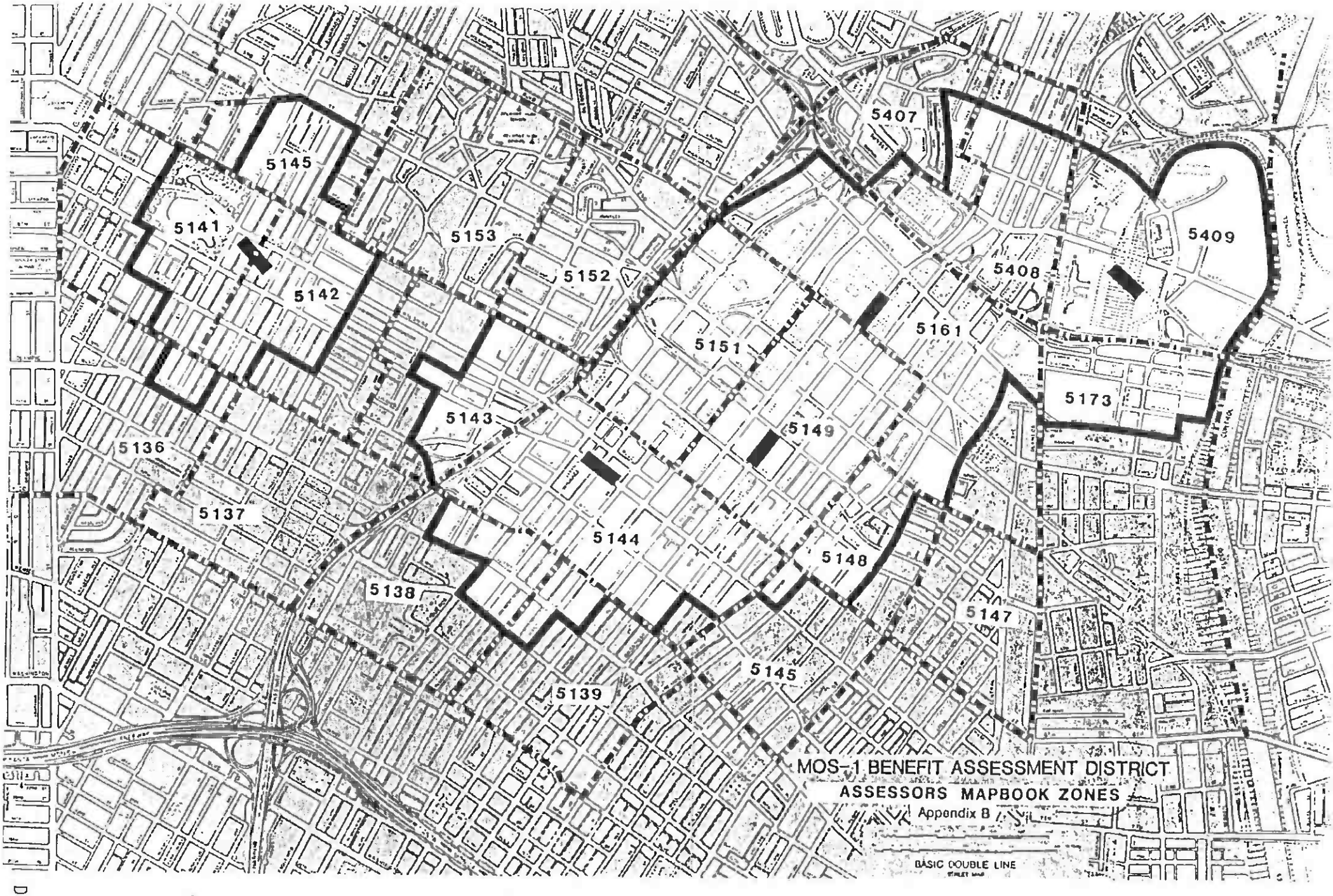
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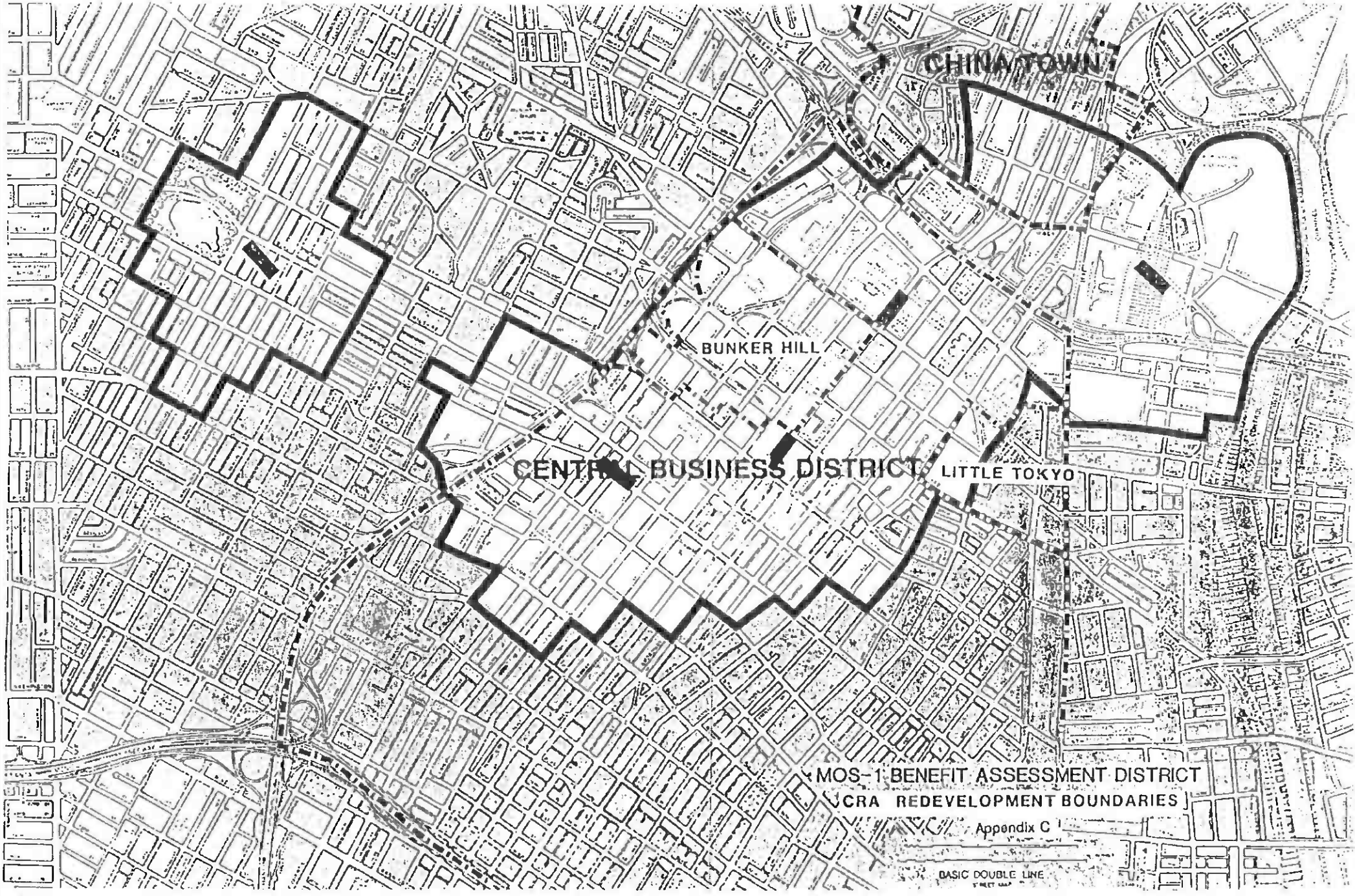
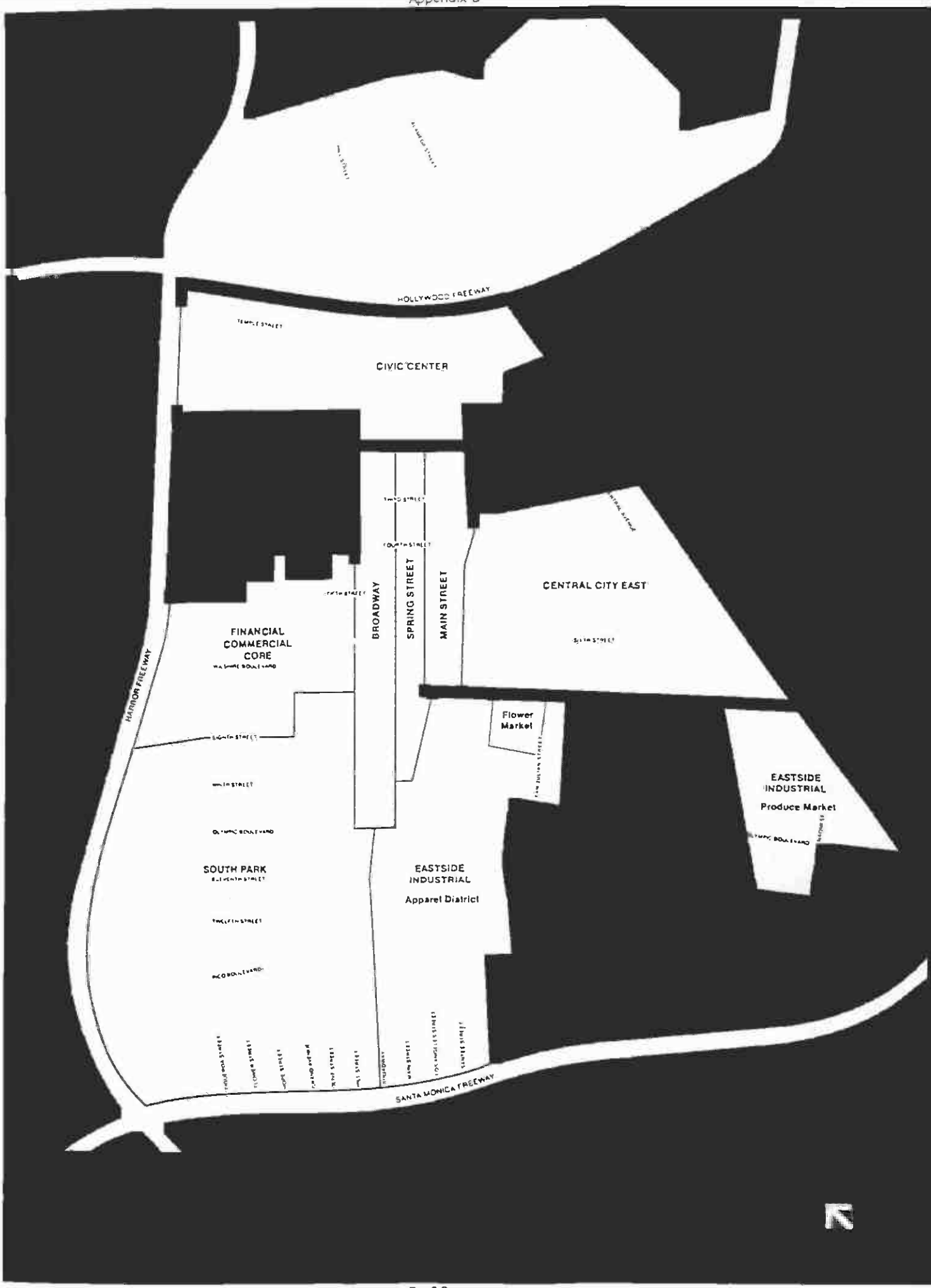
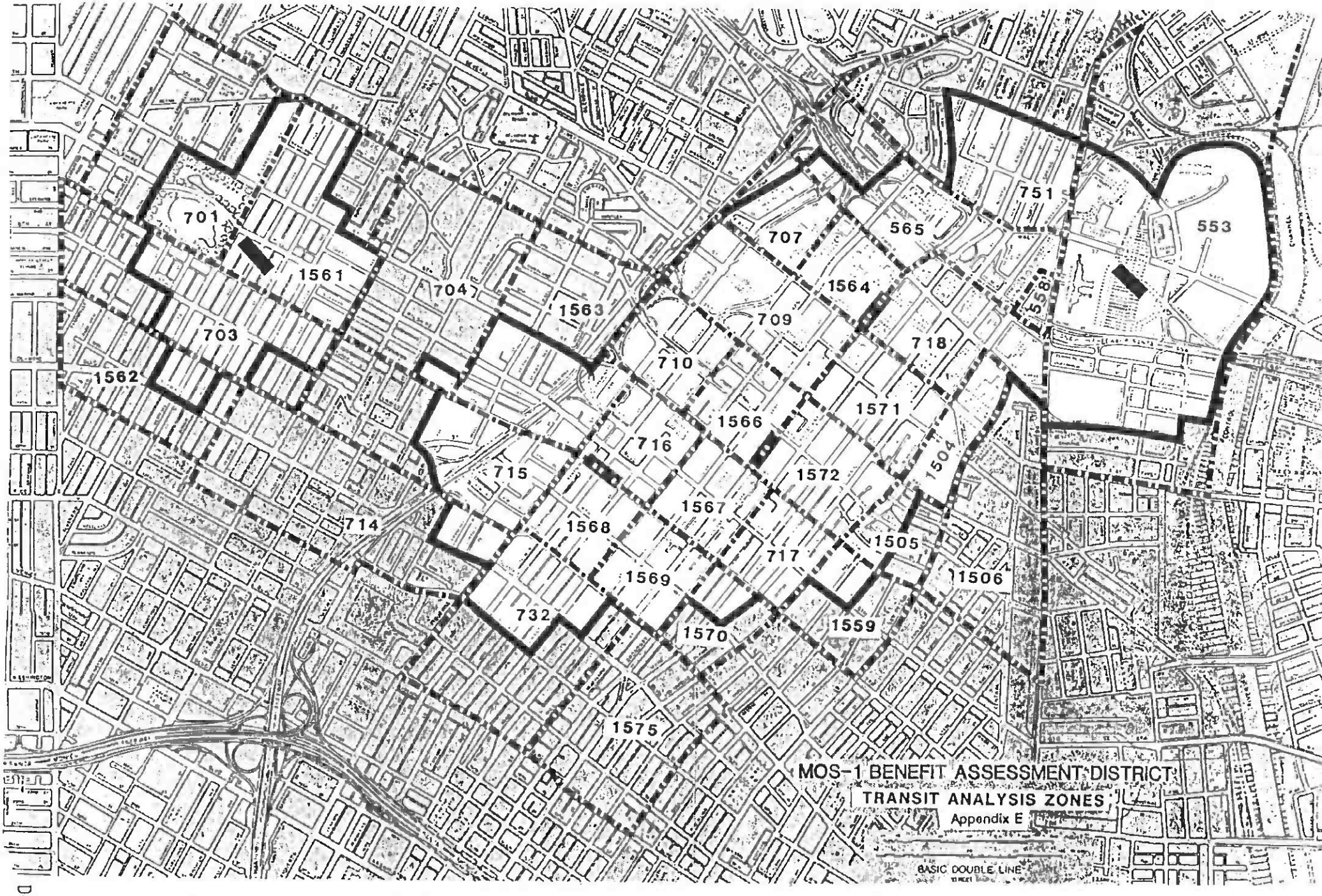
MOS-1 BENEFIT ASSESSMENT DISTRICT
ASSESSORS MAPBOOK ZONES
Appendix B
BASIC DOUBLE LINE


CHINATOWN
BUNKER HILL
CENTRAL BUSINESS DISTRICT
LITTLE TOKYO
MOS-1 BENEFIT ASSESSMENT DISTRICT
CRA REDEVELOPMENT BOUNDARIES
Appendix C
BASIC DOUBLE LINE


HOLLYWOOD FREEWAY
CIVIC CENTER
BROADWAY
SPRING STREET
MAIN STREET
CENTRAL CITY EAST
FINANCIAL COMMERCIAL CORE
HARBOR FREEWAY
Flower Market
EASTSIDE INDUSTRIAL
Produce Market
SOUTH PARK
EASTSIDE INDUSTRIAL
Apparel District
SANTA MONICA FREEWAY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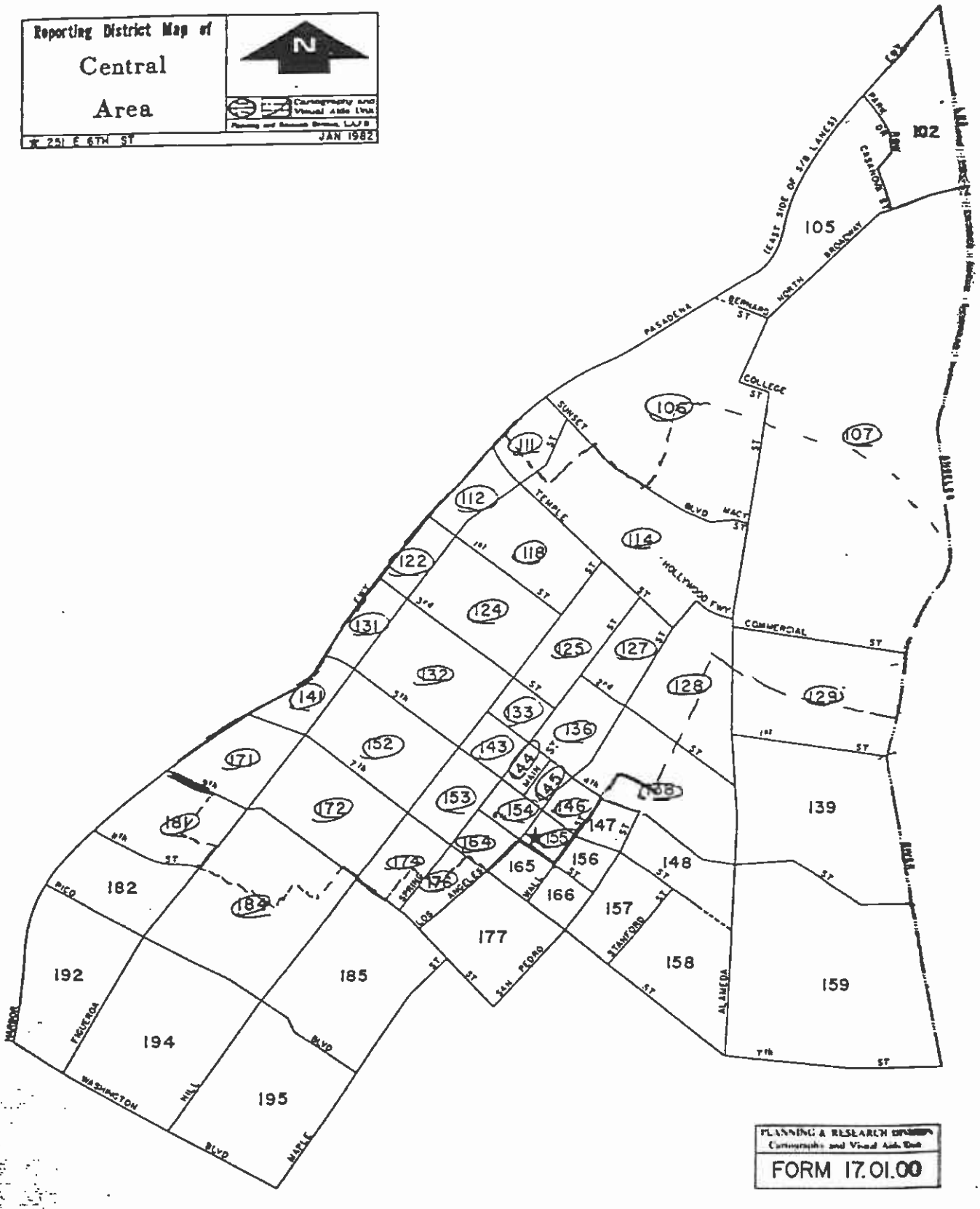
MOS-1 BENEFIT ASSESSMENT DISTRICT
TRANSIT ANALYSIS ZONES
Appendix E
BASIC DOUBLE LINE


Reporting District Map of
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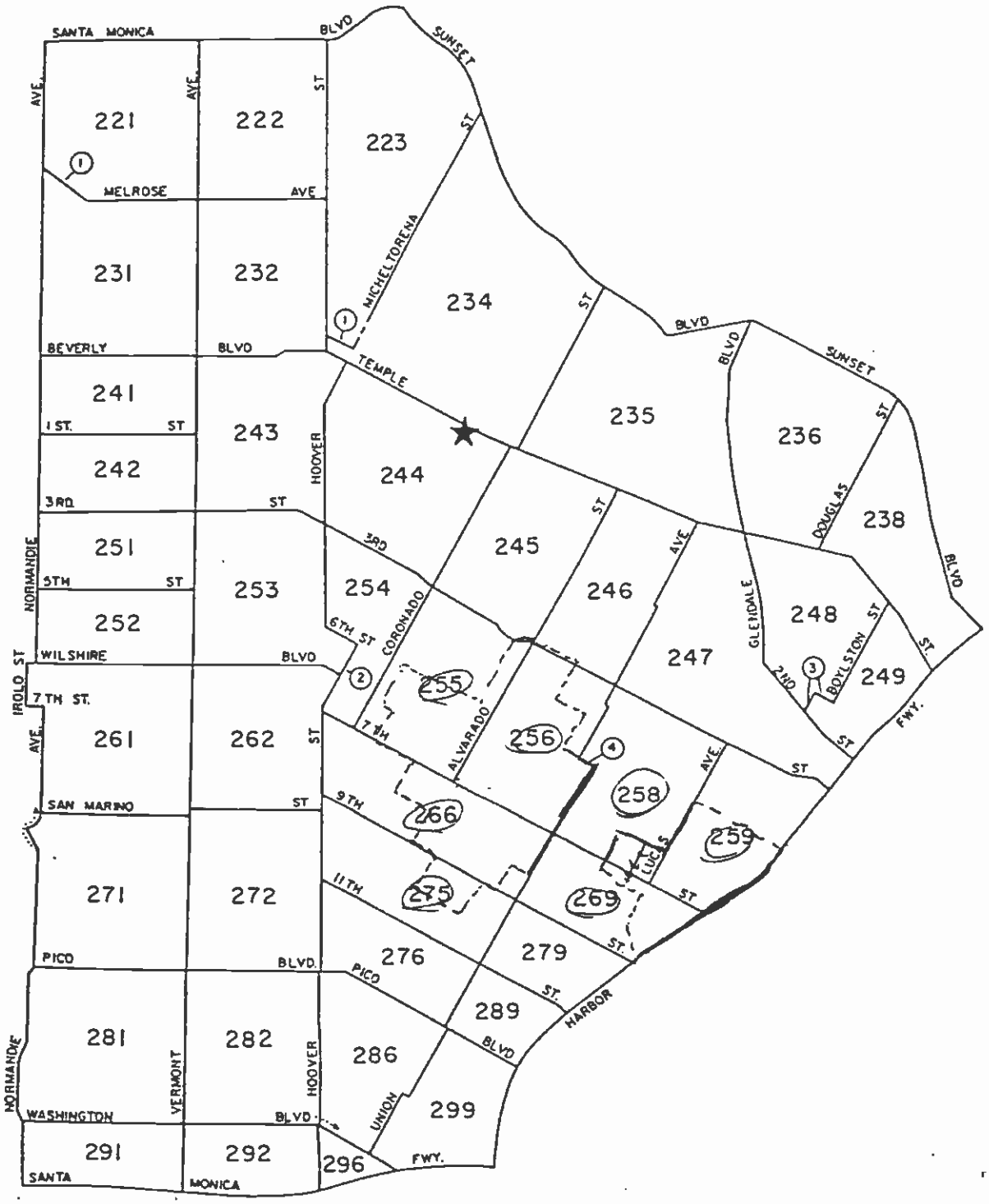
PASADENA
SUNSET
TEMPLE
HOLLYWOOD FWY
COMMERCIAL
MAIN
SAN PEDRO
STAMFORD
ALAMEDA
PICO
MAPLE
BLVD
HILL
PLANNING & RESEARCH
FORM 17.01.00

Reporting District Map of

Rampart

Area



PLANNING & RESEARCH DIVISION
Cartography and Visual Aids Unit

FORM 17.02.00

ESTIMATED NUMBER OF WAGE AND SALARY WORKERS BY INDUSTRY (A)
LOS ANGELES-LONG BEACH METROPOLITAN STATISTICAL AREA
(LOS ANGELES COUNTY)
ANNUAL AVERAGE 1972-1984
(AMOUNT IN THOUSANDS)(B)

INDUSTRY	SIC CODE	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
TOTAL ALL INDUSTRIES		2898.1	3038.2	3082.5	3034.2	3119.2	3243.2	3443.2	3596.8	3622.4	3653.0	3544.4	3567.4	3735.8
TOTAL AGRICULTURAL (C)	01-09	8.0	8.6	8.8	9.8	10.3	10.3	11.9	12.3	12.1	12.0	11.7	11.6	12.3
AGRICULTURAL PRODUCTION	01-02	7.0	7.5	7.9	8.5	9.3	9.4	10.6	10.9	10.7	10.7	10.6	10.3	11.0
AGRICULTURAL SERVICES (D)	07-09	1.1	1.1	0.9	1.1	1.1	1.0	1.3	1.4	1.5	1.3	1.2	1.3	1.3
TOTAL NONAGRICULTURAL		2888.1	3029.6	3073.7	3024.6	3108.9	3232.9	3431.3	3584.5	3610.3	3641.0	3532.7	3555.8	3723.5
MINING	10-14	10.7	10.5	10.8	11.2	11.2	11.2	11.4	12.0	13.0	14.4	14.1	12.8	12.6
OIL & GAS MINING	13	9.0	8.8	9.3	9.7	10.0	10.0	10.1	10.7	11.7	13.2	13.0	11.7	11.4
OTHER MINING & QUARRYING	10,14	1.6	1.7	1.6	1.5	1.2	1.3	1.3	1.3	1.3	1.2	1.1	1.1	1.2
CONSTRUCTION (E)	15-17	97.2	103.6	99.1	89.0	89.9	96.2	105.5	116.7	119.1	118.7	100.0	96.8	109.0
GENERAL BUILDING CONTRACTOR	15	26.6	28.4	28.3	23.5	24.0	24.5	26.3	29.1	30.0	29.5	22.1	21.5	25.4
HEAVY CONSTRUCT CONTRACTORS	16	16.5	16.3	16.8	16.8	16.1	17.2	19.5	19.5	19.6	20.2	15.9	15.2	14.1
SPECIAL TRADE CONTRACTORS	17	54.2	58.9	56.0	48.7	49.9	54.4	59.7	68.0	69.5	69.0	62.0	60.0	69.5
MANUFACTURING	20-39	774.5	821.0	824.4	766.8	789.9	818.1	877.9	924.9	912.1	916.1	862.2	853.1	885.3
NONDURABLE GOODS	20-23,26-31	250.6	264.1	266.7	256.5	269.6	279.1	294.3	300.0	293.8	298.2	286.1	284.1	288.2
DURABLE GOODS	24-25,32-39	523.9	556.9	557.7	510.3	520.3	539.1	583.6	624.9	618.3	618.0	576.1	569.0	597.1
FOOD & KINDRED PRODUCTS	20	49.8	49.9	50.4	49.3	50.3	50.7	51.4	51.4	51.4	52.3	51.8	51.6	49.8
CAN, CURED, FROZ SEA FOODS	2091-2	5.6	5.8	6.7	5.7	6.1	6.0	5.4	5.4	5.5	5.8	5.5	5.7	4.8
MEAT PRODUCTS	201	9.4	9.3	9.9	10.2	9.5	9.0	8.9	8.0	7.2	6.3	5.8	6.0	5.6
DAIRY PRODUCTS	202	5.7	5.4	5.2	4.9	4.5	4.6	4.5	4.9	5.1	6.0	5.7	5.8	5.8
CAN,PRESRVD FRUIT & VEGTBL	203	3.3	3.3	3.3	3.5	3.7	3.8	4.1	4.1	4.2	4.5	5.0	5.4	4.9
GRAIN MILL PRODUCTS	204	3.1	3.0	2.9	2.9	2.9	3.0	3.1	3.1	3.1	3.1	2.9	2.8	2.5
BAKERY PRODUCTS	205	9.1	9.3	8.7	8.2	8.5	8.5	8.6	8.6	8.6	8.7	8.9	8.6	8.9
BEVERAGES	208	4.9	4.8	4.8	5.4	5.6	5.5	6.0	5.9	6.1	6.2	6.6	6.6	6.4
OTHR FOOD & KINDRED PRDDUCT	20 OTHER	8.8	9.1	8.9	8.6	9.4	10.3	10.8	11.5	11.6	11.7	11.3	10.7	10.9
TEXTILE MILL PRODUCTS	22	9.2	10.7	10.3	9.5	10.1	9.9	10.2	10.0	9.3	8.6	8.2	8.4	8.7
APPAREL & OTHER TEXTILE PROD	23	59.1	64.9	66.8	67.7	73.5	74.9	81.2	81.0	77.0	76.7	73.5	73.6	77.6
MEN'S & BOYS' FURNISHINGS	232	7.3	8.2	8.4	8.8	9.2	8.7	8.9	9.0	7.7	6.9	5.8	5.9	5.3
WOMEN'S & MISSES' OUTERWEAR	233	34.2	38.2	40.2	42.0	46.0	47.7	53.1	51.8	48.8	48.8	47.7	47.6	51.0
WOMEN & CHILDRENS UNDERGRMT	234	3.7	3.6	3.7	3.3	3.6	3.3	3.2	3.4	3.6	3.7	3.6	3.5	3.5
OTHR APPAREL & TEXTILE PROD	23 OTHER	13.9	14.8	14.3	13.8	14.6	15.2	16.1	16.8	17.0	17.3	16.5	16.7	17.8
PAPER & ALLIED PRODUCTS	26	16.4	16.5	16.4	15.2	16.3	16.6	16.7	17.7	17.3	17.8	17.3	17.2	18.2
MISC CONVERTED PAPER PRODS	264	7.0	7.1	7.2	6.8	7.1	7.2	7.4	8.0	7.7	7.9	8.2	8.1	8.7
PAPERBOARD CONTAINERS & BOX	265	7.3	7.4	7.0	6.5	7.2	7.4	7.6	7.8	7.6	7.5	7.0	7.0	7.5
OTHR PAPER & ALLIED PRODUCT	26 OTHER	2.1	2.1	2.2	2.0	2.0	1.9	1.7	2.0	2.1	2.4	2.2	2.1	2.0
PRINTING & PUBLISHING	27	41.1	43.3	43.3	42.5	44.3	48.4	50.2	52.6	54.0	54.8	53.3	53.6	55.2
NEWSPAPERS	271	12.9	12.8	12.4	11.7	12.9	13.3	14.2	15.0	15.2	15.4	15.1	15.0	16.0
OTHR PRINTING & PUBLISHING	27 OTHER	28.2	30.5	31.0	30.7	31.4	33.1	36.0	37.6	38.8	39.2	38.2	38.6	39.3

ESTIMATED NUMBER OF WAGE AND SALARY WORKERS BY INDUSTRY (A)
LOS ANGELES-LONG BEACH METROPOLITAN STATISTICAL AREA
(LOS ANGELES COUNTY)
ANNUAL AVERAGE 1972-1984
(AMOUNT IN THOUSANDS)(B)

INDUSTRY	SIC CODE	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
CHEMICALS & ALLIED PRODUCTS	28	27.1	28.5	28.9	28.2	26.0	27.5	28.1	28.9	28.8	29.9	27.8	27.0	27.4
INDUSTRIAL INORGANIC CHEMS	281	2.3	2.3	2.5	2.4	2.5	3.1	3.1	3.0	2.9	2.8	2.2	2.2	2.5
PLASTIC MATERAL & SYNTHETIC	282	2.1	1.9	1.9	1.7	1.8	2.0	1.9	2.1	1.7	1.9	1.9	1.8	1.9
DRUGS	283	5.3	5.9	6.2	4.9	4.3	4.8	4.7	5.4	5.8	6.0	5.8	6.0	5.8
SOAP, CLEANERS, TOILET GOOD	284	8.7	8.9	9.3	8.6	9.0	9.6	9.8	9.5	9.7	10.3	9.7	8.5	8.6
PAINTS & ALLIED PRODUCTS	285	4.3	4.4	4.1	3.9	3.9	3.9	4.2	4.4	3.8	3.8	3.4	3.5	3.8
OTHR CHEMICAL & ALLIED PROD	28 OTHER	4.5	5.1	4.9	4.7	4.5	4.2	4.5	4.5	4.8	5.1	4.9	5.1	4.7
PETROLEUM & COAL PRODUCTS	29	13.6	13.5	13.3	12.8	12.7	12.7	13.2	13.2	13.4	14.9	14.6	13.6	12.8
PETROLEUM REFINING	291	11.2	11.4	11.3	11.0	10.8	10.7	11.1	11.0	11.0	12.5	12.2	11.3	10.8
OTHR PETROLEUM & COAL PRODS	29 OTHER	2.4	2.2	2.1	1.8	1.9	1.9	2.1	2.2	2.4	2.3	2.4	2.3	2.1
RUBBER & MISC PLASTIC PROD	30	28.9	30.9	30.9	26.5	28.8	31.9	33.5	35.2	33.8	33.9	31.3	31.6	32.1
FOOTWEAR & FABRICATED PRODS	302,6	4.2	4.9	5.4	4.8	5.0	5.5	5.4	5.3	5.0	4.8	4.8	5.1	5.5
MISCELLANEOUS PLASTIC PRODS	307	18.4	19.7	19.3	17.0	20.4	21.9	25.0	27.3	27.2	28.1	25.6	25.7	25.9
OTHR RUBBER & PLASTIC PRODS	30 OTHER	6.3	6.3	6.1	4.7	3.4	4.6	3.1	2.7	1.6	1.0	0.9	0.8	0.7
LEATHER & LEATHER PRODUCTS	31	5.6	6.0	6.6	6.8	7.8	8.5	9.7	9.9	8.9	9.6	8.3	7.5	6.3
LUMBER & WOOD PRODS EXC FUR	24	11.2	11.5	10.3	9.3	10.6	11.8	13.0	13.1	12.4	11.5	9.2	9.7	10.8
MILWORK, PLYWOD, STRUCTURAL	243	4.0	4.2	3.8	3.3	4.0	4.3	4.5	4.7	4.6	4.6	3.8	4.0	4.7
OTHER LUMBER & WOOD PRODUCT	24 OTHER	7.2	7.4	6.5	6.0	6.6	7.5	8.5	8.4	7.8	6.9	5.4	5.7	6.1
FURNITURE & FIXTURES	25	29.2	33.2	31.8	28.1	31.0	34.3	38.1	39.6	37.1	37.9	32.8	34.1	38.0
HOUSEHOLD FURNITURE	251	21.9	24.9	23.5	20.6	22.4	24.1	26.3	27.1	24.5	24.4	20.5	21.4	23.6
OTHR FURNITURE & FIXTURES	25 OTHER	7.2	8.3	8.4	7.4	8.6	10.3	11.8	12.5	12.6	13.6	12.3	12.8	14.4
STONE, CLAY, & GLASS PRODUCT	32	23.6	25.0	25.1	23.1	24.2	24.1	25.0	24.7	23.4	22.6	19.8	18.9	19.5
STRUCTURAL CLAY PRODUCTS	325	2.4	2.3	2.4	2.0	2.0	2.0	2.0	1.5	1.3	1.3	1.1	1.0	0.7
POTTERY & RELATED PRODUCTS	326	4.2	4.8	5.2	4.9	5.3	5.2	5.1	4.9	4.5	4.3	3.2	2.8	2.8
CONCRETE, GYPSUM, PLASTER	327	4.9	4.8	4.5	3.7	4.0	4.0	4.5	4.7	4.6	4.4	3.8	3.6	4.2
OTHR STONE, CLAY, GLAS PROD	32 OTHER	12.1	13.1	13.1	12.5	13.0	12.9	13.4	13.6	13.0	12.6	11.8	11.4	11.8
PRIMARY METAL INDUSTRIES	33	24.9	26.1	26.3	23.5	22.6	24.2	25.9	27.5	26.0	25.4	22.4	20.8	21.4
IRON & STEEL FOUNDRIES	332	3.6	3.9	4.5	4.1	3.6	3.8	4.3	4.6	4.4	4.4	4.2	3.4	3.5
NONFERROUS ROLLING & DRAW	335	7.9	7.7	6.7	5.8	5.7	6.2	6.6	7.3	7.2	6.7	5.4	5.6	5.4
NONFERROUS FOUNDRIES	336	4.8	5.4	5.4	4.7	5.3	5.5	6.1	6.7	6.5	6.8	6.4	6.5	6.8
OTHR PRIMARY METALS	33 OTHER	8.5	9.2	9.8	8.8	8.0	8.8	9.0	8.9	7.9	7.5	6.4	5.4	5.6
FABRICATED METAL PRODUCTS	34	69.2	74.5	74.0	67.2	70.8	73.8	80.6	84.6	80.5	78.2	69.7	69.1	72.7
CUTLERY, HANDTOOL, HARDWARE	342	10.6	12.0	11.2	9.5	10.6	11.2	11.5	12.2	9.7	8.6	7.3	6.9	7.2
FABRICATED STRUCTURAL PRODS	344	17.2	18.2	17.6	16.9	17.7	18.5	20.7	20.9	19.1	19.0	17.2	17.1	18.2
SCREW MACHINE PRODS, BOLTS	345	6.1	6.6	7.3	6.3	5.8	6.1	7.7	8.8	10.1	10.2	8.4	7.7	8.0
FORGINGS & STAMPINGS	346	8.3	9.1	9.3	8.5	8.8	9.3	10.0	9.7	9.6	9.4	8.9	9.1	9.7
METAL SERVICES, NEC	347	9.6	11.1	11.2	10.1	11.1	11.3	12.7	13.7	13.3	13.0	11.8	12.3	13.0
OTHR FABRICATED METAL PRODS	34 OTHER	17.3	17.6	17.5	15.9	16.8	17.4	18.1	19.3	18.7	18.0	16.1	15.8	16.6

ESTIMATED NUMBER OF WAGE AND SALARY WORKERS BY INDUSTRY (A)
LOS ANGELES-LONG BEACH METROPOLITAN STATISTICAL AREA
(LOS ANGELES COUNTY)
ANNUAL AVERAGE 1972-1984
(AMOUNT IN THOUSANDS)(B)

INDUSTRY	SIC CODE	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
MACHINERY EXC ELECTRICAL	35	70.8	79.9	84.8	76.2	73.6	75.5	83.1	90.4	91.7	88.9	81.4	76.2	76.4
CONSTRUCTION & RELATED	353	9.1	10.4	11.2	9.2	9.3	9.6	10.5	11.4	10.9	10.9	9.3	6.1	5.9
METALWORKING	354	10.1	11.6	12.0	10.7	10.6	11.1	12.2	12.9	12.2	11.2	9.7	9.4	10.3
GENERAL INDUSTRIAL	356	9.8	10.6	11.1	10.3	10.3	10.4	11.5	12.2	12.5	12.2	10.9	9.8	10.1
OFFICE, COMPUTING, ACCOUNT	357	21.0	23.1	23.9	21.3	18.4	18.1	19.5	21.4	21.9	22.9	23.8	23.9	22.6
OTHER MACHINERY EXC ELECT	35 OTHER	20.8	24.2	26.3	24.6	25.0	26.3	29.5	32.5	34.2	31.7	27.7	27.1	27.4
ELECTRICAL EQUIP & SUPPLIES	36	100.2	107.5	108.0	102.4	108.0	112.2	122.9	131.5	134.8	139.3	139.1	141.4	150.7
INDUSTRIAL APPARATUS	362	5.3	5.7	6.1	5.8	6.6	7.4	8.1	7.7	7.5	7.1	6.5	6.2	6.9
HOUSEHOLD APPLIANCES	363	5.3	5.3	4.2	2.8	3.7	4.0	4.0	3.9	3.4	3.4	3.0	3.1	2.9
LIGHTING & WIRING EQUIP	364	10.1	11.1	10.4	9.0	9.9	11.0	12.3	13.5	13.1	13.6	12.1	12.4	13.2
RADIO & TV RECEIVING EQUIP	365	9.0	9.6	9.6	9.4	10.1	10.6	11.3	10.5	10.1	9.8	8.1	7.2	7.1
COMMUNICATION EQUIP	366	50.8	53.6	54.1	55.0	55.5	55.4	61.3	67.8	71.9	75.7	79.7	81.1	84.8
ELECT COMPONENTS & ACCESS	367	14.5	18.2	17.4	14.6	15.9	17.4	18.8	20.1	20.5	21.8	22.8	24.4	27.1
OTHER ELECT EQUIP & SUPPLY	36 OTHER	5.1	6.0	6.3	5.9	6.3	6.4	7.1	8.0	8.2	8.0	6.9	7.1	8.8
TRANSPORTATION EQUIPMENT	37	150.9	153.3	150.3	136.4	132.7	136.2	143.7	160.7	160.4	161.9	152.1	150.9	157.9
MOTOR VEHICLES & EQUIP	371	22.4	24.0	19.8	17.3	22.7	25.1	27.2	26.8	18.3	19.2	18.7	18.9	20.3
AIRCRAFT & PARTS	372	106.0	106.9	105.4	93.9	84.2	85.3	91.2	108.4	116.1	114.0	105.3	104.0	110.4
SHIP & BOAT BLDG & REPAIR	373	4.1	3.9	5.3	5.5	4.8	4.5	5.3	6.2	5.7	7.0	7.1	6.6	5.5
GUIDED MISS. SPACE VECH	376	15.0	14.3	16.1	16.1	16.0	15.3	14.1	15.3	17.4	19.4	19.2	19.6	19.9
OTHER TRANSPORTATION EQUIP	37 OTHER	3.4	4.2	3.8	3.6	5.1	5.9	5.9	4.0	2.8	2.3	1.8	1.8	1.8
INSTRUMENTS & RELATED PRODS	38	23.4	25.0	27.1	24.7	26.0	25.8	28.2	30.5	31.8	31.2	28.2	26.9	28.7
MEASURING & CONTROLLING	382	10.6	11.7	12.4	10.8	11.3	10.9	11.8	12.0	12.2	12.1	11.1	10.7	11.3
OTHR INSTRUMNT RELATED PROD	38 OTHER	12.8	13.3	14.7	13.9	14.7	15.0	16.5	18.5	19.6	19.1	17.2	16.1	17.4
MISCELLANEOUS MANUFACTURING	39	20.7	20.8	20.2	19.3	20.9	21.1	23.0	22.5	20.3	21.0	21.3	20.9	21.1
TOYS & SPORTING GOODS	394	9.0	8.9	8.4	8.3	9.1	8.9	9.3	9.0	8.2	8.5	9.3	8.5	8.4
OTHR MISC MANUFACT INDUSTY	39 OTHER	11.7	11.9	11.8	11.0	11.8	12.1	13.8	13.5	12.1	12.5	12.1	12.5	12.7
TRANSPORT & PUBLIC UTILITIES	40-49	171.4	177.3	177.2	170.7	173.5	177.4	187.8	198.3	200.8	201.4	197.2	195.1	197.6
TRANSPORTATION	40-47	100.6	105.1	106.1	100.2	103.6	107.3	115.1	121.6	121.1	117.4	111.5	111.3	116.9
COMMUNICATION SERVICES	48	53.4	53.9	53.0	52.8	52.7	52.8	55.3	58.6	61.2	64.9	66.2	63.4	59.7
ELECTRIC SERVICES	49	17.4	18.3	18.1	17.8	17.2	17.3	17.5	18.2	18.4	19.1	19.5	20.4	20.9
WHOLESALE & RETAIL TRADE	50-59	648.8	680.9	692.5	690.7	713.6	742.7	787.9	814.1	816.9	820.7	803.7	812.6	866.3
WHOLESALE TRADE	50-51	195.5	209.3	218.8	216.5	225.6	236.1	253.4	264.9	267.6	267.1	261.5	264.3	282.2
RETAIL TRADE	52-59	453.3	471.7	473.7	474.2	487.9	506.7	534.4	549.2	549.4	553.6	542.2	548.3	584.1
FINANCE, INS AND REAL ESTATE	60-67	177.9	184.1	186.6	184.3	188.4	198.0	212.0	224.2	234.6	239.3	234.1	238.3	251.0
FINANCE	60-62	81.0	84.2	86.7	85.8	88.0	93.0	101.0	108.4	115.1	119.5	118.6	122.9	128.1
INSURANCE CARRIER, AGT & BRKS	63-64	63.2	64.1	63.9	62.6	63.7	65.6	67.8	69.0	70.8	71.3	68.3	65.7	67.3
REAL ESTATE	65	30.6	32.3	32.3	31.9	32.5	35.5	39.0	42.2	43.4	42.7	41.2	43.1	48.3
COMB, HDLDING & OTHR INVEST	66-67	3.1	3.6	3.8	4.1	4.1	4.0	4.2	4.6	5.3	5.8	6.0	6.6	7.3
SERVICES	70-69	571.1	610.1	624.9	633.9	662.2	706.2	761.1	811.7	831.0	855.0	853.0	882.3	934.2

ESTIMATED NUMBER OF WAGE AND SALARY WORKERS BY INDUSTRY (A)
LOS ANGELES-LONG BEACH METROPOLITAN STATISTICAL AREA
(LOS ANGELES COUNTY)
ANNUAL AVERAGE 1972-1984
(AMOUNT IN THOUSANDS)(B)

INDUSTRY	SIC CODE	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
GOVERNMENT (F)		436.5	442.1	458.0	478.1	480.2	483.1	487.9	482.8	482.9	475.3	468.5	464.9	467.7
FEDERAL		67.3	67.1	70.2	69.7	67.6	66.8	67.6	68.1	71.2	67.8	68.0	68.2	69.1
STATE & LOCAL		369.2	375.0	387.9	408.4	412.8	416.2	420.3	414.7	411.7	407.6	400.5	396.7	398.6
COUNTY		76.0	78.4	80.3	84.5	82.9	78.9	80.7	79.2	81.1	77.6	72.7	71.7	73.1
CITY		74.3	74.5	74.6	78.3	76.8	76.3	76.1	70.5	70.0	70.7	70.5	70.8	71.8
EDUCATION		183.7	186.7	197.7	207.2	213.9	220.6	222.2	224.2	218.7	216.9	214.9	210.1	208.7
OTHER STATE & LOCAL		35.3	35.3	35.3	38.5	39.1	40.4	41.2	40.8	42.0	42.4	42.3	44.1	45.0

GENERALIZED SUMMARY OF ZONING REGULATIONS

City of Los Angeles

NOTE: THIS SUMMARY IS ONLY INTENDED TO BE A GUIDE; DEFINITIVE INFORMATION SHOULD OBTAINED FROM THE DEPARTMENT OF BUILDING AND SAFETY.

ZONE	USE	MAXIMUM HEIGHT STORIES	MAXIMUM HEIGHT FEET	REQUIRED YARDS FRONT	REQUIRED YARDS SIDE	REQUIRED YARDS REAR	MINIMUM AREA PER LOT	AREA PER DWELLING UNIT	MINIMUM LOT WIDTH	PARKING REQUIRED
AGRICULTURAL										
A1	AGRICULTURAL One-Family Dwellings-Parks Playgrounds Community Centers Golf Courses-Truck Gardening-Extensive Agricultural Uses	3	45 Ft.	20% lot depth 25 Ft. max.	25 Ft. Maximum 10% Lot Width 3 Ft. minimum	25% lot depth 25 Ft. max.	5 Acres	2½ Acres	300 Ft.	Two Spaces Per Dwelling Unit
A2	AGRICULTURAL A1 Uses	3	45 Ft.				2 Acres	1 Acre	150 Ft.	
RA	SUBURBAN Limited Agricultural Uses One-Family Dwellings				10 Ft.,- plus 1 Ft.,- 3 Stories- less than 70 Ft. width 10% lot width 3 Ft. min.		17,500 Sq. Ft. (1)	17,500 Sq. Ft. (1)	70 Ft. (1)	Two Covered Spaces Per Dwelling Unit
ONE FAMILY RESIDENTIAL										
RE40	RESIDENTIAL ESTATE One-family Dwellings Parks Playgrounds Community Centers Truck Gardening	3	45 Ft.	20% lot depth 25 Ft. Max.	10 Ft. min. plus 1 Ft.- 3 stories	25% lot depth 25 Ft. Max.	40,000 Sq. Ft (1)	40,000 Sq. Ft. (1)	80 Ft. (1)	Two Covered Spaces Per Dwelling Unit
RE20							20,000 Sq. Ft. (1)	20,000 Sq. Ft. (1)	80 Ft. (1)	
RE15					10 Ft. max. 10% Lot width 5 Ft. min.- plus 1 Ft. 3 stories		15,000 Sq. Ft. (1)	15,000 Sq. Ft. (1)	80 Ft. (1)	
RE11					5 Ft., less than 50 Ft. width 3 Ft. Min.		11,000 Sq.Ft. (1)	11,000 Sq.Ft. (1)	70 Ft. (1)	
RE9							9,000 Sq.Ft. (1)	9,000 Sq.Ft. (1)	65 Ft. (1)	
RS	SUBURBAN One-family Dwellings- Parks- Playgrounds- Truck Gardening	3	45	20% lot depth 25 Ft. Max.	5 Ft., less than 50 Ft. 10% Lot Width 3 Ft. Minimum	20 Ft. Min.	7,500 Sq. Ft.	7,500 Sq. Ft.	60 Ft.	Two covered spaces per dwelling unit
R1	ONE-FAMILY DWELLING RS Uses			20% lot depth 20 Ft. Max.	Plus 1 Ft. 3 stories	15 Ft. Min.	5,000 Sq. Ft.	5,000 Sq. Ft.	50 Ft.	
RZ 2.5	RESIDENTIAL ZERO SIDE YARD			10 Ft. Min.	None(3) or 3 Ft. plus 1 Ft.- 3 stories	None(3) or 15 Ft.	2,500 Sq. Ft.	2,500 Sq. Ft.	30 Ft. with driveway, 25 Ft. w/o driveway	
RZ 3	Dwelling across not more than five lots (2)						3,000 Sq. Ft.	3,000 Sq. Ft.	20 Ft.- Flag curved or cul-de-sac	
RZ 4	Parks- Playgrounds						4,000 Sq. Ft.	4,000 Sq. Ft.		
RZ 5							5,000 Sq. Ft.	5,000 Sq. Ft.		
RW1	ONE-FAMILY RESIDENTIAL WATERWAYS ZONE	2	30 Ft.	10 Ft. Min.	10% width 3 Ft. Minimum	15 Ft. Min.	2,300 Sq. Ft.	2,300 Sq. Ft.	28 Ft.	

(1) "H" Hillside or Mountainous Area designation may alter these requirements in the RA-H or RE-H Zones, subdivisions may be approved with smaller lots, providing larger lots are also included. Each lot may be used for only one single-family dwelling. See minimum width and area requirements below.

ZONE COMBINATION	MINIMUM TO WHICH REF AREA MAY BE REDUCED	MINIMUM TO WHICH LOT WIDTH MAY BE REDUCED
RA-H	15,000 Sq. Ft.	65 Ft.
RE9-H	7,200 Sq. Ft.	60 Ft.
RE11-H	8,800 Sq. Ft.	65 Ft.
RE15-H	12,000 Sq. Ft.	72 Ft.
RE20-H	15,000 Sq. Ft.	72 Ft.
RE40-H	32,000 Sq. Ft.	No Reduction

(2) See Section 12.08 B 1 of the Zone Code.
(3) See Section 12.08 C4 of the Zone Code.

CP-7150 (5/84)

INDUSTRIAL

ZONE	USE	MAXIMUM HEIGHT STORIES	MAXIMUM HEIGHT FEET	REQUIRED YARDS FRONT	REQUIRED YARDS SIDE	REQUIRED YARDS REAR	MINIMUM AREA PER LOT/UNIT	MINIMUM LOT WIDTH	LOADING SPACE	PARKING REQUIRED
	INDUSTRIAL									
MR1	RESTRICTED INDUSTRIAL Uses first permitted in CM Zone-Limited Commercial and Manufacturing Uses, Clinics, Limited Machine Shops, Animal Hospitals and Kennels	Unlimited (6)		5 Ft. for lots 100 Ft. in depth or less, 15 Ft. for lots over 100 Ft. in depth	None for Industrial or Commercial Buildings Residential Uses-Same as in R3 Zone (5)	None for Industrial or Commercial Buildings Residential Uses-Same as in R3 Zone Yards provided at lowest residential story (5)	Same as R4 for watchman or caretaker dwellings (5)		Institutions, and with every building where lot abuts on alley Minimum Loading Space 500 Sq. Ft. Additional space required for buildings containing more than 50,000 Sq. Ft. of Floor Area	One space for each 500 Sq. Ft. of floor Area in all buildings on any lot. Must be located within 750 Ft. of building.
MR2	RESTRICTED LIGHT INDUSTRIAL MR1 Uses-Addition Industrial Uses, Mortuaries, Agriculture									
M1	LIMITED INDUSTRIAL CM Uses-Limited Industrial and Manufacturing Uses-No "A" Zone Uses, No Hospitals Schools or Churches or any enclosed CZ Uses									
M2	LIGHT INDUSTRIAL M1 and MR2 Uses-Additional Industrial Uses, Storage Yards of All Kinds, Animal Keeping - No "A" Zone Uses			None	Residential Uses-Same as in R3 Zone (5)		Same as R3 (5)		None Required for apartment buildings 20 Units or Less	
M3	HEAVY INDUSTRIAL M2 Uses-Any Industrial Uses - Nuisance Type - 500 Ft. from any Other Zone - No "A" Zone Uses				None	None	None			

PARKING

P	AUTOMOBILE PARKING-SURFACE AND UNDERGROUND Land in a "P" Zone may also be classified in "A" or "R" Zone Parking Permitted in lieu of Agricultural or Residential Uses			10 Ft. front where any combination of an 'A' or 'R' Zone with 'P' Zone			None Unless also in an "A" or "R" Zone			
PB	PARKING BUILDING Automobile Parking within without A Building "P" Zone Uses	MAXIMUM PB ZONE HEIGHTS: No. 1 Stories and Over; No. 2 2 Stories; No. 3 3 Stories; No. 4 4 Stories; No. 5 5 Stories; No. 6 6 Stories		0 Ft., 5 Ft. or 10 Ft. depending on zoning frontage and zoning across street	5 Ft. plus 1 Ft. each story above 2nd if abutting or across street and frontage in "A" or "R" Zone	5 Ft. plus 1 Ft. each story above 2nd if abutting an "A" or "R" Zone	None None			

SPECIAL

TENTATIVE CLASSIFICATION
(T) Used in Combination with Zone Change Only-Delays Issuance of Building Permits until Subdivision or Parcel Map Recorded or other conditions met as required by City Council.

QUALIFIED CLASSIFICATION
(Q) Further restrictions on Property; used in Combination with Zone Changes Only (Except with RA, RE, RS or R1 Zones) Restricts Uses of Property and Assures Development Compatible with the Surrounding Property

DEVELOPMENT LIMITATION CLASSIFICATION
(D) Restricts absolute building heights, floor area ratio, percent of lot coverage and building setbacks

SUBMERGED LAND ZONE
(SL) Commercial Shipping
Navigation
Fishing
Recreation

FUNDED IMPROVEMENT CLASSIFICATION
(F) An Alternative means of Effecting Zone Changes and Securing Improvements (When No Subdivision or Dedications are Involved)

SUPPLEMENTAL USE DISTRICTS

SUPPLEMENTAL USE DISTRICTS:
Established in Conjunction with Zone(s)

O- Surface Mining
O- Oil Drilling
RPD- Residential Planned Development
K- Equine Keeping
CA- Commercial and Artcraft

CP-7150 (5/84)

COMMERCIAL

ZONE	USE	MAXIMUM HEIGHT STORIES	MAXIMUM HEIGHT FEET	REQUIRED YARDS FRONT	REQUIRED YARDS SIDE	REQUIRED YARDS REAR	MINIMUM AREA PER LOT/UNIT	MINIMUM LOT WIDTH	LOADING SPACE	PARKING REQUIRED
CR	LIMITED COMMERCIAL Banks, Clubs, Hotels, Churches, Schools, Business and Professional, child care, parking areas, RA uses	6	75 Ft.	10 ft. min.	10 ft. 10 % lot width, 5-ft. min. for corner lots; same as RA for residential uses or adjoining an "A" or "R" Zone	15 ft. plus 1 ft. each story above 3rd	Same as RA for Residential purposes Otherwise None	40 Ft. Comm. Use; 50 Ft. Use; residential use	Hotels, institutions, and with every building where lot abuts an alley Minimum Loading Space 400 Sq. Ft.	One space per 500 Sq. Ft. of floor area within all buildings on any lot.
C1	LIMITED COMMERCIAL Local retail stores Offices or Businesses, Hotels, Hospitals and/or Clinics, Parking Areas-CR uses except churches, schools and museums R3 Uses	Unlimited (6)			Same as R3 for corner lots, or residential uses or adjoining an "A" "R" Zone	15 ft. plus 1 ft. each story above 3rd, 20 ft. max. Residential Use or abutting an "A" or "R" Zone.	Same as R3 for Residential purposes, except 5,000 Sq.Ft. per unit in C1-M Zones Otherwise None		Additional Space required for Buildings containing more than 30,000 Sq. Ft. of floor area. None required for apartment buildings 30 units or Less.	One space per 200 Sq. Ft. of total floor area of medical service facilities.
C1.5	LIMITED COMMERCIAL C1 Uses-Department Stores, Theatres, Broadcasting Studios, Parking Buildings, Parks and Playgrounds RA uses.					Yards provided at lowest residential story. Otherwise None	Same as RA for Residential purposes Otherwise None			

ZONE	USE	MAXIMUM HEIGHT STORIES	MAXIMUM HEIGHT FEET	REQUIRED YARDS FRONT	REQUIRED YARDS SIDE	REQUIRED YARDS REAR	MINIMUM AREA PER LOT/UNIT	MINIMUM LOT WIDTH	LOADING SPACE	PARKING REQUIRED
C2	COMMERCIAL C1.5 Uses-Retail Businesses with Limited Manufacturing, Auto Services Station and Garage, Retail Contractors Businesses, Churches, Schools, RA uses.	Unlimited (6)			None for Commercial buildings Residential uses-same as in RA Zone Yards provided at lowest residential story.		Same as RA for Residential purposes Otherwise None	40 ft. Comm. Use; 50 Ft. residential use	Hospitals, Hotels, Institutions, and with every building where lot abuts on alley Minimum Loading Space 400 Sq. Ft. Additional Space Required for Buildings containing more than 30,000 Sq. Ft. of floor area. None required for buildings 30 units or less.	One space per 500 sq. ft. of floor area within all buildings on any lot. One space per 200 Sq. Ft. of total floor area of medical service facilities.
CS	COMMERCIAL C2 Uses-(With Exceptions, such as Auto Service Stations, Amusement Enterprises, Hospitals Second-Hand Businesses) RA Uses									
C3	COMMERCIAL C2 Uses-Limited Floor Areas for Light Manufacturing of the CM-Zone Type, RA uses									
CM	COMMERCIAL MANUFACTURING Wholesale Business, Storage Buildings, clinics, Limited manufacturing, C2 Uses-Except Hospitals, Schools, Churches, R3 Uses				None for Industrial or Commercial buildings Residential Uses-same as in RA Zone		Same as R3 for Residential purposes Otherwise None			

MULTIPLE RESIDENTIAL

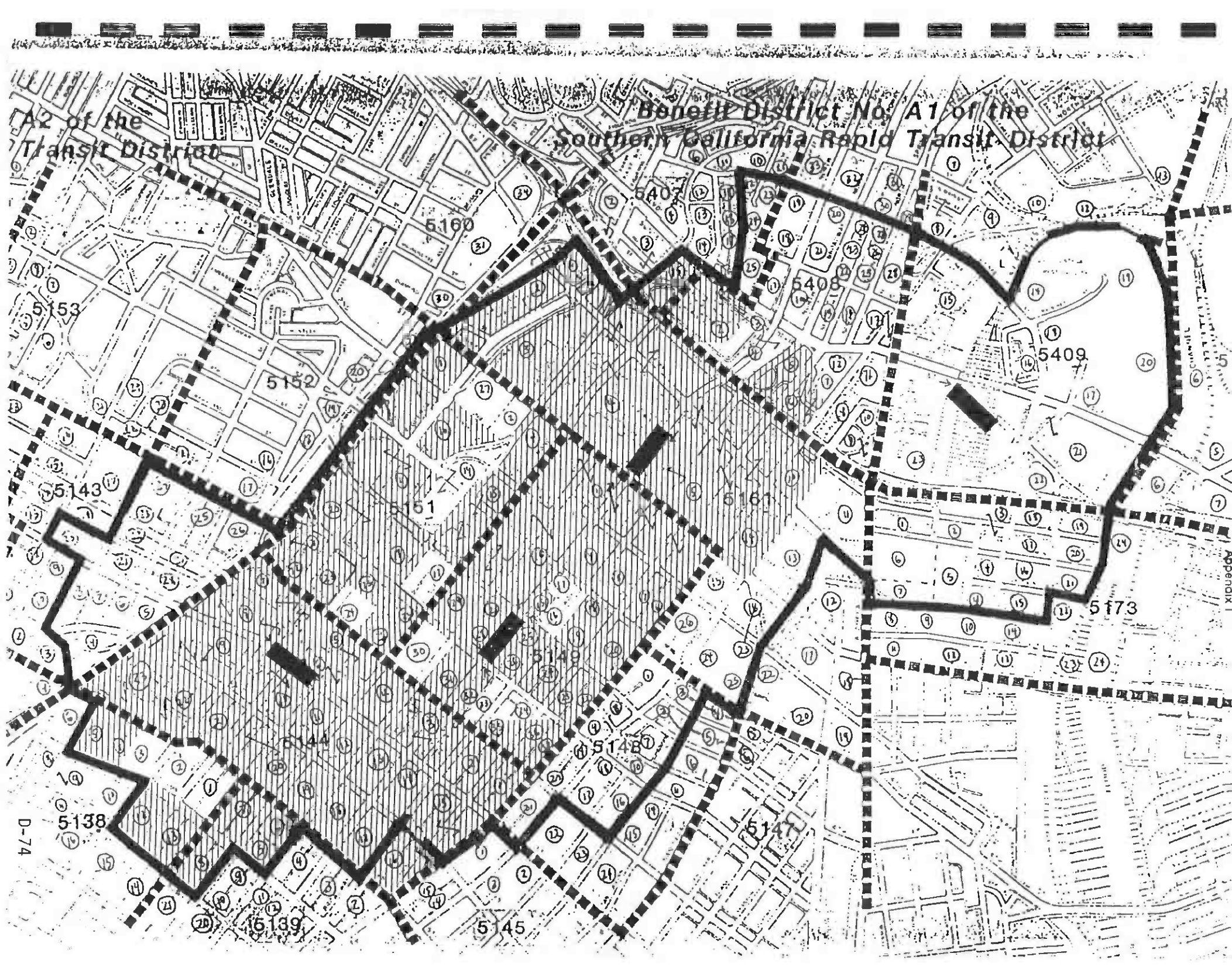
ZONE	USE	MAXIMUM HEIGHT		REQUIRED YARDS			MINIMUM AREA		MINIMUM LOT WIDTH	PARKING REQUIRED
		STORIES	FEET	FRONT	SIDE	REAR	PER LOT	PER DWELLING UNIT		
RW2	TWO-FAMILY RESIDENTIAL WATERWAYS ZONE	3	45 Ft.	10 Ft. Min.	10% Lot Width 3 Ft. Minimum plus 1 Ft. each story over 2nd [4]	15 Ft. min.	2,300 Sq. Ft.	1,150 Sq. Ft.	28 Ft.	Two covered Spaces per Dwelling Unit
R2	TWO-FAMILY DWELLING R1 Uses Two-family Dwellings	3	45 Ft.	20% lot depth 20 Ft. Max.	5 Ft., less than 50 Ft.; 10% Lot width 3 Ft. Min. plus 1 Ft. 3 stories	15 Ft. min.	5,000 Sq. Ft.	2,500 Sq. Ft.	50 Ft.	Two Spaces One Covered
RD 1.5	RESTRICTED DENSITY MULTIPLE DWELLING ZONE Two-family Apartment Houses Multiple Dwellings	Height District No. 1 3 Stories 45 Ft.		15 Ft. Min.	5 Ft., less than 50 Ft. 10% lot width 3 Ft. min. plus 1 Ft. each story over 2. 16 Ft. Max.	15 Ft. Min.	5,000 Sq. Ft.	1,500 Sq. Ft.	50 Ft.	One space each dwelling unit or less than three rooms, one and one-half spaces each dwelling unit of three rooms, two spaces each dwelling of more than three rooms, one space each guest room [First thirty].
RD2								2,000 Sq. Ft.		
RD3		Height District Nos. 2, 3 or 4 6 Stories 75 Ft.			5 Ft. or 10% lot width 10 Ft. Max.		6,000 Sq. Ft.	3,000 Sq. Ft.	60 Ft.	
RD4							8,000 Sq. Ft.	4,000 Sq. Ft.		
RD5	Restricted Density (Continued)	Height District No. 1 3 stories 45 Fc.		20 Ft. Min.	10 Ft. Min.	25 Ft. Min.	10,000 Sq. Ft.	5,000 Sq. Ft.	70 Ft.	
RD6							12,000 Sq. Ft.	6,000 Sq. Ft.		
R3	MULTIPLE DWELLING R2 Uses Apartment Houses Multiple Dwellings Child Care [20 Max.]	Height District Nos. 2, 3 or 4 6 Stories 75 Ft.		15 Ft., key lots 10 Ft. min.	5 Ft., less than 50 Ft. 10% lot width, 3 Ft. min., plus 1 Ft. each story above 2nd. 16 Ft. Max.	15 Ft. Min.	5,000 Sq. Ft.	800 to 1,200 Sq. Ft.	50 Ft.	One space each dwelling unit or less than three rooms, one and one-half spaces each dwelling unit of three rooms. Two spaces each dwelling of more than three rooms
R4	MULTIPLE DWELLING R1 Uses- Churches- Schools- Child care	Unlimited [6]				15 Ft. plus 1 Ft. each story above 3rd. 20 Ft. Max.		400 to 800 Sq. Ft.	50 Ft.	one space each guest room [First thirty]
R5	MULTIPLE DWELLING R4 Uses Clubs- Lodges Hospitals Sanitariums							200 to 400 Sq. Ft.		

[4] For two or more lots the interior side yards may be eliminated, but 4 Ft. is required on each side of the Grouped lots. See Section 12.08.5C of Zone Code.

[5] Sec. 12.17.5 B.9.(e) Dwellings considered as accessory to industrial use only [watchman or caretaker including family].

[6] HEIGHT DISTRICT

No. 1 — Floor Area of Main Building may not Exceed Three Times the Building Area of the Lot
No. 1L — Same as No. 1 and Maximum Height = 6 Stories or 75 Ft.
No. 1-VL — Same as No. 1 and Maximum Height = 3 Stories or 45 Ft.
No. 1-XL — Same as No. 1 and Maximum Height = 2 Stories or 30 Ft.
No. 2 — Floor Area of Main Building may not Exceed Six Times the Buildable Area of the Lot
No. 3 — Floor Area of Main Building may not Exceed 10 Times the Buildable Area of the Lot
No. 4 — Floor Area of Main Building may not Exceed 13 Times the Buildable Area of the Lot


Benefit District No. A1 of the
Southern California Rapid Transit District
A2 of the
Transit District
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Appendix

PARKING SURVEY DATA

PARCEL			NAME	ADDRESS	RATE/MIN	MAXIMUM	VALIDATIONS	MONTHLY RATE
5144	10	-10	Century Parking Inc.	748 S. Figueroa	$1.50/20	$10.00	$150/100	$100
		-9	Century Parking Inc.	757 S. Flower	$1.40/20	$11.20	$140/100	$105
								$130 Reserved
		-18	Century Parking Inc.	818 W. 7th. St.	$1.25/20	$10.00	$125/100	$150 Reserved
								$135
		-23	System Parking	700 S. Flower	$1.75/30	$15.00	N/A	
			Broadway Plaza					$165 Valet
								$105 Self
		-27	Ampco Parking	615 S. Figueroa	$1.25/20	$12.50	$125/100	$55
								$75
								$85
								$100
								$125
		-24	Ampco Parking	800 W. 6th. St.	$1.75/20	$17.50	$175/100	$120
								$140 Reserved
								$175 Valet
	6	-24	State Mutual Garage	626 Wilshire	$1.50/30	$15.00	No	No
		-19	Central Bank	655 S. Hope	$1.50/20	$15.00	$150/100	$140
		-25	Pacific Finance Center	600 Wilshire	$1.60/20	$16.00	$160/100	$135