

FLOOD CONTROL DISTRICT
OF
MARICOPA COUNTY

FLOOD CONTROL DISTRICT
OF
MARICOPA COUNTY

LIBRARY

HUD - R09-EIS-78-3F

Maryvale Terrace 53-A
Phoenix, Arizona

Final Environmental Statement

John F. Long Homes, Inc.
5035 West Camelback Road
Phoenix, Arizona 85063

March 1979

Prepared by:

Phoenix Service Office

U. S. Department of Housing and Urban Development
101 North First Avenue, Suite 1800
Phoenix, Arizona 85003
(602) 261-4434

ES-45

SUMMARY SHEET

Status: Final Environmental Impact Statement

Subject: Maryvale Terrace 53-A
Phoenix, Arizona

U.S. Department of Housing and Urban Development
101 North First Avenue, Suite 1800
Phoenix, Arizona 85003
(602) 261-4434

Name of Action: Administrative

Brief Description of Action: Development of a 141 acre subdivision which will encompass 618 living units. Project is located in Maricopa County at the southeast corner of North 83rd Avenue and West Camelback Road, Phoenix, Arizona.

Summary of Environmental Impacts: Will provide housing for approximately 2,100 people. The primary adverse environmental effect would be the loss of 141 acres of farm land. The demand for water for the developed subdivision will be less than the need for agricultural purposes. No significant impacts are expected in energy, air quality, noise, transportation or education, services, native plants or animals.

Alternatives Considered: No action, alternative sites and alternatives on the project site.

Written Comments were Received from the Following Agencies and Individuals:

Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity	145
Irreversible and Irretrievable Commitments of Resources	146
Recommended HUD Action on the Proposal	147
Comments on the Draft Environmental Impact Statement and HUD Responses	148
Advisory Council on Historic Preservation	149
U.S. Department of Agriculture, Soil Conservation Service	152
U.S. Department of the Army, Corps of Engineers	154
U.S. Environmental Protection Agency	155
U.S. Department of the Interior	162
Veterans Administration	168
Arizona State Parks	170
R. J. Becker	175

FIGURES AND TABLES

<u>I. FIGURES</u>	<u>PAGE NUMBER</u>
1. Maryvale Terrace 53-A Subdivision Plat	7
2. Local Setting	8
3. Regional Setting	9
4. Location of Grand Canal Within Area	30
5. Location of Salt River Project Substations (Existing and Future)	43
6. Salt River Project Service Area (Rate Area Map)	44
7. Continuous Monitoring Site Locations	68
8. Phoenix Primary Planning Area	69
9. 1975 Eight-Hour Average CO	70
10. 1980 Eight-Hour Average CO Contours w/o AQMP Strategies	71
11. 1985 Eight-Hour Average CO Contours w/o AQMP Strategies	72
12. 2000 Eight-Hour Average CO Contours w/o AQMP Strategies	73
13. 1980 Eight-Hour Average CO Contours w/I/M @ .3 Stringency Factor	74
14. Total Non-Methane Hydrocarbon Emissions With Individual Control Strategies	79
15. Total Non-Methane Hydrocarbon Emissions With Control Strategy Combinations	80
16. Isopleths of Predicted Eight-Hour CO Concentrations in ppm for 1985 with Implementation of Inspection/ Maintenance and Carpooling	81
17. Schools - Existing and Proposed	96
18. Elementary and Jr. High School Maps 1977-78	98
19. Phoenix Union High School System Map District No. 210	99
20. Maricopa County Catholic Schools	100

	<u>PAGE NUMBER</u>
21. Location of Future Penrod School Site	107
22. Phoenix, Arizona Fire Rating Zones	112
23. Maricopa County Parks and Recreation System Map	119
24. County Recreational Facilities	120
25. Regional Parks and Open Space	121
26. District Park Locations	122
27. Community Park - Existing Service Areas	123
28. Community Park - Proposed Sites	124
29. Neighborhood Parks Needs - 1985	125
30. Neighborhood Parks Needs - 1990	126
31. Mini-Park Sites	127
32. Existing Park Sites and Other Recreational Sites	128
33. Hiking and Riding Trails	129

II. TABLES

1. Altitude, Annual Temperature and Rainfall for Arizona Cities	36
2. Climate Comparison	37
3. Kilowatt Hour Use (Air Conditioning)	45
4. Appliance Ownership Data from Republic and Gazette Consumer Surveys	46-47
5. The Kilowatt Counter	48
6. Noise Prediction With 6' Walls and Noise Prediction Without Walls	60
7. Phoenix Continuous Monitoring Station Locations	66
8. Particulate Emissions from Major Sources	67
9. Maryvale Terrace Vehicle Travel Assumptions	75

	<u>PAGE NUMBER</u>
10. Traffic Emissions Associated with Maryvale Terrace Vehicles	76
11. Traffic Emissions in One Square Mile Grid Containing Maryvale Terrace	77
12. Carbon Monoxide Concentrations at Receptor Nearest Proposed Site	78
13. Carbon Monoxide - Highest Hourly Concentration	82
14. Carbon Monoxide - Highest Eight-Hour Average Concentration	83
15. Violations of the Eight-Hour Carbon Monoxide Standard of 10,000 ug/m ³ - 1977	84
16. Violations of the Total Oxidants	85
17. Summary of Control Strategies	86
18. Maryvale Terrace Vehicle Travel Assumptions	90
19. Metropolitan Bus Schedule - Route 58	91-92
20. Starlight Park School and Estrella Jr. High School	97
21. Recommended School Planning Standards	101
22. Cartwright School District - Student Enrollment and Staff Assignment	102
23. Cartwright School District #83 Project Facility Needs	103
24. Project Facilities Needs by Year	104-105
25. Anticipated Construction and Student Growth	106
26. Phoenix Fire Department Paramedic Program	113

DESCRIPTION OF PROPOSED ACTION

U. S. Department of Housing and Urban Development (DHUD) provides mortgage insurance to approved lenders for eligible homebuyers in the purchase of one-to-four family dwellings. This insurance assures the lender against losses on mortgages. Insuring of these mortgages by DHUD creates an availability of homes under a segment of the market for persons who otherwise would be unable to obtain housing.

The actions of this Environmental Impact Statement (EIS) is to enable the Phoenix Insuring Office to meet DHUD's statutory responsibilities concerning environmental matters. While DHUD has no control over decisions to build subdivisions, they are a party to the environmental consequences of this subdivision to the extent that the availability of DHUD mortgage insurance encourages the development. Therefore, this evaluation of cumulative impacts of past and future actions has been prepared to aid in attaining harmony between man and his environment and to determine whether or not to make their insurance program available within the Maryvale Terrace 53-A subdivision.

DESCRIPTION OF SUBDIVISION

Maryvale Terrace 53-A subdivision is located within the City of Phoenix in Maricopa County, Arizona. Phoenix, capital of the State of Arizona, lies 420 miles east of Los Angeles, California, in a valley surrounded by lowlying hills in the central part of the state.

The proposal is on the west side of the city and is bordered by two major arterial streets, Camelback Road to the north and 83rd Avenue to the west. It is nine miles from the downtown corridor, seven miles from the one existing freeway traversing the city and will be approximately three miles from a proposed freeway entering from the west.

The site covers 141 acres with a proposal of 618 units to be constructed; zoning is R1-6 which is a minimum of one single family unit per 6,000 square feet. The land was irrigated farm land for many years before the builder acquired the different segments comprising this subdivision between 1972 and 1976.

When an Environmental Impact Statement (EIS) is made on a project, processing of the first segment may begin and be completed prior to the completion of the EIS processing if the first segment would form a project which would be financially and functionally separate and complete, without regard to whether the total project is developed.

Maryvale Terrace 53-A met the criteria required to be eligible for this "early start" processing. This has enabled the developer to qualify for our mortgage insurance program for 199 units prior to completion of this EIS. Construction has now started on several of the

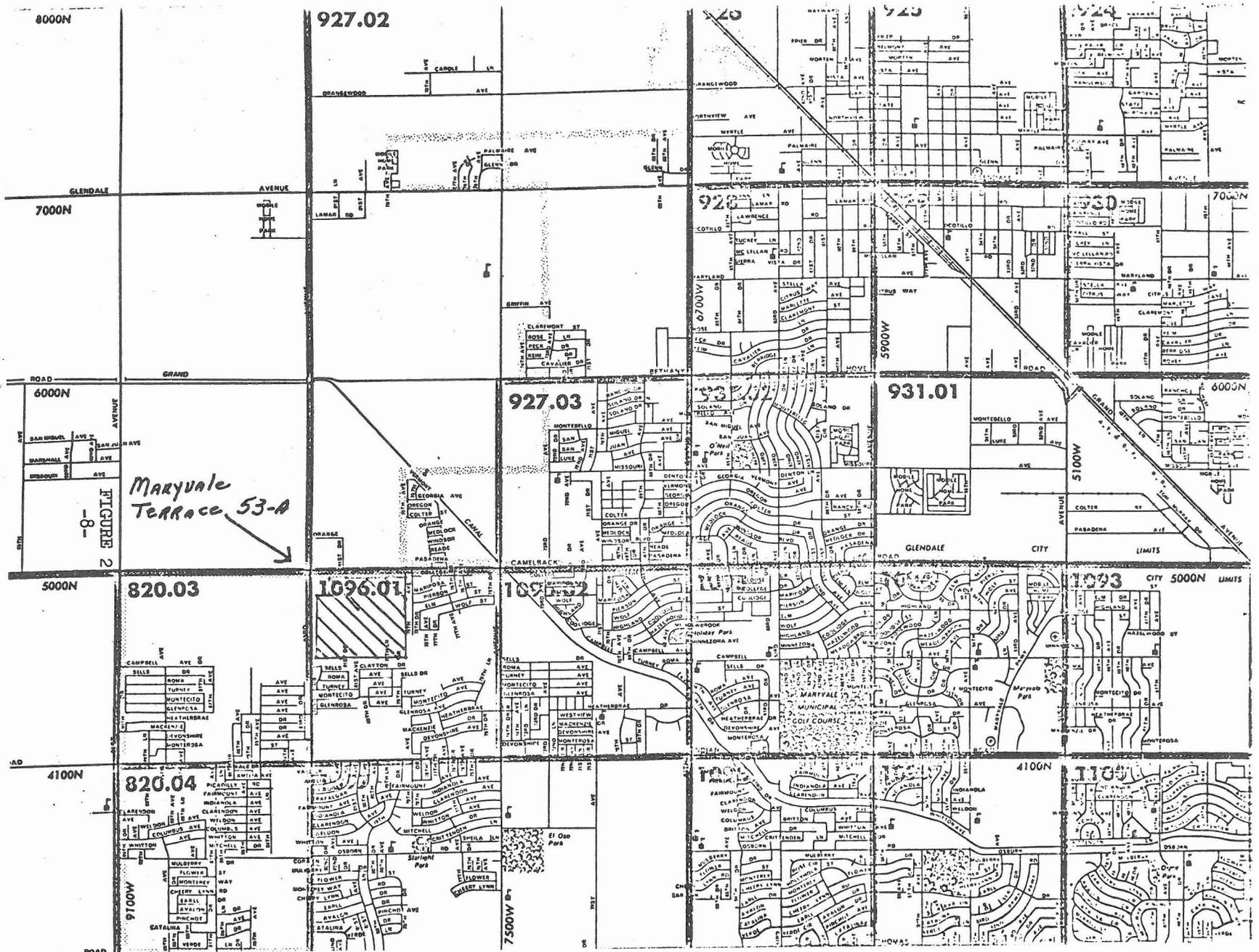
units.

The developer of this subdivision is John F. Long Homes, Inc. This developer is among the largest single family builders in Maricopa County and has had this distinction for many years.

SOURCES

Federal Register, Volume 43, No. 2 - Wednesday, January 4, 1978

DHUD Handbook 1390.1



MARYVALE
TERRACE 53-A

FIGURE 2
-8-

8000N

7000N

6000N

5000N

4100N

927.02

927.03

931.01

820.03

1096.01

1096.02

820.04

4100N

1109

GLENDALE AVENUE

GRAND AVENUE

ROAD

GRAND AVENUE

6000N

SAN MARCEL AVE

BARNSHALL AVE

BRIDGEMAN AVE

6000N

SAN JUAN AVE

SAN ANTONIO AVE

SAN ANTONIO AVE

5000N

CAMPBELL AVE

BELLS DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

4100N

4100N

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

931.01

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

4100N

1109

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

7000N

6000N

5000N

4100N

GLENDALE AVENUE

ROAD

6000N

SAN MARCEL AVE

BARNSHALL AVE

BRIDGEMAN AVE

5000N

CAMPBELL AVE

BELLS DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

4100N

4100N

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

931.01

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

4100N

1109

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

7000N

6000N

5000N

4100N

GLENDALE AVENUE

ROAD

6000N

SAN MARCEL AVE

BARNSHALL AVE

BRIDGEMAN AVE

5000N

CAMPBELL AVE

BELLS DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

4100N

4100N

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE

CLAYTON DR

ROMA AVE

TURKEY AVE

MONTICELLO AVE

GLENNVIEW AVE

MANTON AVE

SEVENSIDE AVE

MONTICELLO AVE

FAIRMOUNT AVE

INDIANOLA AVE

CLAREMONT AVE

WILSON AVE

COLUMBUS AVE

WHITTON AVE

MULBERRY AVE

FLORIAN AVE

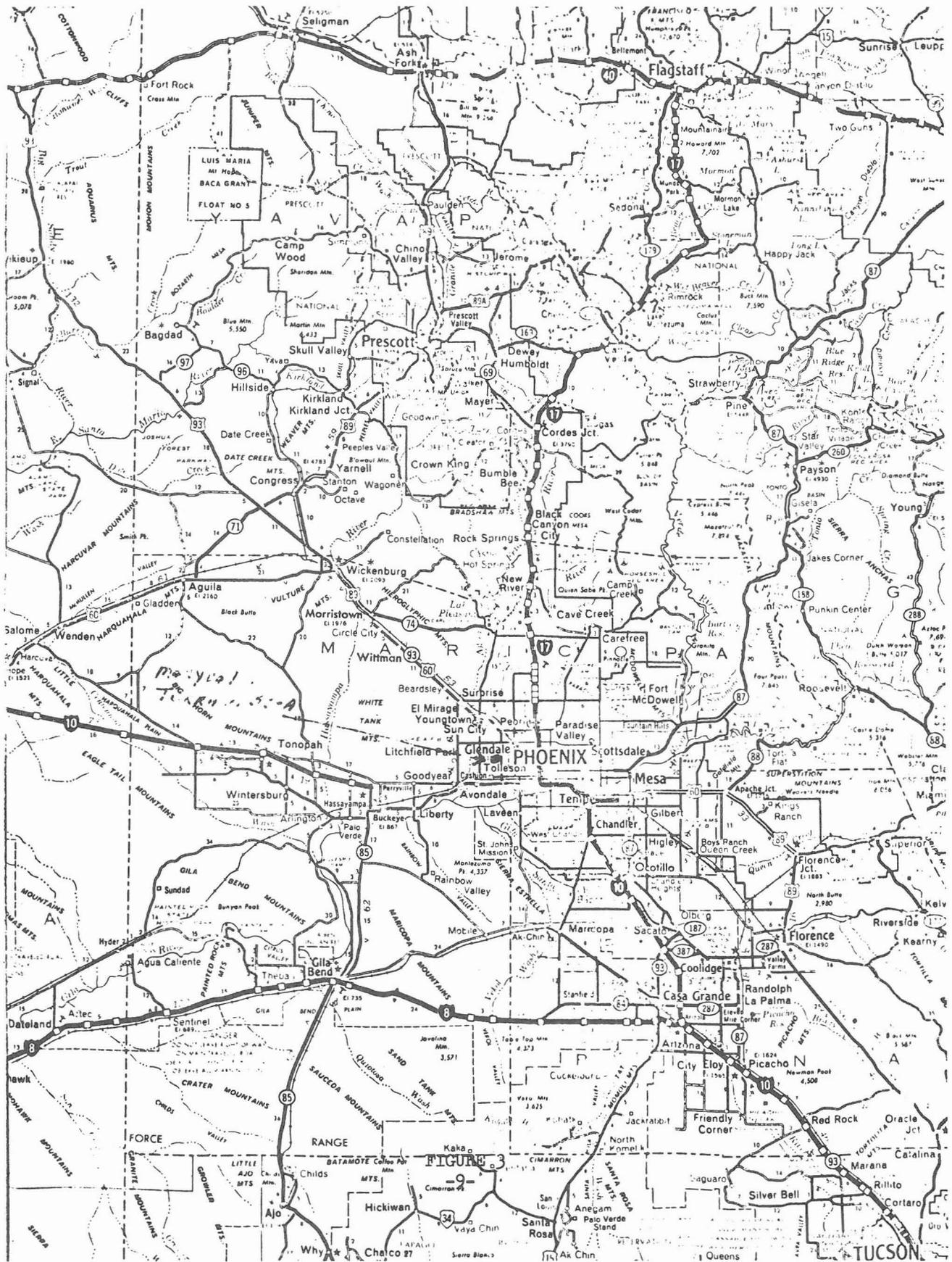
MONTICELLO AVE

CONROY AVE

LABELL AVE

AVENUE

VERDE AVE



ECONOMIC IMPACTS

The proposed subdivision project is located within Census Tract 1096 of the Phoenix, Arizona Standard Metropolitan Statistical Area (SMSA). The Tract is part of the City of Phoenix Maryvale Planning District. This District is considered to be the relevant submarket area within the broader Phoenix, Arizona Housing Market Area. A general description of the Phoenix Market Area is to be found in the Appendix.

The site consists of the Northwest quarter of the section of land bordered on the north by Camelback Road and on the west by 83rd Avenue. There are 141 acres to be developed into 618 single family detached units. Approximately 27% of the units will be two bedroom, 70% will be three bedroom, and 3% will be four bedroom. Prices will range from \$24,000 to \$35,000 (current dollars).

This proposal lies within the historic path of West Phoenix growth and represents contiguous rather than leap-frog development. The area is predominantly residential family in nature and appears to be compatible with the proposed development. Although agricultural land is interspersed with residential development in this District, the clear pattern of development is in the direction to residential conversion. No dislocation of existing families or demolition is contemplated.

In 1976, the median household income of the Maryvale Area was about \$13,800 per year. The overall County median income was \$13,100. Given the expected price range of the proposed housing development, it

would appear that such a project could be supported by household incomes in the \$9,600 to \$14,000 annual range. Based upon previous sales experience in the area, it is expected that nearly 60% of potential buyers will be first-time owners.

The 1975 Census indicates a total of 28,500 dwelling units in the Maryvale Planning District. The 2,700 dwelling units in Census Tract 1096 accounted for about 9% of the District housing stock. This Tract is typical of the district in relation to the proportion of owner-occupied units (70 to 80%). Nearly 70% of the single family units in the Maryvale area range in value from \$20,000 to \$35,000. About 75 to 80% of housing currently under construction are single family detached units. Metropolitanwide, the Phoenix area can expect to absorb at least 12,000 to 16,000 new single family residential units annually to meet housing needs generated by natural population increase and in-migration. Maryvale has, historically, absorbed 7% of total additions to the metropolitan new sales inventory. This would represent an absorptive potential of about 800 to 1,000 units annually. The project sponsor controls about 35% of the Maryvale single family housing market with six other major builders controlling the remainder.

Based upon the above annual absorption rates and the sponsor's share of the market, the proposed subdivision would likely be absorbed within 18 to 20 months. Currently, the number of units coming into production in the Maryvale area is less than maximum absorptive capacity. In the first half of 1977, only 346 single family units were

permitted compared to 329 units permitted in the first half of 1976. Evidence of production less than absorptive capacity is reflected in single family vacancy rates currently being under 2%. New sales are reported to be very active - about 20 sales per week.

With an estimated household size of 3.2 to 3.5 persons per dwelling unit, the project will generate a population base of 1,970 to 2,150 persons at full absorption. A population of 122,778 persons by 1985 for the Maryvale District is projected by the City of Phoenix. The 1975 population of the District was 92,778. The projection represents a 30,000 population increase (32%) over the 10-year period. This Maryvale growth will require the construction of about 8,600 housing units to accommodate the anticipated growth. The subject proposal represents only 7% of the anticipated housing requirement.

Commuting time is well within 45 minutes to major employment and shopping centers in the West Phoenix area. Employment centers in close proximity include Luke Air Force Base, Honeywell, Goodyear Aerospace, Nuclear Dynamics, Western Electric, Revlon Company and Reynolds Metals. Heavy industry along Grand Avenue and industrial parks along Buckeye Road provide good access to potential employment. Numerous convenience, neighborhood and regional shopping centers abound throughout the area.

Residents of the proposed development will generate about \$8.5 million in gross household income annually in current dollars. Most expenditures for consumer items will be spent within the Maryvale District and will represent only a slight increment to the Maryvale annual

household income of \$385 million.

Maryvale Terrace 53-A subdivision is located within School District No. 83 (Cartwright). Net assessed valuation, which is a crude measure of overall economic growth, increased from \$60.8 million in 1974 to \$70.3 million in 1976. This overall increase of 15.6% is about equal to the increase in overall tax rates experienced in this District from 1974 to 1976. The Cartwright School District reports that adequate physical facilities will be available to accommodate the anticipated increase in school children expected from the development.

Household heads will likely seek housing in close proximity to existing employment. Many of the residents in the Maryvale District work in the local area. White collar and skilled employees constitute the bulk of Maryvale employment. In 1970, about 43% of persons residing in Census Tract 1096 were employed in clerical, white collar, crafts and skilled labor categories. The overall county ratio was 32%.

An examination of the proposed subdivision in relation to its compatibility with area economic characteristics reveals that economic impacts of this project upon the area will be minimal. It also represents a continuation of existing residential development and appears compatible in relation to existing demographic and housing market characteristics. The economic conditions of the surrounding area do not appear to adversely affect the proposed project. The proximity to local sources of major employment and shopping centers and the availability of adequate school resources should have a salutary impact on

potential residents.

SOURCES

Arizona Republic/Phoenix Gazette
Inside Phoenix - 1977

Valley National Bank of Arizona
Annual Statistical Review for Arizona - September, 1976

City of Phoenix, Arizona
Urban Form Directions-Phase II - June, 1976

Arizona Tax Research Association
Arizona Property Tax Rate & Assessed Valuations - 1976 Supplement

City of Phoenix Planning Department
Schools in Phoenix - September, 1972

U. S. Department of Commerce
1970 Census of Population & Housing for the Phoenix, Arizona SMSA

SOILS

Soil properties on a parcel proposed for development are of concern because these properties affect the construction and future maintenance of buildings, streets and utility systems. Among the properties of soils commonly evaluated prior to construction are, strength compaction characteristics, shrink-swell potential, permeability and grain size.

Soil information included herein is from the report prepared by the consulting soils engineer (Construction Inspection and Testing Co., January 19, 1977) and data assembled by the U. S. Department of Agriculture, Soil Conservation Service (Soil Survey of Maricopa County, Arizona Central Part, September 1977).

The soils at the Maryvale Terrace 53-A subdivision were formed through time from alluminum deposited on alluvial fans, flood plains and terraces. The Soil Conservation Service (SCS) map indicates the presence of deep, well-drained moderately permeable, fine to coarse, sandy loam soils of the Gilman - Estrella - Avondale association and normally includes about 55 percent Gilman soils. According to the SCS "loam" is a soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

The water table is at such a depth below the land surface that there is no effect on housing projects. Similarly, the soils are deep enough over bedrock so that ordinary grading and construction for housing is not affected by rock materials.

Owing to the previous use of the land for agriculture, the near-surface soils will require reworking and recompaction to provide suitable bearing capacity for housing construction. Subsoils at shallow depths of 1.5 to 2.5 feet are reported to be appropriate for spread footings supporting single family houses.

Grading and trenching in the near-surface soil material should be possible with conventional equipment.

Shrunk-swell potential at final grade is expected to be low to moderate. This characteristic can be determined at the completion of rough grading. Heavy reinforcement of ground supported slabs and foundations is not anticipated as a result of shrunk-swell test results following the rough grading operation.

Legislation prohibiting or restricting housing construction because of special topographic features or soil conditions is not applicable to the Maryvale Terrace parcel.

The SCS indicates the Gilman - Estrella - Avondale association of soils will support vegetables, citrus and small grains among other crops. Accordingly, normal subdivision landscaping will be possible.

SOURCES

Construction Inspection Testing Company, January 19, 1977. Preliminary Soil Investigation Maryvale Terrace 53-A 83rd Avenue and Camelback Road, Phoenix, Arizona.

U. S. Department of Agriculture, Soil Conservation Service, "Soil Survey of Maricopa County, Arizona, Central Part," September 1977.

GEOLOGY

Geology is a science concerned with the earth materials below a normally thin surface soil veneer. All structures are dependent on the load supporting capability of either the soil horizon or the geologic materials which underlie them.

Phoenix is in a region described geologically as the Basin and Range province. This particular site is in the basin part which comprises broad, sloping to relatively flat valleys or plains from which rise a number of hills and mountains of only moderate height. The valleys and plains are underlain by alluvial deposits eroded from the higher areas. The alluvium ranges in size from clay to boulders and ranges in thickness to more than a thousand feet.

With respect to the geology, the land proposed for the Maryvale Terrace development appears favorable. The alluvial deposits below the thin soil mantle can be worked with conventional earth-moving equipment so grading and trenching problems are not anticipated. Bearing capacity of the subsurface geologic materials is adequate for the proposed construction.

At the Maryvale site the surface soils extend in depth to about 6 feet below existing grade. Sandy clays and silts are present just below the surface soils to the depth explored, which was about 9 feet. Alluvial deposits consisting mainly of clay, silt, sand and gravel extend to a depth in excess of 1,200 feet.

Certain geologic features can be of special interest for educational, aesthetic or scientific purposes. Examples of these could be

exotic rock outcrops or the probability of significant fossil occurrences, or the earth materials may be of value in themselves for construction or as a source of mineral deposits. Building construction is likely to foreclose the possibility for the use or the recovery of such deposits from the site in the future.

Mineral deposits of commercial value other than ground water are not known to exist. Isolated fossil occurrences or vertebrate remains are possible, but none are known to exist in the vicinity. The site geology is similar to that found throughout the Salt River Valley. Unique geologic features or valuable mineral resources are not of significant environmental concern in this proposed project.

Geologic structures such as the attitude of bedding planes, joints and geologic faults are normally discussed with the topic of geology because these may affect site layout, grading procedures, building locations or construction details. However, at the Maryvale Terrace site there are no known geologic structures of significance relative to the construction as planned. Geological faults capable of rupturing the land surface on the parcel are not believed to exist.

Surface rupture may result from land subsidence. This phenomenon is known to exist in the greater Phoenix Area and is believed to result in Arizona from the heavy production of ground water. Surface subsidence can cause distortions of the land with fissures or cracking and can lead to problems with fluid transport facilities such as drainage systems and canals. Surface subsidence has been identified in the area of the Maryvale Terrace parcel. The magnitude of the settlement at the

present time is not precisely known, but it is thought to be not more than a foot or so. This was reflected in 1970 by earth fissures in the general vicinity of Luke Air Force Base.

Land subsidence is a geologic hazard known to exist and one that could affect the use of the Maryvale Terrace parcel. (The reference here is to deep subsidence; that originating at same depth below the ground surface and caused by the withdrawal of water from the subsurface natural reservoir and leading to a sinking of the ground surface.)

Between 1923 and 1976 ground water levels were drawn down 150 to 200 feet in the Maryvale Terrace vicinity. While no precise levels have been run recently in the region westerly of Phoenix, it is probable that land settlement amounting to a foot or so exists. This settlement could be expected to occur over such a broad area that it tends to be fairly uniform within areas covered by a single structure or even a subdivision. Problems related to subsidence, particularly ground fissures, do not now exist in or immediately adjacent to the Maryvale development.

Subsidence and the related problem of earth fissures can be prevented by stabilizing ground water levels, but this is unlikely in the Phoenix area. Accordingly, continued settlement can be anticipated and new surface fissures may develop as a result. There is a remote possibility that fissures could occur within the Maryvale Terrace 53-A within the expected useful life of the development. Housing is not normally built to accommodate such a feature without a significant loss of function and probably the loss of the house and lot as a building

site.

Arizonans in Maricopa County are overdrafting or mining their ground water at a rate estimated to be about 902,000 acre-feet per year. While the combined impact of population growth generally may be great with respect to the subsidence problem, the impact of a single subdivision is not. This is particularly true since the Maryvale construction replaces agriculture. In general, urban development in the Phoenix area will result in a substantial reduction in agricultural acreage. This in turn will yield a decrease in annual water depletion. The decrease should lead to a corresponding decrease in the general subsidence rate; nevertheless, surface fissures may develop in time.

SOURCES

Arizona Water Commission, July 1975. Inventory of Resource and Uses. Phase I - Arizona Water Plan.

Arizona Water Commission, February 1977. Alternative Futures, Phase II - Arizona Water Plan.

Bureau of Reclamation, September 1972. Final Environmental Statement, Proposed Central Arizona Project. U. S. Department of the Interior.

Construction Inspection & Testing Company, January 19, 1977. Preliminary Soil Investigation Maryvale Terrace 53-A, 83rd Avenue and Camelback Road, Phoenix, Arizona.

U. S. Geological Survey, 1973. Thickness of Alluvial Deposits, Phoenix Area, Arizona. Map I-845-C. U. S. Department of the Interior.

U. S. Geological Survey, 1974. Land Subsidence and Earth Fissures in Alluvial Deposits, Phoenix Area, Arizona. Map I-845-H. U. S. Department of the Interior.

U. S. Geological Survey, February 4, 1947. Geology and Ground Water Resources of the Salt River Valley Area, Maricopa & Pinal Counties, Arizona. Open file report - U. S. Department of the Interior.

U. S. Geological Survey, 1963. Electrical Analog Analysis of Ground Water Depletion in Central Arizona. Water Supply Paper 1860. U. S. Department of the Interior.

U. S. Bureau of Reclamation, Phoenix, Arizona. Mr. Richard Raymond.

SEISMICITY

In general, earthquakes in the western United States are related to known major geologically active faults. When movement occurs along such a fault, an earthquake may result.

In the greater Phoenix area geologic faulting has significantly affected the land forms and the Salt River Valley probably exists because of a trough formed by faulting. This activity is thought to have happened prior to geologically recent time (11,000 years before the present).

Most of Arizona is in Seismic Risk Zone 2, according to the risk map of the nation in the latest issue of the Uniform Building Code. This number sets an estimated maximum for future shocks in the moderate damage range. Very few earthquakes have originated on faults in southern Arizona during the last 100 years or so of recorded earthquake history. It is likely that the strongest shaking would result from earthquakes centered in California or Mexico. Damage from these events in the historic past has been minor. Therefore, the potential hazard from earthquakes to single family housing in the Phoenix area is not considered to be serious.

The severity of earthquake-induced ground shaking at a particular site is commonly measured by maximum acceleration. It is a term useful for engineering purposes and is generally expressed in terms of the acceleration of gravity - "g".

A fairly recent study (Algermissen & Perkins, 1976) indicates there is a low probability that earthquake-induced rock accelerations in the

Phoenix area will exceed 1/4% of gravity during the life of the Maryvale construction. Considered on a national basis, this figure implies that the Phoenix area is a safe place with respect to the earthquake danger. The Department of Housing and Urban Development's (DHUD) experience with California earthquakes and recent studies on shake tables at the University of California, Berkeley, have demonstrated that wood-frame and even concrete block single family dwellings of conventional construction will survive the anticipated earthquake-induced shaking in the Phoenix area without being severely damaged. It is unlikely that loss of life would occur as a result of a single family housing performance if construction is in accord with DHUD and local standards.

Other earthquake-induced hazards such as liquefaction and landslides are such remote possibilities in the Maryvale development that discussion seems unwarranted. This opinion stems from the fact that the parcel is essentially flat and the liquefaction phenomenon (loss of strength of water saturated material) probably requires ground shaking in excess of 0.20 g and a high ground water table among other factors. Neither of these requirements are expected in the area of the subdivision.

The earthquake damage potential to single family dwellings in the Phoenix area is believed to be small.

SOURCES

Algermissen, S.T. and Perkins, D.M. 1976. A Probabilistic Estimate of Maximum Acceleration in Rock in the Contiguous United States. U. S. Geological Survey, Open File Report 76-416. U.S. Dept. of the Interior.

Arizona State University, Tempe, Arizona. Professor Péwé.

GROUND WATER

Ground water in a general sense is all free water below the surface of the land. Housing development may affect ground water quality or quantity by changing pumping rates or patterns, runoff or percolation characteristics. Application of fertilizers, herbicides and pesticides, and other human activities may pollute recharge water and cause deterioration of the ground water quality. Near-surface water may cause construction problems. Ground water is included here as an area of potential concern.

Maryvale Terrace is located over a ground water reservoir which is extremely large relative to the size of the proposed subdivision. Static water levels, that is the top of the water table, are several hundred feet below land surface, but the effective water-yielding sediments range to a depth in excess of 1,200 feet. The total underground reservoir known as the Salt River Valley Basin contained more than 150 million acre-feet of water in 1970. (An acre-foot of water will supply a family of 4 or 5 for a period of about one year).

The chemical quality of ground water is normally expressed in total dissolved solids (TDS). In the Southwest, domestic users commonly accept an upper TDS limit of about 1,000 milligrams per liter (mg/l). The chemical quality of the ground water in the Salt River Valley Basin is different for different localities and depths. It is likely that the composite quality in the vicinity of the Maryvale Terrace area is about 1,000 mg/l or near the upper limit with respect to acceptability as a source for domestic use.

Near-surface water either in a "perched" condition or as part of a water table can present construction difficulties, influence design and construction of housing elements - foundations, ground-supported slabs and utilities are examples. Generally speaking, water below a depth of about 10 feet would not constitute any significant problem relative to single family housing except for construction requiring deep excavations such as a major sewer project. Ground water in the Maryvale Terrace region is substantially below 10 feet. Therefore, subsurface water will have no important influence upon the development either during the construction phase or during the life of the development.

A subdivision can affect a ground water reservoir by contributing to water withdrawal at a rate greater than the replenishment rate (over-drafting) and may also affect ground water quality through the application of fertilizers, for example.

This subject has been covered at some length in preceding section titled "Geology" because it is closely related to the subsidence issue. Agriculture consumes nearly 90% of all water used in the State; municipal and industrial uses amount to only 10%. Maricopa County ground water is being depleted at a rate greater than 30 times the rate of natural recharge. Against such a backdrop even a cursory analysis of a single subdivision hardly seems justified, though the combined impact of urbanization may be great. It is immediately apparent that the physical, economic and political aspects of ground water are substantial and not within the scope of this impact statement. Choices relative to the ground water resource are being made on the basis of regional priorities

being arrived at by the State.

To some degree mitigation will occur in the future because falling water levels will increase pumping lifts and costs; therefore, the amount of ground water pumped will probably decline. The Arizona Water Commission notes that, "Arizona's supply/use imbalance is so severe ... that all opportunities to conserve water must be given serious consideration." A number of methods are suggested; among these are the use of desert landscaping; also urban water use can be reduced through the use of widely known in-house measures. Water reclamation and artificial recharging of the ground water reservoir are projects under consideration. Irrigation practices are expected to improve as water production costs increase.

The Maryvale Terrace 53-A development is located several hundred feet above the main ground water body. It will obtain approximately half of the water it receives from the Salt River Valley ground water basin. As noted previously, the reservoir to a depth of about 1,200 feet contained more than 150 million acre-feet of water in 1970. An average family of four or five will receive about one acre-foot of water per year. The effect, if any, on either the quantity or the quality of the ground water must be considered minor.

SOURCES

Arizona Water Commission, July 1975. Inventory of Resource and Uses. Phase I - Arizona Water Plan.

Arizona Water Commission, February 1977. Alternative Futures, Phase II - Arizona State Water Plan.

U. S. Geological Survey, 1973. Thickness of Alluvial Deposits, Phoenix Area, Arizona, Map I-845-C. U. S. Department of the Interior.

U. S. Geological Survey, 1973. Depth to Water in Wells in the Phoenix Area, Arizona, Map I-845-D. U. S. Department of the Interior.

U. S. Geological Survey, 1974. Chemical Quality of Ground Water, Phoenix Area, Arizona, Map I-845-F. U. S. Department of the Interior.

U. S. Geological Survey, 1974. Dissolved-Solids Content of Ground Water, Phoenix Area, Arizona, Map I-845-G. U. S. Department of the Interior.

HYDROLOGY AND DRAINAGE

The study area is not in a defined flood plain. However, it is subject to a heavy sheet flow during severe storms. Houses within the subdivision will be afforded protection from this runoff by complying with the recommendations given in the approved storm drainage study such as (1) the finish floor grades will be set at or above the 100-year frequency runoff, (2) finish grades at foundations will be at or above the 50-year frequency runoff, and (3) streets will be designed to carry a 10-year frequency runoff.

The City of Phoenix requires that all storm water be retained on site of each development. Streets are generally used to transport storm drainage. Subsurface drainage systems are rarely used within developments in the city.

Some land will be removed from cultivation as a result of the development, but the effect on storm runoff will be no more detrimental than any other subdivision. During storms, all irrigation and storm water in the Grand Canal, east of 46th Street, empties into the Salt River. There can be sufficient street runoff west of 46th Street to cause the Grand Canal to overflow in the Maryvale Area.

All developments adjacent to the Grand Canal should consider the flood hazard caused by possible overflow or breaks resulting from the accumulation of flood water above the canal. Maryvale Terrace 53-A is $\frac{1}{2}$ mile from the canal.

The City of Phoenix is aware of this problem and is currently installing storm drains. It will be several years before drains will

be installed in this area. Even then, this will not completely alleviate all the flooding during major storms.

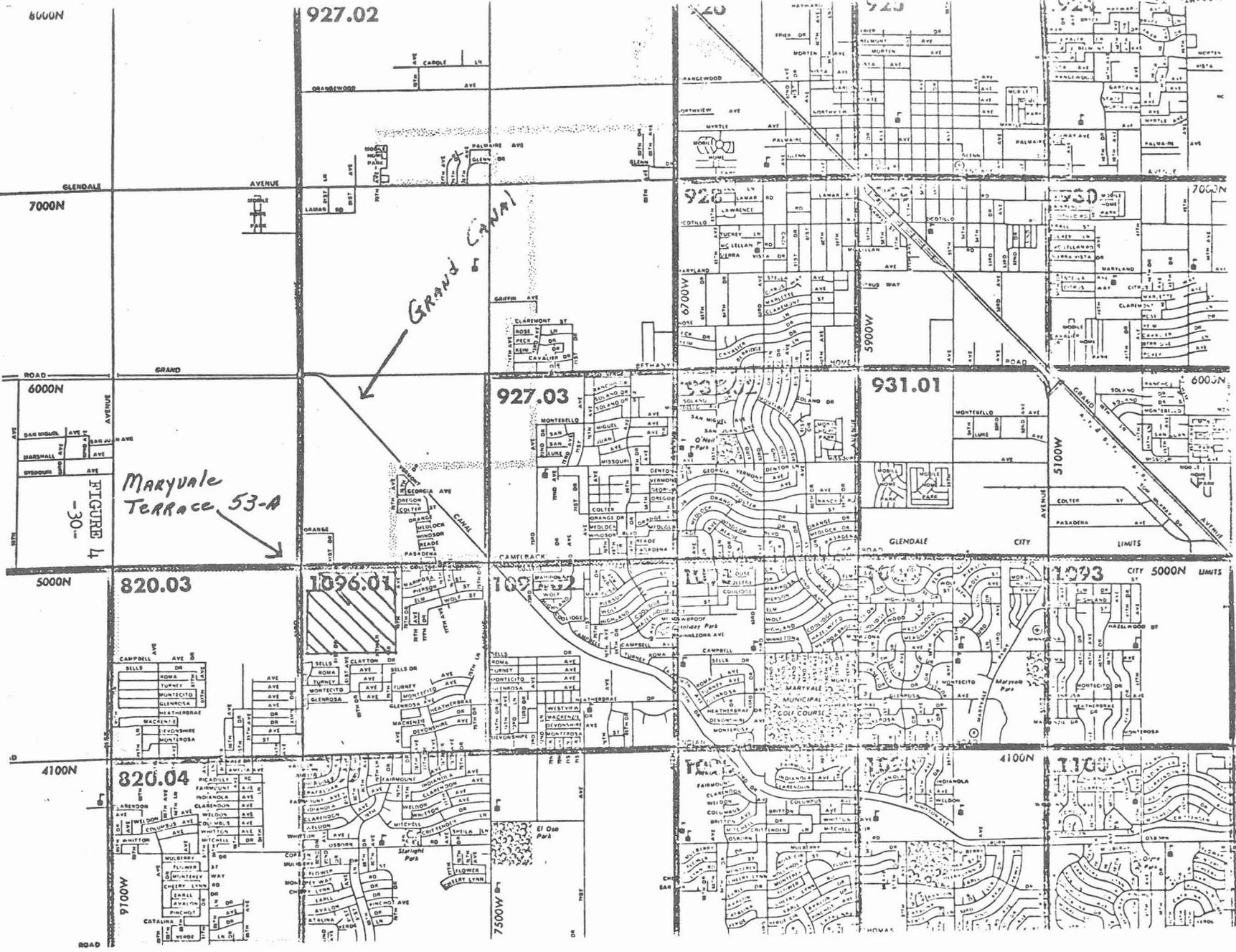
SOURCES

City of Phoenix Grading & Drainage Section
Municipal Bldg. - 251 W. Washington
Phoenix, Arizona
Leon Este, Civil Engineer III

Salt River Project
P. O. Box 1980
Phoenix, Arizona
Frank T. Darmiento, Environmental Division

U. S. Army Engineer's Flood Map 1963

Phoenix Flood Insurance Administration Map



8000N

927.02

7000N

6000N

5000N

4100N

FIGURE 4
-30-

Maryvale
Terrace 53-A

Grand Canal

927.03

931.01

820.03

1096.01

1097.02

1109

820.04

1109

CITY 5000N LIMITS

CITY 4100N LIMITS

4100S

ROAD

FAUNA

This proposed project did have definite wildlife values before the land use was agricultural. The wildlife species capable of being supported in the general area were White Wing Dove, Mourning Doves, Gambel's Quail, Cactus Wren, Elf Owl, Desert Tortoise, Desert Kangaroo Rat, Gila Monster, Tiger Rattlesnake, Desert Iguana, Javelina, Desert Mule Deer and Antelope Ground Squirrel.

With the cultivating of the land for producing as many as four crops a year, many of the animal's habitats were substantially destroyed or displaced to undeveloped land nearby. More will be destroyed or displaced with the completion of this subdivision. This would upset the animal population and create an impact on the surrounding area until the carrying capacity of the adjoining land and the number of animals comes into balance.

Certain birdlife, who have moved on during construction, will migrate back within the project after it is fully developed.

There was no evidence submitted of rare or endangered animal or bird species within the subdivision.

SOURCES

Arizona Game and Fish Department
2222 W. Greenway Road, Phoenix, Arizona
Robert A. Jantzen, Director
Bruce R. Duke, Project Evaluation Specialist

Maricopa County Planning Department
111 S. 3rd Avenue, Phoenix, Arizona
Frank A. Schuma, Principal Planner
Greg Marek, Advance Planning

FLORA

The proposed development of Maryvale Terrace 53-A encompasses 141 acres of farm land. An investigation by Arizona Commission of Agriculture and Horticulture revealed no growing protected plant material, and that it meets the requirements of the Native Plant Law.

The types of vegetation found in the surrounding areas are Creosote Bush, Cacti, Bag Galletta, Ironwood, Bush Muhly, Sand Dropseed and Saltbush.

SOURCES

Arizona Commission of Agriculture and Horticulture
1688 West Adams, Phoenix, Arizona
R. A. Countryman, Assistant Director

Maricopa County Planning Department
111 S. 3rd Avenue, Phoenix, Arizona
Frank A. Schuma, Principal Planner
Greg Marek, Advance Planner

CLIMATE

Phoenix is located in the center of the Salt River Valley, a broad, oval-shaped, nearly flat plain. The Salt River itself is impounded in reservoirs upstream and is usually dry in the Valley. The climate is of a desert-type with low annual rainfall and low relative humidity. Daytime temperatures are high throughout the summer months. The winters are mild. Nighttime temperatures frequently drop below freezing during the winter months, but the afternoons are usually sunny and warm. Occasionally the Valley is subjected to killing and land freezes in which no area escapes damage. Snowfall occurs very rarely, while light snows sometimes fall in the higher surrounding mountains.

Phoenix is at an elevation of 1,117 feet. Average annual maximum temperature is 85.1 and average annual minimum temperature is 55.4 with an average annual precipitation of 7.05 inches.

There are two separate rainfall seasons. The first occurs during the winter months from November through March when the area is subjected to occasional storms from the Pacific Ocean. The second rainfall period occurs during July and August when Arizona is subjected to widespread thunderstorm activity with considerable blowing dust. The Spring and Fall months are generally dry.

Tornadoes between 1955 and 1976 were widely scattered throughout Maricopa County. A total of 34 were sighted with many never touching ground. Of these, six occurred on the west side of the Valley. Two within a 5-mile radius of the site doing some damage. Most of the funnels appeared between the months of May and October. Overall, the

Valley floor is rather free of strong wind. Throughout the year there are many periods in which winds remain under 10 miles per hour.

Sunshine in the Phoenix area averages 86% of possible, ranging from 77% in December to 94% in June. During the winter, skies are sometimes cloudy, but sunny skies predominate and the temperatures are mild. Skies are also sunny in the Spring with warm temperatures during the day and mild, pleasant evenings. Beginning with June, daytime weather is hot. In July and August there is an increase in humidity with occasional evening thunderstorms. This hot and humid period occurring during the summer months is the so-called "Arizona Monsoon". There are often periods of hot, dry weather interspersed with hot, humid days. The sources of the moist maritime tropical air are the Gulf of Mexico and the Pacific Ocean off the west coast of Mexico. The monsoon moisture, combined with strong solar insolation, creates uncomfortable heat and humidity.

The State of Arizona Climatologist has identified two important changes in weather patterns affecting Phoenix:

1. Most weather stations in the state show a continuing downward trend in the amount of precipitation recorded. For the most part this is due to lower amounts of precipitation in the winter season.
2. The influence of urbanization on local climatic patterns is evidenced by the upward trend of minimum temperatures in the metropolitan Phoenix area.

The change in land use from farming to the construction of housing in Maryvale Terrace 53-A will cause a slight decrease in the diminishing

water supply. Adverse precipitation trends should be taken into consideration in water resource planning. It will also cause a slight, but cumulative contribution to "urbanization dome" that even increases nighttime temperatures in the Phoenix Valley. This results in an increased energy demand for air conditioning, but lower requirements for heating purposes. Proper insulation in the homes would aid in alleviating the discomforts of summer heat and reduce energy consumption.

SOURCES

Arizona Statistical Review - 9/77

National Weather Service
Department of Commerce
Mr. Ingram, Chief Meteorologist
Skyharbor, Room 135, Phoenix, Arizona
Climate of Phoenix - 1976

State Climatologist
Arizona State University
Tempe, Arizona
Dr. Durrenberger

ALTITUDE, ANNUAL TEMPERATURE AND RAINFALL FOR ARIZONA CITIES

City	Elevation (Feet)	Average Maximum Temperature	Average Minimum Temperature	Average Precipitation (Inches)
Ajo	1,736	84.0	58.3	9.10
Alpine	8,000	61.9	24.8	20.73
Bisbee	5,350	74.0	48.7	18.44
Casa Grande	1,405	87.3	52.2	8.20
Clifton	3,465	81.0	52.5	12.54
Coolidge	1,419	86.8	50.9	8.74
Douglas	4,020	79.2	46.3	12.25
Flagstaff	6,993	60.2	30.3	19.31
Gila Bend	737	89.5	54.4	5.69
Globe	3,540	77.6	47.2	15.75
Grand Canyon	6,965	62.4	34.9	15.81
Holbrook	5,069	71.9	37.8	8.64
Kingman	3,345	76.4	46.4	10.63
Mesa	1,225	84.6	51.6	8.06
Miami	3,603	76.4	50.9	18.98
Nogales	3,800	79.5	45.0	15.60
Parker	425	88.2	52.6	4.83
Payson	4,910	70.9	34.8	21.48
Phoenix	1,117	85.1	55.4	7.05
Prescott	5,410	69.7	35.8	19.32
Safford	2,900	80.3	46.1	8.95
Springerville	6,964	65.8	31.5	12.11
Tempe	1,150	84.8	52.2	7.66
Tucson	2,410	81.5	54.1	11.05
Wickenburg	2,070	82.7	46.8	10.99
Willcox	4,200	76.6	40.8	11.76
Williams	6,750	64.2	32.8	21.88
Winslow	4,880	70.6	39.9	7.33
Yuma	138	86.9	60.4	2.67

Source: U.S. National Oceanic and Atmospheric Administration.

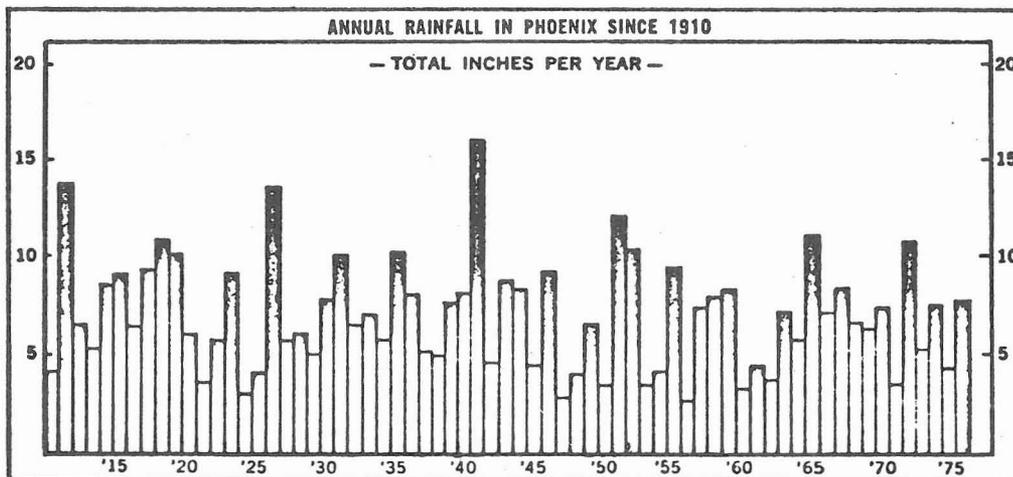


TABLE 1
-36-

CLIMATE COMPARISON

Average Percentage of Possible Sunshine for Selected U.S. Cities

	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Avg.
PHOENIX, Arizona	78	80	83	89	93	94	85	85	89	88	84	77	86
TUCSON, Arizona	82	83	86	91	93	93	78	81	87	89	85	80	86
Boston, Mass.	53	57	57	56	59	63	65	66	64	61	51	54	60
Chicago, Ill.	43	47	51	53	61	66	69	68	64	61	41	40	57
Los Angeles, Calif.	71	72	73	69	66	65	82	83	79	73	74	72	73
Miami, Fla.	68	74	74	72	68	62	62	63	58	59	66	65	66
New York, N.Y.	51	55	57	59	62	65	65	64	63	61	52	50	59
St. Louis, Mo.	51	50	53	56	63	68	71	68	65	62	50	44	58
Portland, Ore.	24	36	41	47	53	50	68	63	58	39	29	20	47

Source: U.S. National Oceanic and Atmospheric Administration, Local Climatological Data.

MONTHLY TEMPERATURE RANGE IN SELECTED ARIZONA CITIES

Average Maximum Temperature

Month	Flagstaff	Phoenix	Tucson	Winslow	Yuma
January	41.4	64.8	63.5	45.6	67.4
February	44.0	69.3	67.0	53.3	72.6
March	47.9	74.5	71.5	60.2	77.6
April	56.9	83.6	80.7	70.1	85.6
May	66.6	92.9	89.6	79.9	93.4
June	76.0	101.5	97.9	89.8	100.8
July	80.8	104.8	98.3	93.6	106.0
August	77.9	102.2	95.3	90.6	104.4
September	73.7	98.4	93.1	85.4	100.3
October	62.9	87.6	83.8	73.2	89.8
November	50.9	74.7	72.2	58.2	76.5
December	43.2	66.4	64.8	46.7	68.2
Annual	60.2	85.1	81.5	70.6	86.9

Average Minimum Temperature

Month	Flagstaff	Phoenix	Tucson	Winslow	Yuma
January	14.4	37.6	38.2	19.6	43.3
February	17.0	40.8	39.9	24.8	46.1
March	20.4	44.8	43.6	29.4	50.2
April	27.3	51.8	50.3	37.3	56.7
May	33.5	59.6	57.5	45.5	63.9
June	40.4	67.7	66.2	53.7	70.8
July	50.4	77.5	74.2	62.9	81.4
August	49.3	76.0	72.3	61.5	81.2
September	41.2	69.1	67.1	53.5	73.9
October	31.1	56.8	56.4	41.3	62.0
November	21.8	44.8	44.8	28.2	50.5
December	16.3	38.5	39.1	20.9	44.4
Annual	30.3	55.4	54.1	39.9	60.4

Source: U.S. National Oceanic and Atmospheric Administration, Local Climatological Data.

TABLE 2

ENERGY

Salt River Project is currently supplying electrical service in the area.

Impacts to the north and south of the subject were considered in this environmental assessment. Salt River Project is currently operating the following facilities within the area:

1. Three 69/12 kV distribution substations: Grasmoen, Sheely and Sunset (see attached map).
2. Two 69/12 kV distribution substations adjacent to the study area: Christy and Fowler (see attached map).
3. Ten miles of overhead 69 kV transmission lines.
4. Fifty-seven miles of overhead 12 kV distribution lines.
5. Sixty-two miles of underground 12 kV distribution lines.

The electrical facility additions projected to serve the fully developed area consist of:

1. One new 69/12 kV distribution substation within the area at 3E-6N (see attached map).
2. Four new 69/12 kV distribution substations adjacent to the study area (see attached map).
3. Three miles of new overhead 69 kV transmission lines.
4. Five miles of new overhead 12 kV distribution lines.
5. One hundred twenty miles of new underground 12 kV distribution lines.

The longrun outlook for energy availabilities for metropolitan Phoenix is favorable. The Salt River Project is participating in the

construction of giant coal-fired generating plants in Northern Arizona and adjoining states where an abundance of coal exists. During 1976, 60% of the energy delivered to Project electric customers was generated by coal-fired stations (such as Navajo at Page, Arizona, and Four Corners at Farmington, New Mexico). This compares to 48% in 1975. Oil use decreased from 18 to 12%. The project will continue its program of converting to coal-fired power generation to replace higher cost oil-fired generation. They are also participating in the Palo Verde Nuclear Station 40 miles west of Phoenix, which should be in service by 1982.

Salt River Project has a forward looking conservation program, including load management which encourages customers to change some of their electricity use to off-peak periods. They also have a watershed management agreement with the U. S. Forest Service which protects the forested wilderness water sources that provides hydro-electric energy.

The Arizona Corporation Commission requires that extensions of single phase electric lines necessary to furnish permanent electric service to new residential buildings within a subdivision, in which facilities for electric service have not been constructed and for applications made after October 6, 1970 (Amended General Order U-48), shall be installed underground except where unfeasible from an engineering, operational or economic standpoint.

Salt River Project has received a request for underground power to serve Maryvale Terrace 53-A subdivision.

Natural gas is not available to the site. A moratorium on gas

connections has been in effect since 1975 due to declining gas supplies. All current new residential construction in the Salt River Project service area is total electric.

Studies by the Salt River Project were made of energies used under average weather conditions in the greater Phoenix area for air conditioning units, heat pumps and varied electrical appliances. The results of these studies are indicated on Tables 1, 2, 3, and 4 attached.

The appliance configuration in the typical home will include an electric range and refrigerator, dishwasher, washing machine, and, for the vast majority, a heat pump heating and cooling unit. An electric dryer will be included in about two-thirds of the homes.

It is estimated that the thermal standards of the typical home for construction in this project would develop a peak summer coincident demand of 4.15 KW. The peak summer demand can occur during any of the prime summer cooling months from June through September. This peak summer demand can also be expected to occur most frequently between the hours of 3:00 to 8:00 PM.

The actual capacity needs for these units could be reduced if the homes were built to higher thermal energy standards. A home of approximately 1,400 square feet would be expected to consume 21,711 kilowatt-hours per year. If the thermal standards for this same home were upgraded in the ceiling from R-19 to R-22 insulation, and in the walls from R-11 to R-13 insulation, and if all east and west facing windows were shaded at least 50%, consumption of energy would be estimated at 19,813 kilowatt-hours per year or a reduction in kilowatt-hour

consumption of 8.7%. The added thermal insulation and proper window shading is a viable cost-effective alternative that is available to the builder.

Remarkable Energy Value (REV) homes are frame constructed homes with R-19 insulation in the side walls, R-22 insulation in the ceilings, shade screens on the windows, plus other energy saving features.

When considering the 1,898 additional kilowatt-hours that will be consumed by a home built to the proposed standards versus a home built to REV home standards as peaking-type energy, a direct relationship between that peaking energy and barrels of oil consumed can be determined. The 1,898 kilowatt-hours of energy provided by peaking turbines would burn 3.8 barrels of oil per year. Thus, the total 618 units in this proposed development would burn an additional 2,348.4 barrels of oil each year if they were built to the proposed thermal standards instead of the REV home standards. This would amount to 70,452 barrels of oil over the life of the 30-year mortgages that would be placed on these units.

There would also be a reduction in the kilowatt demand of each home built to the REV home thermal insulation and shading standards. This reduction in needed peaking capacity would amount to .45 kilowatts per unit, or 278.1 kilowatts of peaking capacity for the entire proposed subdivision. This additional peaking capacity would mean a greater use of capital resources to provide this type of equipment.

SOURCES

Salt River Project

P. O. Box 1980

Phoenix, Arizona

Frank T. Darmiento, Chief, Environmental Division

Lee Athmer, Manager, Consumer Services Department

Jim Grady, Consumer Affairs

Mike Webb, Environmental Division

Arizona Public Service Company

411 N. Central Avenue

Phoenix, Arizona

Dave Folz, Senior Customer Service Representative

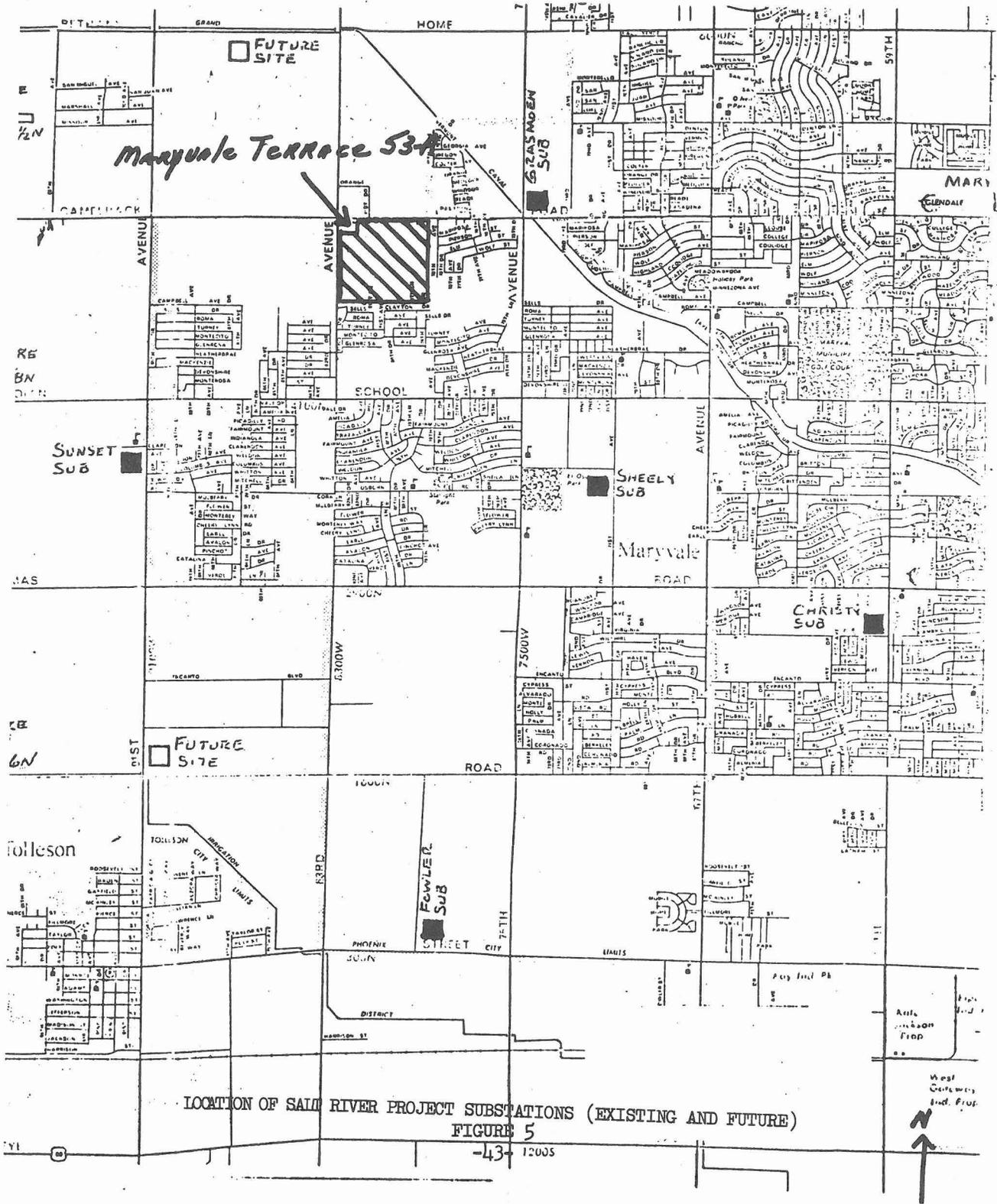
Salt River Project Annual Report - 1976

Arizona Public Service Company Annual Report - 1976

The Story of the Salt River Project - 1975

The Power Saver Diet - Salt River Project

Appliance Ownership Data - Republic and Gazette Consumer Surveys



LOCATION OF SALT RIVER PROJECT SUBSTATIONS (EXISTING AND FUTURE)
 FIGURE 5

- LEGEND
-  S.R.P. EXCLUSIVELY PROVIDES SERVICE - RATE AREA I
 -  S.R.P. EXCLUSIVELY PROVIDES SERVICE - RATE AREA II
 -  S.R.P. PROVIDES POWER REQUIREMENTS OF A.P.S. FOR RESALE.
 -  S.R.P. MAKES DIRECT SALES TO CUSTOMERS FOR MINING LOADS - RATE AREA III
 -  S.R.P. PROVIDES FULL POWER REQUIREMENTS OF A.P.S. FOR RESALE.
 -  A.P.S. PROVIDES SERVICE WITHIN S.R.P. BOUNDARIES.
 -  CITY OF MESA EXCLUSIVELY PROVIDES SERVICE.
 -  ASSOCIATION BOUNDARY
 -  AREAS OUTSIDE S.R.P. POWER DISTRICT BOUNDARY MOSTLY SERVED BY A.P.S.

SALT RIVER PROJECT SERVICE AREA



RATE AREA MAP
10/1/75

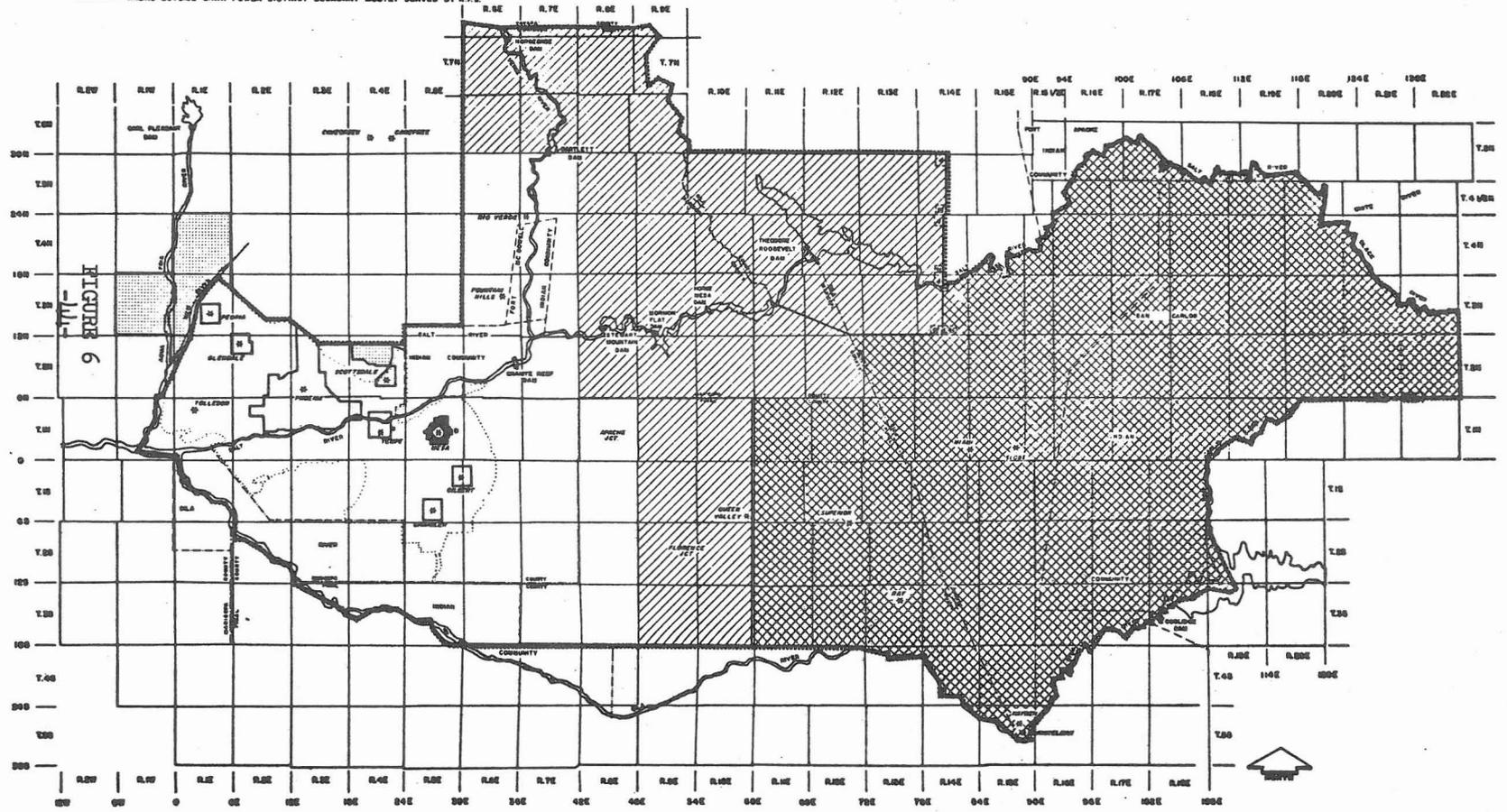


FIGURE 9

Approximate daily kilowatt-hour use (range and average) of air conditioning units under average weather conditions in the greater Phoenix area*

*Actual amounts vary according to operating efficiencies of individual units, insulation and use characteristics.

Tons of air conditioning

	2 Tons			3 Tons			4 Tons			5 Tons		
	low range	average	high range									
May	0	16	42	0	24	63	0	67	84	0	40	105
June	10	34	68	15	50	102	20	67	136	25	83	170
July	28	43	78	42	64	117	56	85	156	70	106	195
August	34	39	58	51	58	87	68	77	116	85	97	145
September	16	26	44	24	38	66	32	51	88	40	64	110
October	0	4	22	0	6	33	0	8	44	0	10	55

(Published in THE POWER SAVER DIET by Salt River Project)

TABLE 3
-15-

SRP - SALT RIVER PROJECT
 APS - ARIZONA PUBLIC SERVICE
 PMA - PHOENIX METROPOLITAN AREA

APPLIANCE OWNERSHIP DATA FROM REPUBLIC & GAZETTE CONSUMER SURVEYS

TABLE 4
-16-

	1970			1971			1972			1973			1974			1975			1976		
	SRP	APS	PMA																		
Central Air Conditioning	55	40	47	58	42	50	62	49	56	64	51	58	72	60	66	73	62	67	72	61	66
Heat Pump	24	12	18	25	11	18	31	17	24	28	17	22	33	18	26	33	21	27	33	21	27
Refrigeration Only	31	29	30	36	34	35	33	33	33	40	38	39	40	41	40	40	41	40	39	40	39
Principal Heating																					
Electric	26	13	19	27	12	19	34	16	25	35	19	27	42	25	34	42	26	34	42	26	34
Gas	73	86	80	72	87	80	65	83	74	64	79	71	57	74	65	58	73	65	58	73	65
Evaporative Coolers	41	56	49	39	53	46	34	46	40	31	42	37	27	37	32	27	37	32	27	38	34
Room Air Conditioners	10	12	11	10	13	12	9	10	10	9	7	8	7	9	8	6	10	8	7	9	8
Clothes Dryers	38	26	31	43	29	36	46	33	39	52	39	45	54	43	49	56	47	51	58	50	54
Electric	26	15	20	29	18	24	32	21	26	36	27	31	39	28	33	39	32	35	43	33	38
Gas	12	11	11	14	11	12	14	12	13	16	12	14	15	15	15	17	15	16	15	17	16
Cooking Ranges	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Electric	59	36	47	61	38	49	61	41	51	62	45	53	64	48	56	62	53	57	65	51	58
Gas	41	64	53	39	62	51	39	59	49	39	56	47	37	52	44	38	48	43	35	49	42
Microwave Oven										2	1	1	3	3	3	6	6	6	7	7	7
Dishwashers																					
Automatic	32	22	26	34	21	27	36	27	31	39	34	36	44	35	39	42	38	40	48	41	44
Food Freezers																					
Home	29	21	25	28	20	24	26	18	22	27	23	25	30	22	26	30	24	27	30	23	26
Refrigerators	100	100	100	100	99	99	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100
Television	98	96	97																99	98	98
Black & White	77	75	75	74	74	74	69	70	70	66	65	66	63	64	64	61	61	61	60	60	60
Color	50	42	46	55	48	51	61	52	57	70	61	65	73	64	68	73	68	71	76	72	74
Trash Compactor	NA	NA	NA	NA	NA	NA	0.5	0.3	0.4	1	1	1	2	2	2	2	2	2	3	3	3
Washing Machines																					
Automatic	73	62	67	72	63	67	72	63	67	73	64	69	73	64	68	74	68	71	77	70	73
Water Heaters	97	96	97	96	97	97	96	96	96	97	98	97	97	97	97	96	96	96	96	97	96
Electric	23	9	16	23	9	16	29	11	20	30	13	22	34	18	26	34	19	26	34	19	26
Gas	74	87	81	73	88	81	67	85	76	67	85	75	63	79	71	63	77	69	62	78	70

NA - Data Not Available

SURVEYS MADE IN OCTOBER OF EACH YEAR INDICATED

Consumer Services Department

SRP - SALT RIVER PROJECT
 APS - ARIZONA PUBLIC SERVICE
 PMA - PHOENIX METROPOLITAN AREA

APPLIANCE OWNERSHIP DATA FROM REPUBLIC & GAZETTE CONSUMER SURVEYS

	1977			1978			1979			1980			1981			1982			1983		
	SRP	APS	PMA																		
	(%)			(%)			(%)			(%)			(%)			(%)			(%)		
Central Air Conditioning	74	66	69																		
Heat Pump	29	20	24																		
Refrigeration Only	45	46	45																		
Principal Heating																					
Electric	45	28	36																		
Gas	55	72	63																		
Evaporative Coolers	25	32	29																		
Room Air Conditioners	7	7	8																		
Clothes Dryers	58	53	55																		
Electric	44	35	39																		
Gas	14	18	16																		
Cooking Ranges	100	100	100																		
Electric	69	55	62																		
Gas	31	45	38																		
Microwave Oven	9	11	10																		
Dishwashers																					
Automatic	51	46	48																		
Food Freezers																					
Home	27	26	27																		
Refrigerators	100	100	100																		
Television	99	97	98																		
Black & White	55	57	56																		
Color	80	76	78																		
Trash Compactor	NA	NA	NA																		
Washing Machines																					
Automatic	73	73	73																		
Water Heaters	96	97	95																		
Electric	39	22	30																		
Gas	57	75	65																		

NA - Data Not Available

SURVEYS MADE IN OCTOBER OF EACH YEAR INDICATED

CONSUMER SERVICES DEPARTMENT

RHK 5/78

TABLE 4
-47-

THE KILOWATT COUNTER
 Typical Electric Uses of Common Appliances
 (Based on data compiled by the Salt River Project.)

Remember: One kilowatt-hour is 1,000 watts of electricity used for one hour.

Category	Appliance	Load (kilowatts)	Hours used per day (Average)	Typical daily Use (kwh)	
Basic Use	Water heater, quick recovery	4.5	2.9	13.1	
	Refrigerator/freezer frostless, 14 cu. ft.	.6	8.1	4.9	
	Refrigerator/freezer 14 cu. ft.	.3	9.6	2.9	
	Refrigerator/freezer frostless, 12 cu. ft.	.3	10.4	3.1	
	Refrigerator/freezer 12 cu. ft.	.2	8.3	1.7	
	Freezer, frostless 15 cu. ft.	.4	11.0	4.4	
	Freezer, 15 cu. ft.	.3	9.6	2.9	
	Other Use (kitchen)	Range (each 8" element)	2.0	Varies	--
		Range (each 6" element)	1.5	Varies	--
		Oven, standard	4.2	Varies	--
		Oven, microwave	1.4	Varies	--
		Fry pan	1.2	Varies	--
		Toaster	1.1	Varies	--
		Waffle iron	1.1	Varies	--
		Coffee percolator	.9	Varies	--
Broiler		1.4	Varies	--	
Deep fryer		1.4	Varies	--	
Blender		.4	Varies	--	
Waste disposal		.4	Varies	--	
Mixer		.1	Varies	--	
Carving knife		.09	Varies	--	
Roaster		1.3	Varies	--	
Trash compacter	1.4	Varies	--		

Category	Appliance	Load (kilowatts)	Hours used per day (Average)	Typical daily Use (kwh)
Other Use (laundry)	Washing machine	.5	Varies	--
	Clothes dryer	4.9	Varies	--
	Iron (hand)	1.0	Varies	--
Other Use (entertainment)	Radio	.07	Varies	--
	Record player	.1	Varies	--
	Television, color (tube)	.3	Varies	--
	Television, color (solid state)	.2	Varies	--
	Television, b&w (tube)	.16	Varies	--
	Television, b&w (solid state)	.055	Varies	--
Other Use (housewares)	Clock	.002	24.0	0.048
	Vacuum cleaner	.6	Varies	--
	Floor polisher	.3	Varies	--
	Sewing machine	.075	Varies	--
Cooling Use (Varies according to outside temperatures)				
	Air conditioner, 5 ton	9.3	Varies	--
	Air conditioner, 4 ton	7.4	Varies	--
	Air conditioner, 3½ ton	6.5	Varies	--
	Air conditioner, 3 ton	5.6	Varies	--
	Air conditioner, 2½ ton	4.6	Varies	--
	Air conditioner, 2 ton	3.7	Varies	--
	Air conditioner (room)	1.9	Varies	--
Motors (evaporative cooler or swimming pools)				
	1½ hp	1.43	24.0	34.3
	1¼ hp	1.43	16.0	22.9
	1 hp	.98	24.0	23.5
	¾ hp	.98	16.0	15.7
	½ hp	.80	24.0	19.2
	¼ hp	.80	16.0	12.8
	½ hp	.55	24.0	13.2
	¼ hp	.55	16.0	8.8

TABLE 5
-48-

WATER SUPPLY

The proposed 618 unit subdivision for one story single family dwellings will be supplied with domestic water by the City of Phoenix Department of Water and Sewers. This service was anticipated and had been included in their long-range planning.

There are two sources supplying the City of Phoenix. One of the sources consists of approximately 130 wells owned and operated by the Phoenix Department of Water and Sewers. The other source is from four filtration plants that treat the water from the Salt River Project storage reservoirs before being pumped into the Phoenix water system.

The filtration plants that treat the water from the Salt River Project are located on the Salt and Verde Rivers. Their capacities are as follows: Val Vista - 80 million gallons per day (MGD); Verde - 40 MGD; Squaw Peak - 111 MGD; and Deer Valley - 100 MGD.

The present capacity of all above sources exceeds the peak demand by 100 MGD.

The City of Phoenix is planning to construct an additional filtration plant (Union Hills Filtration Plant) to increase the capacity of the water system to accommodate the expected population growth.

The water distribution system within the subdivision will be constructed by the developer and dedicated to the Department of Water and Sewers for maintenance and operation. The minimum size of the water mains in the water distribution system required by the City of Phoenix is six inches. The distribution system will be connected to an existing 12-inch trunk lines in Camelback Road and 83rd Avenue. The grid of

trunk lines in the area where the subdivision is located is supplied by an existing 54-inch trunk line in Indian School Road to assure adequate pressure.

The subject development will not have an adverse impact on the water system of the City of Phoenix or the surrounding area. The water supply sources have sufficient reserve capacity to satisfy the demand due to population growth until the City of Phoenix develops additional sources. The existing trunk lines have been designed for sufficient capacity to supply the subject development.

The bacteriological and chemical quality of the water supply is satisfactory.

SOURCES

Arizona Department of Health Services
Division of Environmental Health Services
1740 W. Adams Street, Phoenix, Arizona
Robert L. Munari, P.E., Environmental Engineer - Planner

Arizona Water Commission
222 N. Central Avenue, Suite 800
Phoenix, Arizona
Philip C. Briggs, Chief Hydrologist

Maricopa County Planning Department
111 S. 3rd Avenue, Phoenix, Arizona
Frank A. Schuma, Principal Planner
Grey Marek, Advance Planning

Department of Water and Sewers
Gerald Copeland, Engineering Superintendent
Art F. Vondrick, Water and Sewers Director

SEWERAGE

The subject subdivision is served by a public sewerage system owned and operated by the Phoenix Department of Water and Sewers.

The sewage collection system within the subdivision will be constructed by the developer and dedicated to the City of Phoenix for maintenance and operation. It will discharge into an existing 12-inch trunk sewer in 83rd Avenue. The capacity of the trunk sewer is 1.1 million gallons per day (MGD) and the present flow is approximately 0.22 MGD.

The sewage from this area is treated in the 91st Avenue Sewage Treatment Plant on the Salt River. This sewage treatment plant is of the secondary type utilizing the activated sludge process and has the capacity to treat 95 MGD of sewage; the present flow is approximately 85.7 MGD. The effluent from this plant is disposed of in the Salt River, essentially a dry watercourse, where it percolates into the soil. The remainder of the effluent is used for irrigation of agricultural land where such crops as alfalfa are grown. None of the crops irrigated with sewage effluent are of the kind which would be directly used as food for human consumption that would result in exposure to disease organisms that may be present in effluent from a secondary sewage treatment plant.

To provide for population growth, the City of Phoenix plans to increase the capacity of this sewage treatment plant to 125 MGD by the year 1980 or later, depending on the availability of EPA grant funds.

The U.S. Environmental Protection Agency (EPA) has filed a lawsuit

against the City of Phoenix for failure to comply with EPA requirements for chlorination of the effluent. It has been the position of the City that chlorination is an unnecessary expense as the effluent from a secondary treatment plant does not constitute a significant health hazard. A second lawsuit has been filed by EPA alleging that some of the plant equipment is in need of replacement or repairs to increase the efficiency of the treatment process and the capacity needs to be increased to eliminate the cause of fly breeding in this unit, which is overloaded. The City Council has appropriated \$500,000 to bring the plant up to EPA requirements.

The subject subdivision will not have an adverse affect on the City of Phoenix sewerage system. The trunk sewers and the sewage treatment plant have sufficient capacity to accommodate additional sewage flow from the subdivision. The funds appropriated by the City Council will be used to correct deficiencies in the plant equipment to produce effluent of improved sanitary quality and increase the capacity of the sludge drying beds to eliminate the fly nuisance and a possible health hazard.

The sewer service to this development was anticipated by the City of Phoenix and has been included in their long-range planning.

SOURCES

City of Phoenix Water and Sewer Department
215 E. McDowell Road
Phoenix, Arizona
Art. R. Vondrick, Water and Sewers Director
Gerald Copeland, Engineering Superintendent

Arizona Department of Health Services
Division of Environmental Health Services
1740 W. Adams Street
Phoenix, Arizona
Robert L. Munari, P.E., Environmental Engineer - Planner

Maricopa County Health Department
1825 E. Roosevelt
Phoenix, Arizona 85006
Bureau of Public Health Engineering
Harry T. Crohurst, P.E., Chief

SOLID WASTE

Maryvale Terrace 53-A is located in the Northwest District. Contained refuse is collected in this area twice weekly on Monday and Thursday by City Sanitation forces. The area has been implemented with the mechanical loading collection system, whereby each individual home serviced by street collection receives from the City, a 90-gallon container for solid waste. Homes in the area, serviced in the alley, share a 300-gallon container. The average number of residential units per container at present is 3.5 units.

Uncontained refuse, such as tree limbs, tree trunks and general yard and garden waste which cannot be placed in the container due to size and weight, is collected on a four-week cycle.

All remaining bulk items, construction and demolition waste are not collected by City Sanitation forces and must be taken to the City-operated landfill by the owner or occupant of the unit.

The nearest city sanitary landfill is approximately 13 miles from this project at 19th Avenue and the Salt River. They also operate two other landfill sites. These sites have sufficient reserve capacity at the present time.

The City is also exploring the feasibility of disposal of solid wastes by incineration to generate electric power and recovery of metals, such as aluminum and steel. Negotiations are being conducted with the Arizona Public Service Company and the Salt River Project, which at the present time use gas, coal and oil for electric power generation.

No impact from the disposal of solid wastes generated in the development is anticipated as the capacity of the facilities for disposal of solid wastes is adequate. Additional suitable sites are available in or near the subject area.

SOURCES

Arizona Department of Health Services
Division of Environmental Health Services
1740 W. Adams, Phoenix, Arizona
Robert L. Munari, P.E., Environmental Engineer - Planner

City of Phoenix Maintenance and Sanitation Dept.
Phoenix, Arizona
W. C. McSpadden, Assistant Director

City of Phoenix Engineering Department
Phoenix, Arizona
Thomas Wesas Batten, Senior Sanitary Engineer

City of Phoenix
Phoenix, Arizona
Jim Wong, Disposal Engineer

NOISE

The Department of Housing and Urban Development (DHUD) has found that noise is a major source of environmental pollution. It represents a threat to the serenity and quality of life in population centers.

DHUD aircraft noise policies and standards are currently expressed in Composite Noise Rating (CNR) and Noise Exposure Forecasts (NEF). Both CNR and NEF are rated in three categories: acceptable, discretionary and unacceptable. Although other metrics are not listed under DHUD aircraft noise policies and standards, they are acceptable if generally equivalent. "For example, noise contours identified as Ldn 65 are generally equivalent to CNR 100 and NEF 30, the acceptable categories."

Maryvale Terrace 53-A is located approximately 17 miles northwest of Phoenix Sky Harbor International Airport, 7 miles southeast of Luke Air Force Base and 4 miles south of the Glendale City Airport. The site falls in the "acceptable" categories of all three airports being in CNR Zone #1 and outside NEF 30.

By utilizing the HUD Noise Assessment Guidelines, an evaluation was made on the following:

1. Railroads - the nearest railroad is five miles from the development and will create no impact from railroad noise.
2. The Papago Freeway proposed for completion in 1985 will pass three miles to the south and should have no adverse noise impact.
3. There should be no adverse influence from industrial land use, which is five miles to the east.

4. City of Phoenix and Maricopa County Zoning Maps and Land Use Planning Maps indicate only residential, agricultural and scattered commercial land uses for the area surrounding the subject site. These would cause only a minimal noise impact.

The only significant noise element affecting Maryvale Terrace 53-A is street traffic. Major arterial streets are Camelback Road abutting the north side and 83rd Avenue the west side. Maricopa Association of Governments (MAG) projects an average daily traffic count for 1997 will be 18-25,000 vehicles on Camelback Road and 10-15,000 vehicles on 83rd Avenue. The noise generated from these two streets will be attenuated by a 6' solid masonry wall and site planning with setbacks. Noise from collector and local streets will also be ameliorated by normal measures such as block barriers, setbacks, etc.

HUD noise standards for general external exposures uses the measurements of decibel values (dB(A)) as a guide. These noise exposures are as follows:

Acceptable - does not exceed 45 dB(A) more than 30 minutes per 24 hours.

Discretionary - Normally Acceptable - does not exceed 65 dB(A) more than 8 hours per 24 hours.

Discretionary - Normally Unacceptable - exceeds 65 dB(A) 8 hours per 24 hours or having loud repetitive sounds on site. This would require noise attenuation measures.

Unacceptable - exceeds 80 dB(A) 60 minutes per hour or exceeds 75 dB(A) 8 hours per 24 hours. Development is strongly discouraged

with this noise exposure.

A study using the projected daily traffic count for 1997 was made by the Arizona Department of Transportation. This revealed that Camelback Road would fall in the Discretionary - Normally Unacceptable area without the 6' solid masonry wall. With the required wall, the noise exposure corresponded to HUD measurement of 61 dB(A) or within the Discretionary - Normally Acceptable area.

Noise occurring during construction can be expected to be minimal, as the development is programmed over an extended period and the residential character will not require any extensive use of heavy noise producing construction equipment.

SOURCES

Federal Aviation Administration
Phoenix, Arizona

Arizona Department of Transportation (Environmental Planning)
205 S. 17th Avenue, Room 240, Phoenix, Arizona
Mario Saldamando, P.E., Supervisor
Richard Thurman, P.E., Civil Engineer

Maricopa County Planning & Zoning
111 S. 3rd Avenue, Phoenix, Arizona
Frank Schuma, Planner (noise)

City of Phoenix Traffic Engineering Department
251 W. Washington, Phoenix, Arizona
Dan Morgan, Acting Chief Traffic Engineer

City of Phoenix Planning Department
251 W. Washington, Phoenix, Arizona

City of Glendale, Glendale, Arizona
Ray Morse, Airport Manager

City of Glendale Airport NEF Contour Map

Land Use Plan 1990
City of Phoenix Planning Department

Maricopa County Land Use Plan - MAG 1973

Noise Abatement and Control Policy - HUD 4/77

Noise Assessment Guidelines - HUD

Noise Abatement and Control - HUD Circular 1390.2

RGT 1-23-78

With walls (6')

59

NOISE PREDICTION WORK SHEET

Line	Symbol	ROAD ELEMENT	Camelback		Camelback		83' HW		83' HW	
			50'	65'	50'	65'	50'	65'	50'	65'
Ref.		TIME INTERVAL	1997 hr							
		VEHICLE TYPE	Auto	Truck	Auto	Truck	Auto	Truck	Auto	Truck
1		Reference L50 at 100 ft	64	59	64	59	62	52	62	52
2	Δ1	Distance	+4	+4	+3	+3	+4	+4	+3	+3
3	Δ2	Element								
4	Δ3	Gradient	-		-		-		-	
5	Δ4 WS3	Vertical								
6	Δ5	Surface	+5	01			+5	01		
7	Δ6 WS4	Shielding	-8	-5	-8	-5	-8	-5	-8	-5
		(a) Barriers								
		(b) Structures & Plant.								
8		TOTAL ADJUSTMENT (add rows 2 through 7)	-4	-1	-5	-2	-4	-1	-5	-2
9		L50 AT OBSERVER (add row 1 to row 8)	60	58	59	57	58	51	57	50
10	WS5	L10 - L50 ADJUSTMENT	+5	+12	+4	+12	+6	+12	+5	+12
11		INTERRUPTED ADJUSTMENT								
12		L10 AT OBSERVER (add row 10 & 11 to row 9)	65	70	63	69	64	63	62	62
13	WS6	ELEMENT TOTAL	L50		L50		L50		L50	
			71		70		67		65	
14	WS6	GRAND TOTAL	L50	=	dB	L10	=	dB	L50	=
15			L10	-	L50	=	dB			

TABLE 6
-60-

RGT 1-23-78

Without walls

59

NOISE PREDICTION WORK SHEET

Line	Symbol	ROAD ELEMENT	Camelback		Camelback		83' HW		83' HW	
			50'	65'	50'	65'	50'	65'	50'	65'
Ref.		TIME INTERVAL	1997 hr							
		VEHICLE TYPE	Auto	Truck	Auto	Truck	Auto	Truck	Auto	Truck
1		Reference L50 at 100 ft	64	59	64	59	62	52	62	52
2	Δ1	Distance	+4	+4	+3	+3	+4	+4	+3	+3
3	Δ2	Element								
4	Δ3	Gradient	-		-		-		-	
5	Δ4 WS3	Vertical								
6	Δ5	Surface								
7	Δ6 WS4	Shielding								
		(a) Barriers								
		(b) Structures & Plant.								
8		TOTAL ADJUSTMENT (add rows 2 through 7)	+4	+4	+3	+3	+4	+4	+3	+3
9		L50 AT OBSERVER (add row 1 to row 8)	68	63	67	62	66	56	65	55
10	WS5	L10 - L50 ADJUSTMENT	+5	+12	+4	+12	+6	+12	+5	+12
11		INTERRUPTED ADJUSTMENT								
12		L10 AT OBSERVER (add row 10 & 11 to row 9)	73	75	71	74	72	68	70	67
13	WS6	ELEMENT TOTAL	L50		L50		L50		L50	
			77		76		73		72	
14	WS6	GRAND TOTAL	L50	=	dB	L10	=	dB	L50	=
15			L10	-	L50	=	dB			

(Excerpt from Arizona Department of Transportation letter dated December 20, 1977)

We are not able to estimate future sound level values which are directly comparable to the standards set forth in HUD Circular 1390.2. Circular 1390.2 establishes a level of 65 dBA not exceeded more than eight hours per day as an upper limit for the "discretionary-normally acceptable" range. Our sound level estimation procedures, based on extensive research done for the Federal Highway Administration, produce an estimate of the sound level not exceeded more than six minutes during the hour of heaviest traffic flow. Analysis of our data indicates that a sound level of approximately 75 dBA not exceeded more than six minutes during the noisiest hour corresponds to the Circular 1390.2 limit of 65 dBA not exceeded more than eight hours per day.

Arizona Department of Transportation
Highways Division
206 South 17th Avenue
Phoenix, Arizona 85007

AIR QUALITY

The Code of Federal Regulations 40 CFR 51.12(e), published in 1975, requires all states to identify areas which, due to the air quality at that time and/or projected growth rate, might have the potential for exceeding any national standards within the subsequent 10-year period.

After the State of Arizona determined that the national standards were being exceeded in Maricopa County, Phoenix Standard Metropolitan Statistical Area was designated as an Air Quality Maintenance Area (AQMA). In May 1976, an AQMA Task Force was formed to develop an Air Quality Maintenance Plan to assure compliance with the National Ambient Air Quality Standards (NAAQS). The 1977 Clean Air Act amendments require attainment by 1982.

Of the pollutants for which there are NAAQS, the Phoenix Air Quality Maintenance Area presently violates the one-hour primary standard for particulates and photochemical oxidants and the eight-hour primary standard for carbon monoxide. Violations of one or more of these standards have been recorded in 1977 at all of the continuous monitoring sites (Figure 1). The exact locations of these sites and the pollutants monitored are described in Table 1.

Violation of the particulate standard in Phoenix occurs as a result of the high level of desert dust in the ambient atmosphere. The major sources of particulate emissions are unpaved roads, resuspension off paved roads, construction activities, wind erosion, undisturbed desert and off-road vehicles. Maricopa County is currently preparing

an Air Quality Maintenance Plan (AQMP) for particulates which will be submitted to Environmental Protection Agency by January 1, 1979. All developers will have to comply with any dust control regulations adopted by the Maricopa County Board of Supervisors as a part of this plan. The development of streets, curbs and sidewalks and the completion of residential construction will aid in reducing future particulate levels in the area.

The other two pollutants (carbon monoxide and photochemical oxidants) which presently violate the NAAQS in Phoenix are primarily the product of traffic emissions. Carbon monoxide is emitted directly by vehicles, while oxidants are formed by a complex interaction between non-methane hydrocarbon and nitrogen oxide vehicle emissions in the presence of sunlight.

One-hour violations of the carbon monoxide standard have not been recorded in Phoenix since 1973. The eight-hour standard is violated frequently, however, due to ground-based inversions occurring at sunset on two-thirds of the winter evenings. Prevailing wind currents usually dilute the pollution and blow it out of the Valley, and the only unpleasant effect may be a haze. However, wind decreases in the winter months, and a temperature inversion layer forms over the Valley like a lid during the winter evenings. These inversions trap the carbon monoxide emissions produced after sunset which often causes eight-hour average violations after midnight during the winter.

In contrast, high photochemical oxidant concentrations are caused by a.m. traffic emissions which react with morning sunlight to produce

violations during the mid and late afternoon. Most oxidant violations occur during the spring and summer months in Phoenix.

Since the subdivision will be all electric, the major contribution to future carbon monoxide and oxidant levels will be made by vehicles owned by the project residents.

Assuming 80% of vehicles associated with Maryvale Terrace are light-duty autos and 20% are light-duty trucks, the predicted emission rates of carbon monoxide of 14.8 grams for 1980 are expected to decrease 8.0 grams per mile by 1985 on the primary system and 12.2 grams on the local system from 23.2 grams. The non-methane hydrocarbon rates of 3.1 grams per mile for the primary system and 3.7 for the local system should decrease 1.6 and 2.0, respectively, during the same period. The primary system is the network of major streets and freeways including improvements programmed into the Maricopa County "Transportation Improvement Program, FY 1978-1982" by the Maricopa Association of Governments (MAG). The local system is composed of the collector streets which feed into the primary system.

The project will also contribute approximately 27% of the traffic emissions in 1980 and 20% in 1985 in the one-square-mile grid containing the proposed development. This emissions decline will be due to the impact of the Federal Motor Vehicle Emission Control Program and the ongoing Maricopa County Vehicle Inspection and Maintenance Program.

With the continued use of these programs plus vapor recovery (vapor recovery controls hydrocarbon vapors from fuel handling operations), the entire Phoenix AQMA will attain the eight-hour carbon monoxide standard

in 1982 and one-hour photochemical oxidant standard in 1985.

Assuming a 2,600 person population increase between 1975 and 1985 in the area containing Maryvale Terrace 53-A, the project does not and will not violate the eight-hour carbon monoxide primary standard and it is likely oxidant air quality standards will achieve attainment several years earlier than downtown Phoenix.

The proposed Papago Freeway passing three miles south of the subject site would make no significant contribution to air pollution at the subdivision. However, according to the Draft EIS on Interstate 10, some pollution could be localized within the transportation corridor of the Papago Freeway.

Zoning and land use maps indicate only residential, agricultural and commercial uses for this area.

Maryvale Terrace 53-A will not be a source of significant air pollution. Once construction is completed, the subdivision will have a positive impact in reducing particulate concentrations in West Phoenix. With the continued implementation of the Federal Motor Vehicle Emission Control, Maricopa County Vehicle Emission Control and Vapor Recovery programs now in effect, the carbon monoxide level will meet the NAAQS in compliance with the 1977 Clean Air Act amendments and the oxidant level will be attained by 1985 or earlier.

SOURCES

Maricopa County Health Department
1845 E. Roosevelt
Phoenix, Arizona 85006
James Layden
Robert Taylor, Chief, Bureau of Air Pollution

Arizona Department of Health Services (ADHS)
Bureau of Air Quality Control
1740 W. Adams Street
Phoenix, Arizona 85007
Art Aymar, Assistant Chief

"Air Quality Data for Arizona - 1976"
Arizona Department of Health Services

"Executive Summary - Phoenix Air Quality Maintenance Area Analysis" -
August 1977

Arizona Department of Transportation (ADOT)
206 S. 17th Avenue
Phoenix, Arizona 85007
Cathy Arthur, Senior Planner

EPA Document -
"Supplement No. 5 for Compilation of Air Pollution Emission Factors"
April 1975

"Technical Support Documentation - Phoenix Air Quality Maintenance
Plan for Carbon Monoxide and Photochemical Oxidants" prepared by
ADOT for ADHA, March, 1978.

PHOENIX CONTINUOUS MONITORING STATION LOCATIONS*

<u>Site</u>	<u>Name</u>	<u>Address</u>	<u>Operating Agency**</u>	<u>Components Monitored</u>
1	Central Phoenix Station	1845 E. Roosevelt Phoenix	MCDHS	CO, CH ₄ , NMHC, THC, NO ₂ , O ₃ , Part., WS, WD
2	South Phoenix Station	4732 S. Central Ave. Phoenix	MCDHS	CO, O ₃ , Part., WS, WD
3	Arizona State Station	1740 W. Adams Phoenix	ADHS	CO, CH ₄ , THC, NMHC, NO ₂ , SO ₂ , O ₃ , Part., WS, WD
4	Glendale Station	6000 W. Olive Glendale	MCDHS	CO, O ₃ , Part., WS, WD
5	West Phoenix Station	3300 W. Camelback Phoenix	MCDHS	CO, WS, WD
6	North Phoenix	8531 N. 6th Street Phoenix	MCDHS	CO, O ₃ , Part., WS, WD
7	North Scottsdale/ Paradise Valley Station	13665 N. Scottsdale Rd. Scottsdale	MCDHS	CO, Part., WS, WD
8	Scottsdale Station	2857 N. Miller Rd. Scottsdale	MCDHS	CO, NO ₂ , O ₃ , Part., WS, WD
9	Mesa Station	3rd Place and Center Mesa	MCDHS	CO, Part., WS, WD,
10	Sky Harbor Inter- national Airport	Sky Harbor Blvd. Phoenix	NWS	Surface Weather Observations

* As of February 1, 1978

**MCDHS: Maricopa County Department of Health Services
ADHS: Arizona Department of Health Services
NWS: National Weather Service

TABLE 8 PARTICULATE EMISSIONS FROM MAJOR SOURCES* IN THE PHOENIX STUDY AREA, 1975 AND 1985.

TABLE 8
-67-

EMISSIONS SOURCE CATEGORY	PARTICULATES, TONS/DAY							
	1975				1985			
	0-10 μ	10-20 μ	20-100 μ	TOTAL	0-10 μ	10-20 μ	20-100 μ	TOTAL
1. Unpaved Roads	537	144	600	1281	637	171	745	1553
2. Resuspension off paved roads	164	57	27	248	213	74	35	322
3. Construction activities	66	23	11	100	169	59	28	256
4. Wind Erosion-undisturbed Desert	200	65	29	294	58	19	8	85
5. Off road vehicles	29	8	23	71	44	12	50	106
6. All other categories	258	70	49	386	105	16	19	140
Sub-total for 5 categories	996	297	690	1974	1121	335	866	2322
Total emissions	1254	367	739	2360	1226	351	885	2462
Percentage of all emissions generated by 5 fugitive dust categories	79.4	81.0	93.5	83.7	91.5	95.5	98.0	94.0

* The five sources listed above are the largest emitting sources of particulates projected to exist in 1985.

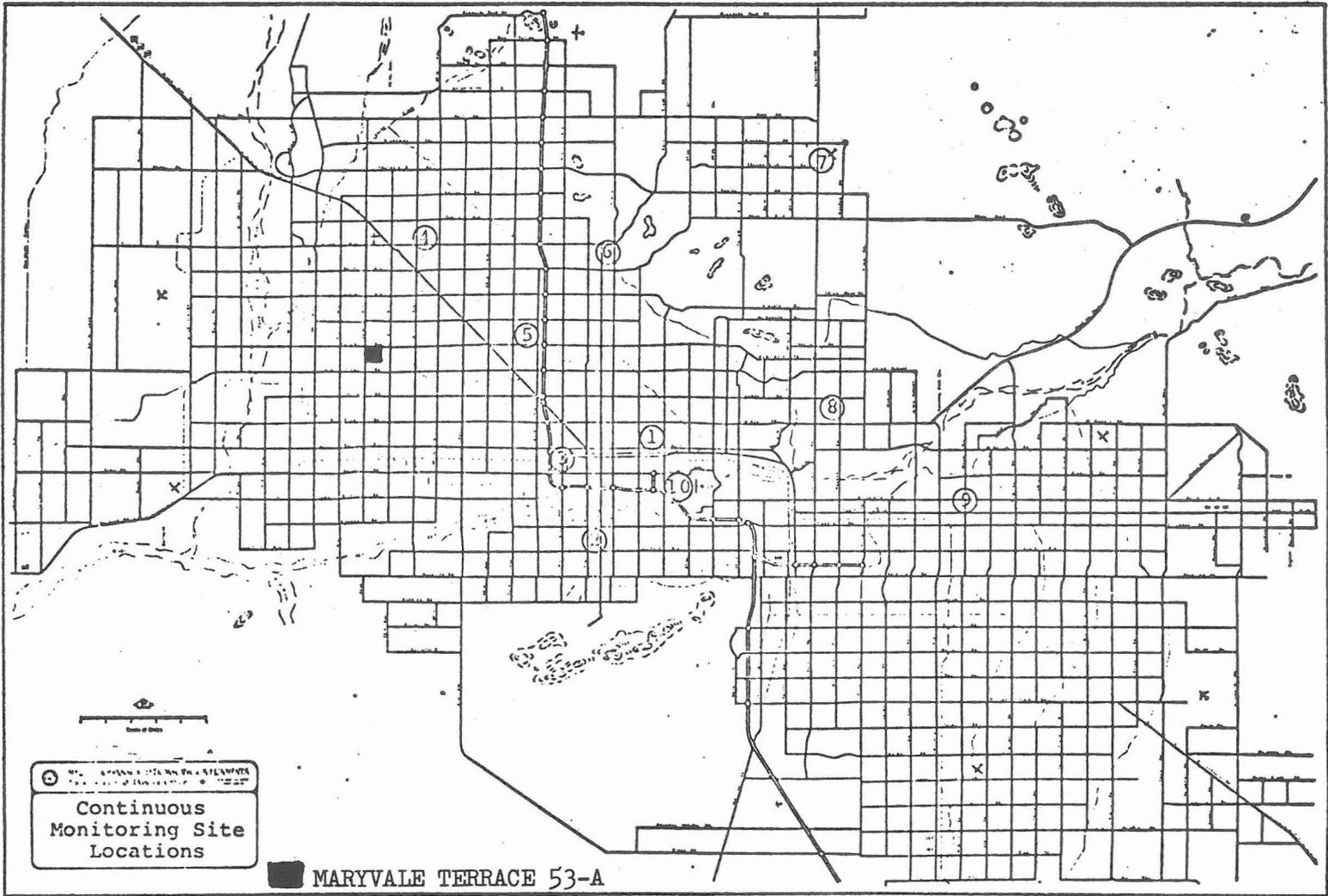
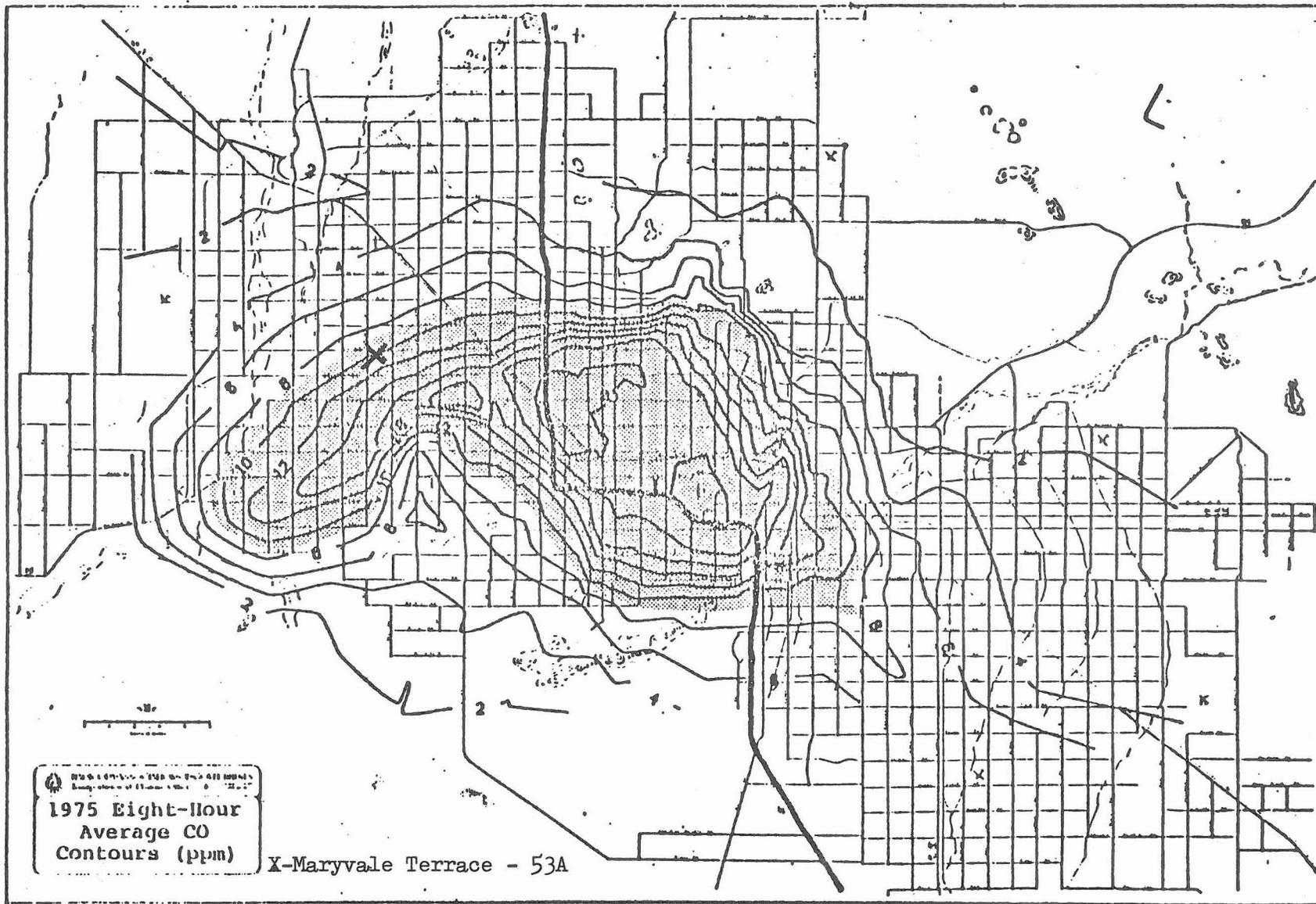


FIGURE 7
-68-

FIGURE 8
-69-

1" = 1/2 MILE
1" = 1/4 MILE
1" = 1/8 MILE
1" = 1/16 MILE
1" = 1/32 MILE
1" = 1/64 MILE
1" = 1/128 MILE
1" = 1/256 MILE
1" = 1/512 MILE
1" = 1/1024 MILE
1" = 1/2048 MILE
1" = 1/4096 MILE
1" = 1/8192 MILE
1" = 1/16384 MILE
1" = 1/32768 MILE
1" = 1/65536 MILE
1" = 1/131072 MILE
1" = 1/262144 MILE
1" = 1/524288 MILE
1" = 1/1048576 MILE
1" = 1/2097152 MILE
1" = 1/4194304 MILE
1" = 1/8388608 MILE
1" = 1/16777216 MILE
1" = 1/33554432 MILE
1" = 1/67108864 MILE
1" = 1/134217728 MILE
1" = 1/268435456 MILE
1" = 1/536870912 MILE
1" = 1/1073741824 MILE
1" = 1/2147483648 MILE
1" = 1/4294967296 MILE
1" = 1/8589934592 MILE
1" = 1/17179869184 MILE
1" = 1/34359738368 MILE
1" = 1/68719476736 MILE
1" = 1/137438953472 MILE
1" = 1/274877906944 MILE
1" = 1/549755813888 MILE
1" = 1/1099511627776 MILE
1" = 1/2199023255552 MILE
1" = 1/4398046511104 MILE
1" = 1/8796093022208 MILE
1" = 1/17592186044416 MILE
1" = 1/35184372088832 MILE
1" = 1/70368744177664 MILE
1" = 1/140737488355328 MILE
1" = 1/281474976710656 MILE
1" = 1/562949953421312 MILE
1" = 1/1125899906842624 MILE
1" = 1/2251799813685248 MILE
1" = 1/4503599627370496 MILE
1" = 1/9007199254740992 MILE
1" = 1/18014398509481984 MILE
1" = 1/36028797018963968 MILE
1" = 1/72057594037927936 MILE
1" = 1/144115188075855872 MILE
1" = 1/288230376151711744 MILE
1" = 1/576460752303423488 MILE
1" = 1/1152921504606846976 MILE
1" = 1/2305843009213693952 MILE
1" = 1/4611686018427387904 MILE
1" = 1/9223372036854775808 MILE
1" = 1/18446744073709551616 MILE
1" = 1/36893488147419103232 MILE
1" = 1/73786976294838206464 MILE
1" = 1/147573952589676412928 MILE
1" = 1/295147905179352825856 MILE
1" = 1/590295810358705651712 MILE
1" = 1/1180591620717411303424 MILE
1" = 1/2361183241434822606848 MILE
1" = 1/4722366482869645213696 MILE
1" = 1/9444732965739290427392 MILE
1" = 1/18889465931478580854784 MILE
1" = 1/37778931862957161709568 MILE
1" = 1/75557863725914323419136 MILE
1" = 1/151115727451828646838272 MILE
1" = 1/302231454903657293676544 MILE
1" = 1/604462909807314587353088 MILE
1" = 1/1208925819614629174706176 MILE
1" = 1/2417851639229258349412352 MILE
1" = 1/4835703278458516698824704 MILE
1" = 1/9671406556917033397649408 MILE
1" = 1/19342813113834066795298816 MILE
1" = 1/38685626227668133590597632 MILE
1" = 1/77371252455336267181195264 MILE
1" = 1/154742504910672534362390528 MILE
1" = 1/309485009821345068724781056 MILE
1" = 1/618970019642690137449562112 MILE
1" = 1/1237940039285380274899124224 MILE
1" = 1/2475880078570760549798248448 MILE
1" = 1/4951760157141521099596496896 MILE
1" = 1/9903520314283042199192993792 MILE
1" = 1/19807040628566084398385987584 MILE
1" = 1/39614081257132168796771975168 MILE
1" = 1/79228162514264337593543950336 MILE
1" = 1/158456325028528675187087900672 MILE
1" = 1/316912650057057350374175801344 MILE
1" = 1/633825300114114700748351602688 MILE
1" = 1/1267650600228229401496703205376 MILE
1" = 1/2535301200456458802993406410752 MILE
1" = 1/5070602400912917605986812821504 MILE
1" = 1/10141204801825835211973625643008 MILE
1" = 1/20282409603651670423947251286016 MILE
1" = 1/40564819207303340847894502572032 MILE
1" = 1/81129638414606681695789005144064 MILE
1" = 1/162259276829213363391578010288128 MILE
1" = 1/324518553658426726783156020576256 MILE
1" = 1/649037107316853453566312041152512 MILE
1" = 1/1298074214633706907132624082305024 MILE
1" = 1/2596148429267413814265248164610048 MILE
1" = 1/5192296858534827628530496329220096 MILE
1" = 1/10384593717069655257060992658440192 MILE
1" = 1/20769187434139310514121985316880384 MILE
1" = 1/41538374868278621028243970633760768 MILE
1" = 1/83076749736557242056487941267521536 MILE
1" = 1/166153499473114484112975882535043072 MILE
1" = 1/332306998946228968225951765070086144 MILE
1" = 1/664613997892457936451903530140172288 MILE
1" = 1/1329227995784915872903807060280344576 MILE
1" = 1/2658455991569831745807614120560689152 MILE
1" = 1/5316911983139663491615228241121378304 MILE
1" = 1/10633823966279326983230456482242756608 MILE
1" = 1/21267647932558653966460912964485513216 MILE
1" = 1/42535295865117307932921825928971026432 MILE
1" = 1/85070591730234615865843651857942052864 MILE
1" = 1/170141183460469231731687303715884105728 MILE
1" = 1/340282366920938463463374607431768211456 MILE
1" = 1/680564733841876926926749214863536422912 MILE
1" = 1/1361129467683753853853498429727072845824 MILE
1" = 1/2722258935367507707706996859454145691648 MILE
1" = 1/5444517870735015415413993718908291383296 MILE
1" = 1/10889035741470030830827987437816582766592 MILE
1" = 1/21778071482940061661655974875633165533184 MILE
1" = 1/43556142965880123323311949751266331066368 MILE
1" = 1/87112285931760246646623899502532662132736 MILE
1" = 1/174224571863520493293247799005065324265472 MILE
1" = 1/348449143727040986586495598010130648530944 MILE
1" = 1/696898287454081973172991196020261297061888 MILE
1" = 1/1393796574908163946345982392040522594123776 MILE
1" = 1/2787593149816327892691964784081045188247552 MILE
1" = 1/5575186299632655785383929568162090376495104 MILE
1" = 1/11150372599265311570767859136324180752990208 MILE
1" = 1/22300745198530623141535718272648361505980416 MILE
1" = 1/44601490397061246283071436545296723011960832 MILE
1" = 1/89202980794122492566142873090593446023921664 MILE
1" = 1/178405961588244985132285746181186892047843328 MILE
1" = 1/356811923176489970264571492362373784095686656 MILE
1" = 1/713623846352979940529142984724747568191373312 MILE
1" = 1/1427247692705959881058285969449495136382746624 MILE
1" = 1/2854495385411919762116571938898990272765493248 MILE
1" = 1/5708990770823839524233143877797980545530986496 MILE
1" = 1/11417981541647679048466287755595961091061972992 MILE
1" = 1/22835963083295358096932575511191922182123945984 MILE
1" = 1/45671926166590716193865151022383844364247891968 MILE
1" = 1/91343852333181432387730302044767688728495783936 MILE
1" = 1/182687704666362864775460604089535377456991567872 MILE
1" = 1/365375409332725729550921208179070754913983135744 MILE
1" = 1/730750818665451459101842416358141509827966271488 MILE
1" = 1/1461501637330902918203684832716283019655932542976 MILE
1" = 1/2923003274661805836407369665432566039311865085952 MILE
1" = 1/5846006549323611672814739330865132078623730171904 MILE
1" = 1/11692013098647223345629478661730264157247460343808 MILE
1" = 1/23384026197294446691258957323460528314494920687616 MILE
1" = 1/46768052394588893382517914646921056628989841375232 MILE
1" = 1/93536104789177786765035829293842113257979682750464 MILE
1" = 1/187072209578355573530071658587684226515959365500928 MILE
1" = 1/374144419156711147060143317175368453031918731001856 MILE
1" = 1/748288838313422294120286634350736906063837462003712 MILE
1" = 1/1496577676626844588240573268701473812127674924007424 MILE
1" = 1/2993155353253689176481146537402947624255349848014848 MILE
1" = 1/5986310706507378352962293074805895248510699696029696 MILE
1" = 1/11972621413014756705924586149611790497021399392059392 MILE
1" = 1/23945242826029513411849172299223580994042798784118784 MILE
1" = 1/47890485652059026823698344598447161988085597568237568 MILE
1" = 1/95780971304118053647396689196894323976171195136475136 MILE
1" = 1/191561942608236107294793378393788647952342390272950272 MILE
1" = 1/383123885216472214589586756787577295904684780545900544 MILE
1" = 1/766247770432944429179173513575154591809369561091801088 MILE
1" = 1/1532495540865888858358347027150309183618739122183602176 MILE
1" = 1/3064991081731777716716694054300618367237478244367204352 MILE
1" = 1/6129982163463555433433388108601236734474956488734408704 MILE
1" = 1/12259964326927110866866776217202473468949912777468817408 MILE
1" = 1/24519928653854221733733552434404946937899825554937634816 MILE
1" = 1/49039857307708443467467104868809893875799651109875269632 MILE
1" = 1/98079714615416886934934209737619787751599302219750539264 MILE
1" = 1/196159429230833773869868419475239575503198604439501078528 MILE
1" = 1/392318858461667547739736838950479151006397208879002156544 MILE
1" = 1/784637716923335095479473677900958302012794417758004313088 MILE
1" = 1/1569275433846670190958947355801916604025588835516008626176 MILE
1" = 1/3138550867693340381917894711603833208051177671032017252352 MILE
1" = 1/6277101735386680763835789423207666416102355342064034504704 MILE
1" = 1/12554203470773361527671578846415332832204710684128069009408 MILE
1" = 1/25108406941546723055343157692830665664409421368256138018816 MILE
1" = 1/50216813883093446110686315385661331328818842736512276037632 MILE
1" = 1/100433627766186892221372631171322662657637685473024552075264 MILE
1" = 1/200867255532373784442745262342645325315275370946049104150528 MILE
1" = 1/401734511064747568885490524685290650630550741892098208301056 MILE
1" = 1/803469022129495137770981049370581301261101483784196416602112 MILE
1" = 1/1606938044258990275541962098741162602522202967568392833204224 MILE
1" = 1/3213876088517980551083924197482325205044405935136785666408448 MILE
1" = 1/6427752177035961102167848394964650410088811870273571332816896 MILE
1" = 1/12855504354071922204335696789929300820177623740547142665633792 MILE
1" = 1/25711008708143844408671393579858601640355247481094285331267584 MILE
1" = 1/51422017416287688817342787159717203280710494962188570662535168 MILE
1" = 1/102844034832575377634685574319434406561420989924377141325070336 MILE
1" = 1/205688069665150755269371148638868813122841979848754282650140672 MILE
1" = 1/411376139330301510538742297277737626245683959697508565300281344 MILE
1" = 1/822752278660603021077484594555475252491367919395017130600562688 MILE
1" = 1/1645504557321206042154969189110950504982735838790034261201125376 MILE
1" = 1/3291009114642412084309938378221901009965471677580068522402250752 MILE
1" = 1/6582018229284824168619876756443802019930943355160137044804501504 MILE
1" = 1/13164036458569648337239753512887604039861886710320274089609003008 MILE
1" = 1/26328072917139296674479507025775208079723773420640548179218006016 MILE
1" = 1/52656145834278593348959014051550416159447546841281096358436012032 MILE
1" = 1/105312291668557186697918028103100832318895093682562192716872024064 MILE
1" = 1/210624583337114373395836056206201664637790187365124385433744048128 MILE
1" = 1/421249166674228746791672112412403329275580374730248770867488096256 MILE
1" = 1/842498333348457493583344224824806658551160749460497541734976192512 MILE
1" = 1/1684996666696914987166688449649613317102321498920995083469952385024 MILE
1" = 1/3369993333393829974333376899299226634204642997841990166939904770048 MILE
1" = 1/6739986666787659948666753798598453268409285995683980333879809540096 MILE
1" = 1/13479973333575319897333507597196906536818571991367960667759619080192 MILE
1" = 1/26959946667150639794667015194393813073637143982735921335519238160384 MILE
1" = 1/53919893334301279589334030388787626147274287965471842671038476320768 MILE
1" = 1/107839786668602559178668060777575252294548575930943685342076952641536 MILE
1" = 1/215679573337205118357336121555150504589097151861887370684153905283072 MILE
1" = 1/431359146674410236714672243110301009178194303723774741368307810566144 MILE
1" = 1/862718293348820473429344486220602018356388607447549482736615621132288 MILE
1" = 1/1725436586697640946858688972441204036712777214895098965473231242264576 MILE
1" = 1/3450873173395281893717377944882408073425554429790197930946462484529152 MILE
1" = 1/6901746346790563787434755889764816146851108859580395861892924969058304 MILE
1" = 1/13803492693581127574869511779529632293702217719160791723785849938116608 MILE
1" = 1/2760698538716

FIGURE 9
-70-



1975 Eight-Hour
Average CO
Contours (ppm)

X-Maryvale Terrace - 53A

Exceeds NAAQS = 9 ppm
Represents the meteorology
of January 16-17, 1975, 8 p.m.-4 a.m.

FIGURE 10
-71-

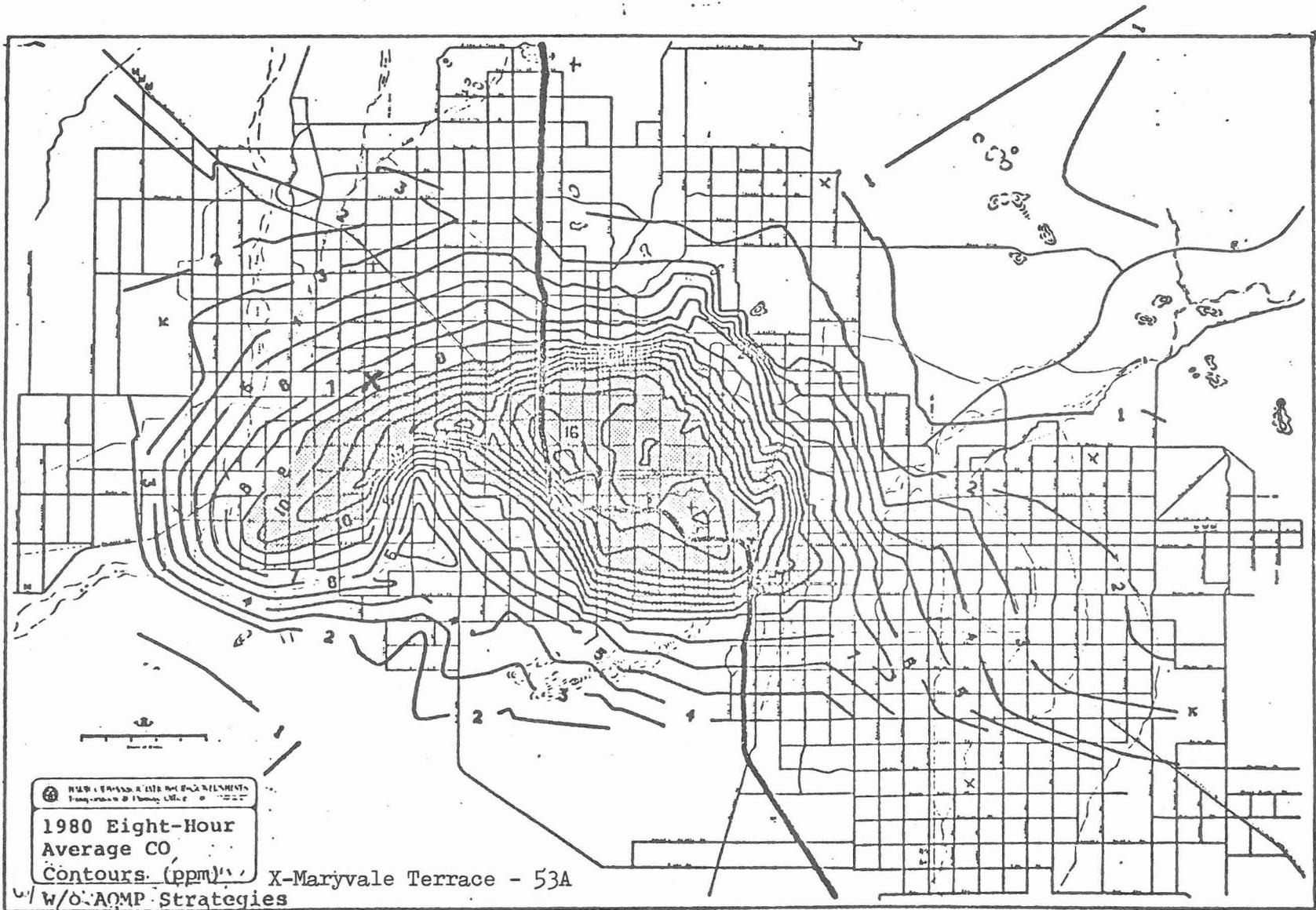


FIGURE 11
-72-

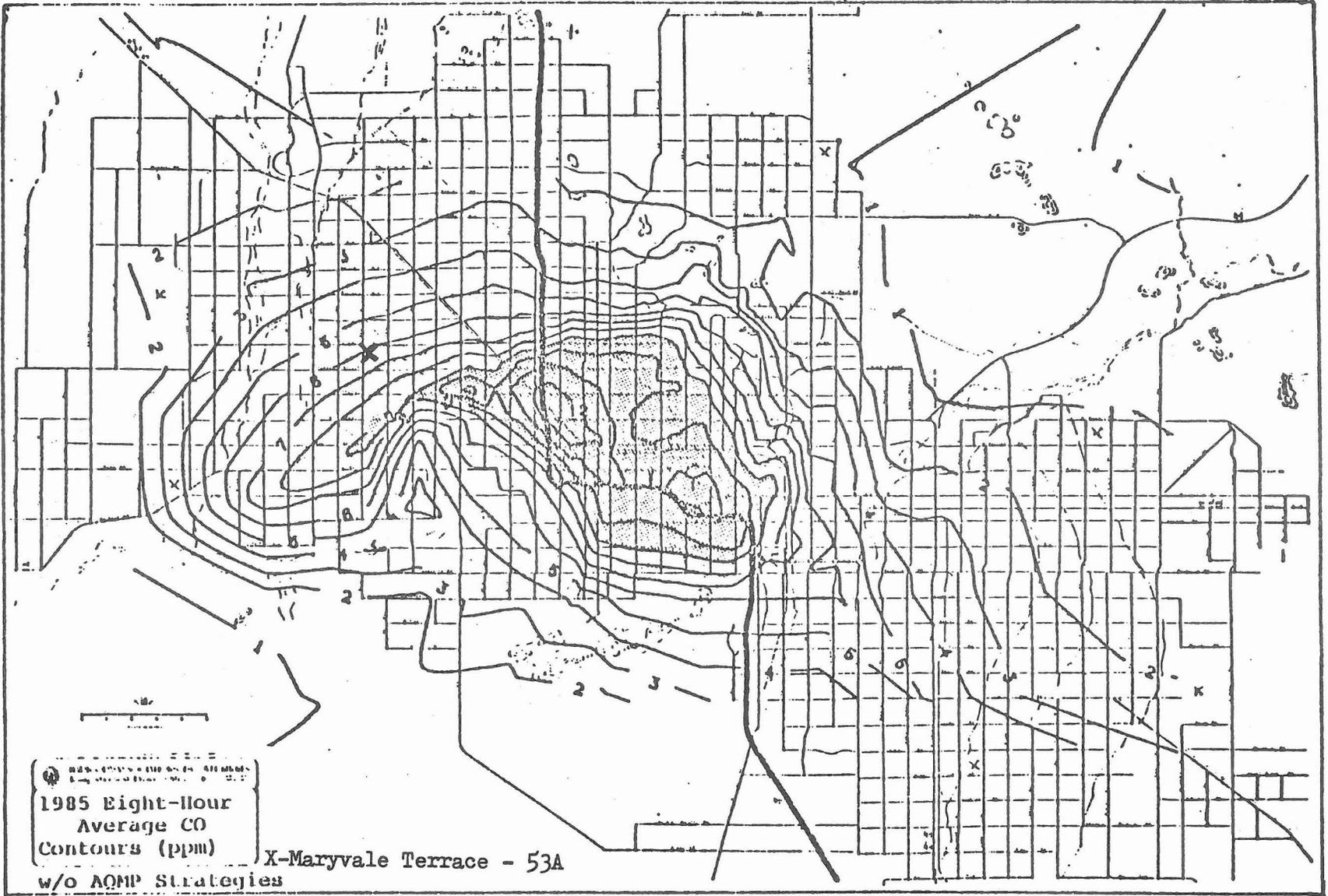


FIGURE 12
-73-

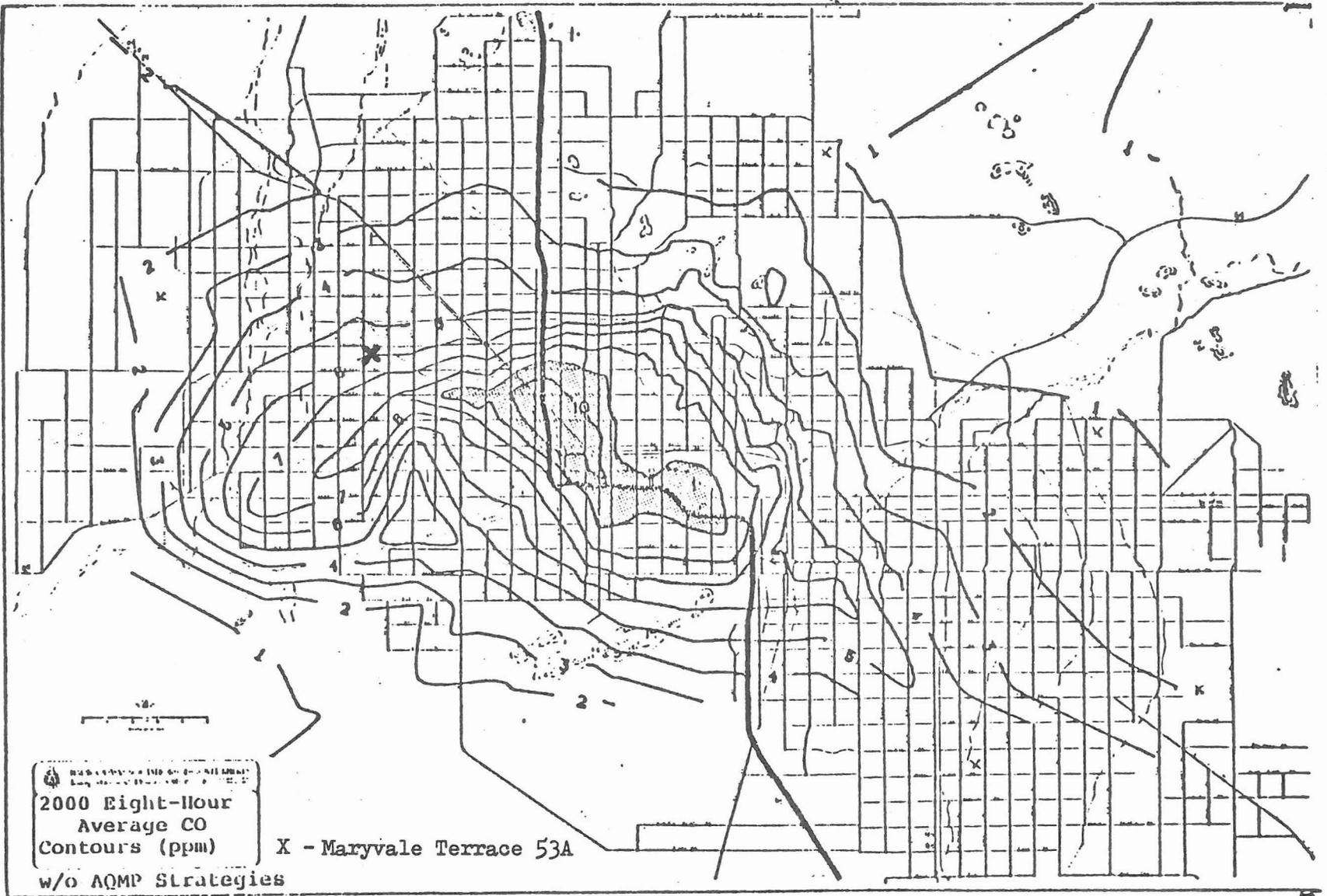
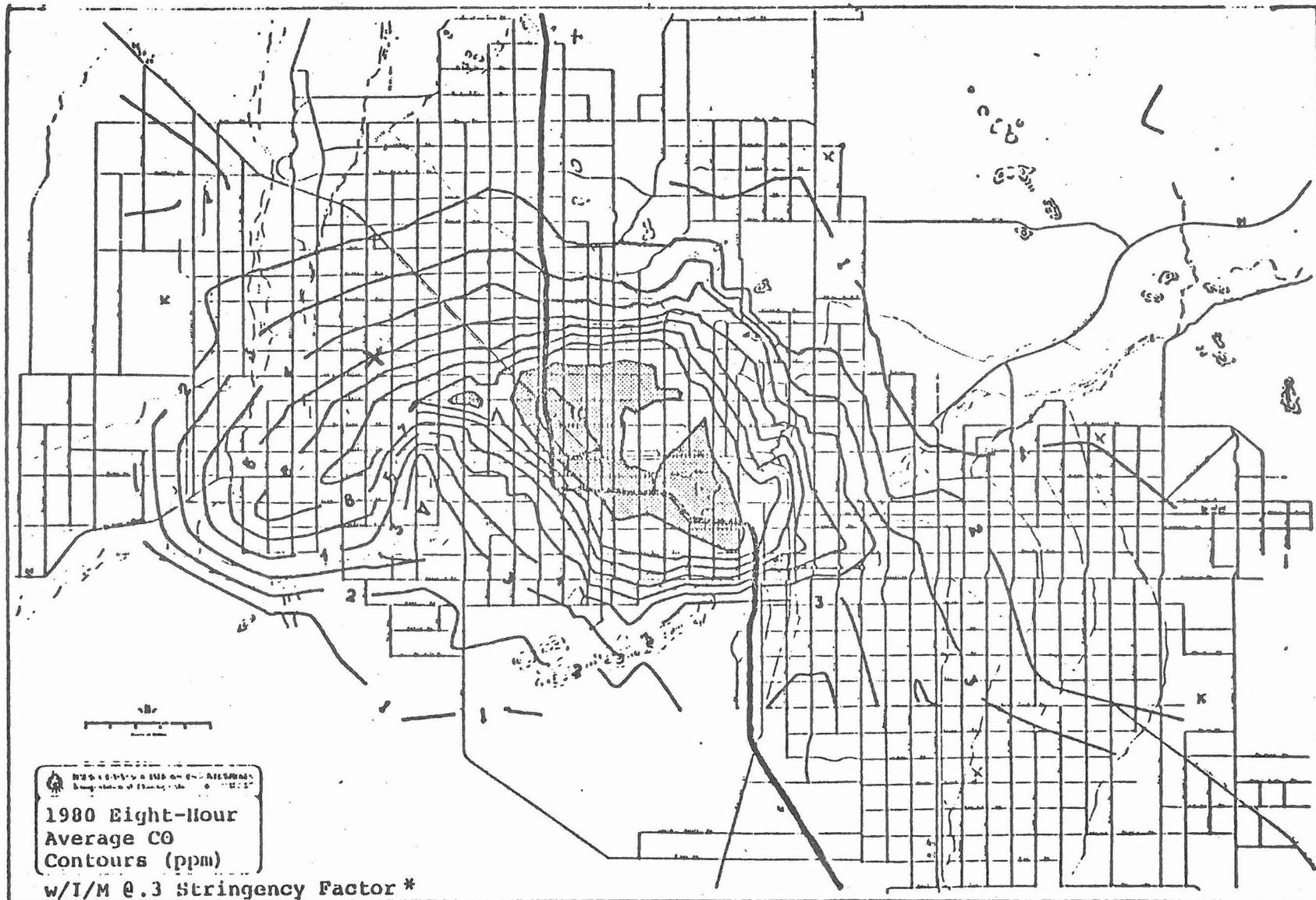


FIGURE 13
-74-



1980 Eight-Hour
Average CO
Contours (ppm)

w/I/M @.3 Stringency Factor *

X - Maryvale Terrace 53A

* I/M - Inspection/Maintenance



Exceeds NAAQS = 9 ppm

Stringency Factor is based on the Federal Certification Standards with allowances for deterioration and local conditions.

MARYVALE TERRACE VEHICLE TRAVEL ASSUMPTIONS

Number of proposed dwelling units =	615	
Regional average vehicles/dwelling unit =	1.4	
Total vehicles =	860	
Regional average work trips/vehicle =	1.2	
Average work trip length on primary system =	10	Miles
Work trip vehicle miles of travel on primary system =	10,330	
Regional average home-based other trips/vehicle =	2.3	
Average home-based other trip length on primary system =	7	Miles
Other trip vehicle miles of travel on primary system =	13,860	
Total vehicle miles of travel on primary system =	24,190	
Regional average work and other trips =	3,010	
Average trip length on local streets =	.25	Miles
Secondary vehicle miles of travel =	750	

TABLE 9
-75-

TRAFFIC EMISSIONS ASSOCIATED WITH MARYVALE TERRACE VEHICLES

Assuming 80% light-duty autos and 20% light-duty trucks from Maricopa County registrations:

		(grams/mile)	
<u>Emission Rates</u>		<u>CO</u>	<u>NMHC</u>
1980	Primary System	14.8	3.1
	Local System	23.5	3.7
1985	Primary System	6.8	1.5
	Local System	11.3	1.7
<u>Total Emissions</u>		(kilograms/day)	
		<u>CO</u>	<u>NMHC</u>
1980	Primary System	358.0	75.0
	Local System	17.7	2.8
1985	Primary System	164.5	36.3
	Local System	8.5	1.3

TABLE 10

TABLE 11
-77-

TRAFFIC EMISSIONS IN ONE SQUARE MILE GRID CONTAINING MARYVALE TERRACE

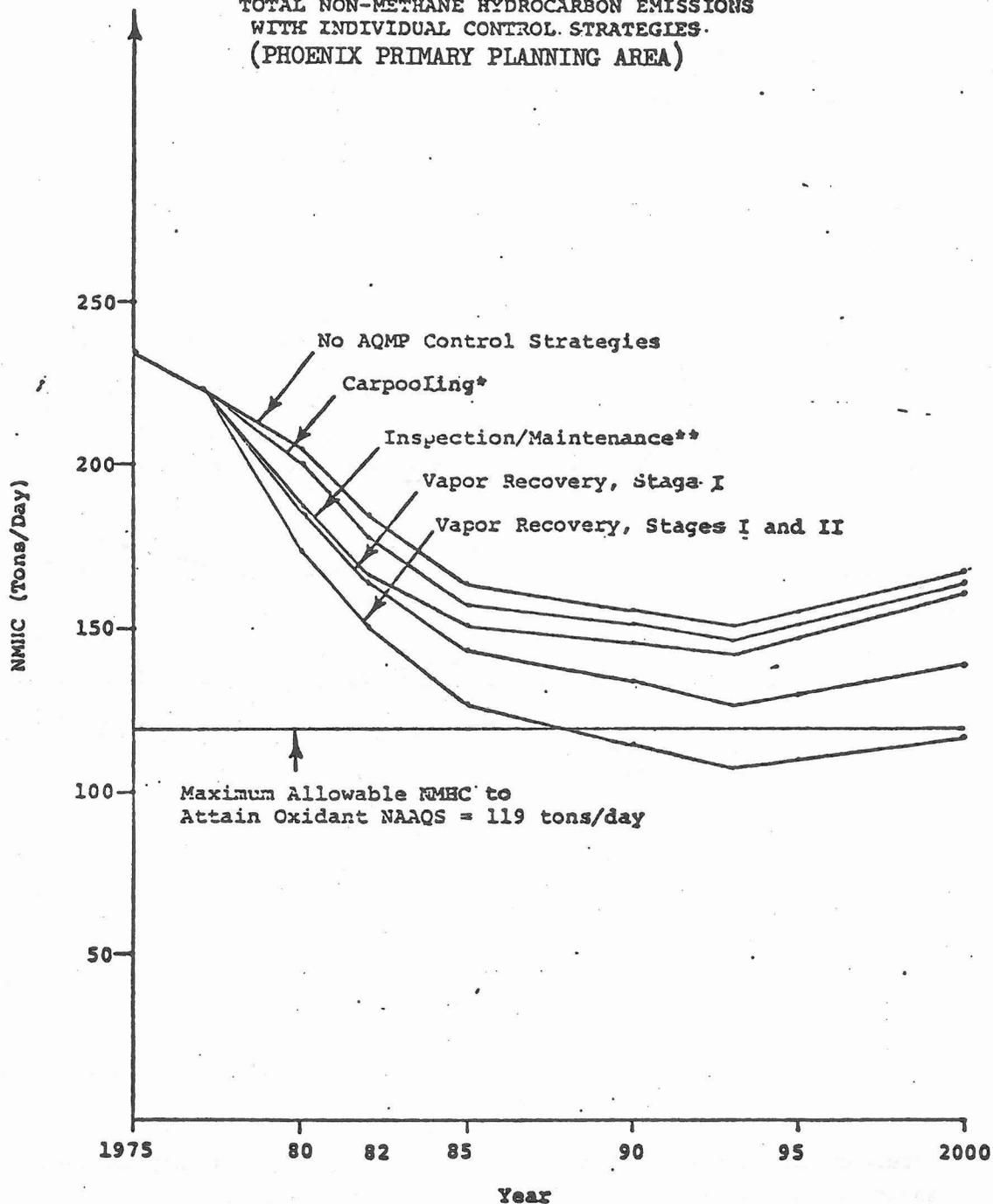
	Maryvale Terrace Traffic Emissions		Total Traffic Emissions	
	CO (kilograms/day)	NMHC (kilograms/day)	CO (kilograms/day)	NMHC (kilograms/day)
1975	-	-	703	86
1980	68.0	13.0	259	46
1985	31.8	6.2	185	30

CARBON MONOXIDE CONCENTRATIONS
AT RECEPTOR NEAREST PROPOSED SITE

	<u>Eight-Hour Average CO Concentration</u>
1975	9.07 ppm
1980	4.57 ppm
1985	3.29 ppm

National Ambient Air Quality Primary
Standard for Eight-Hour CO = 9 ppm.

TOTAL NON-METHANE HYDROCARBON EMISSIONS
WITH INDIVIDUAL CONTROL STRATEGIES.
(PHOENIX PRIMARY PLANNING AREA)



*Assuming maximum effectiveness of a carpooling program

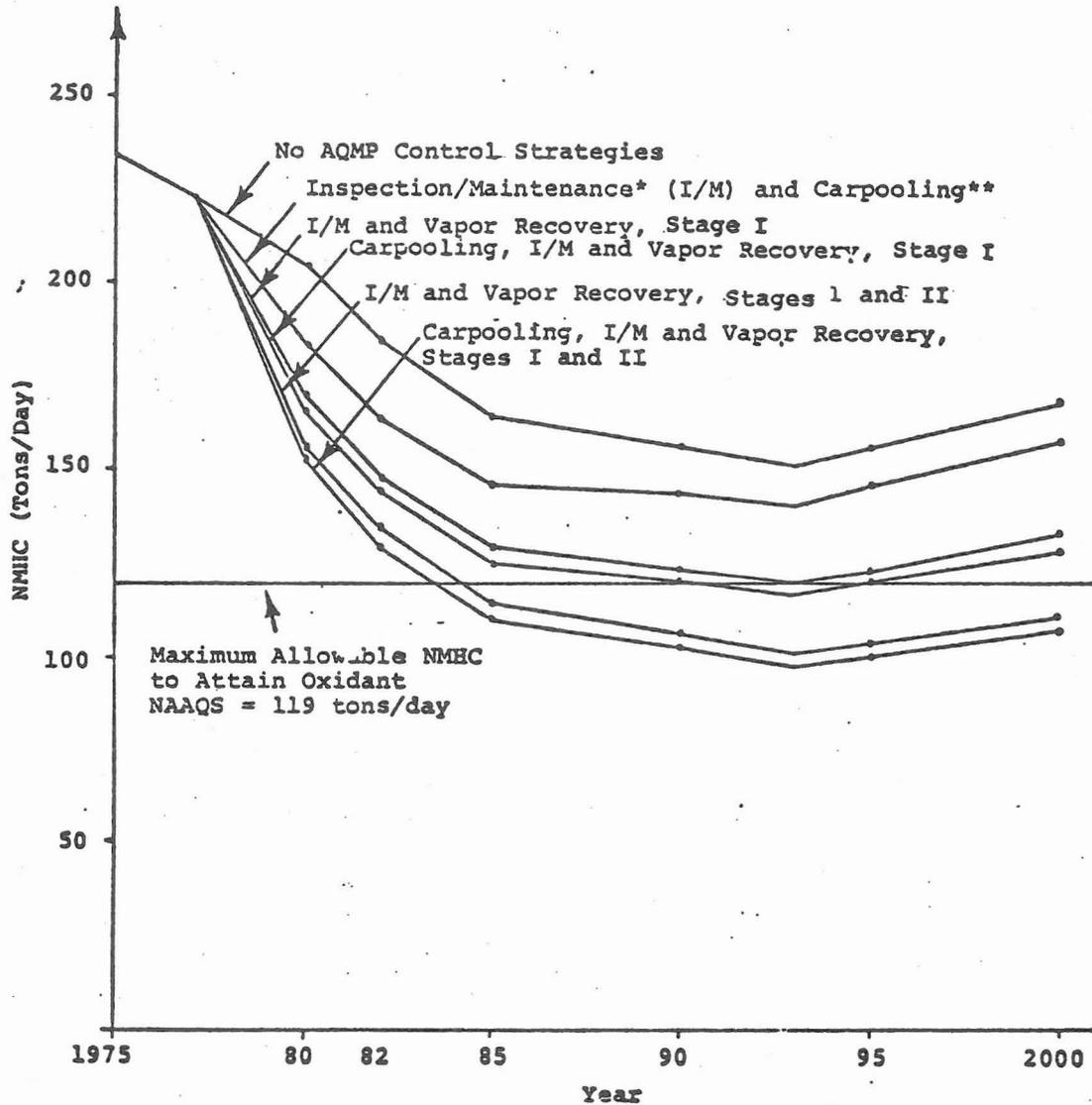
**Imperceptible differences between .2, .3 and .4 stringency factors.

Stage I. Controls vapors escaping during transfer of fuel from main storage tanks to delivery trucks and delivery trucks to station storage tanks.

Stage II. Controls vapors escaping during transfer of fuel from station pumps to vehicles.

FIGURE 14

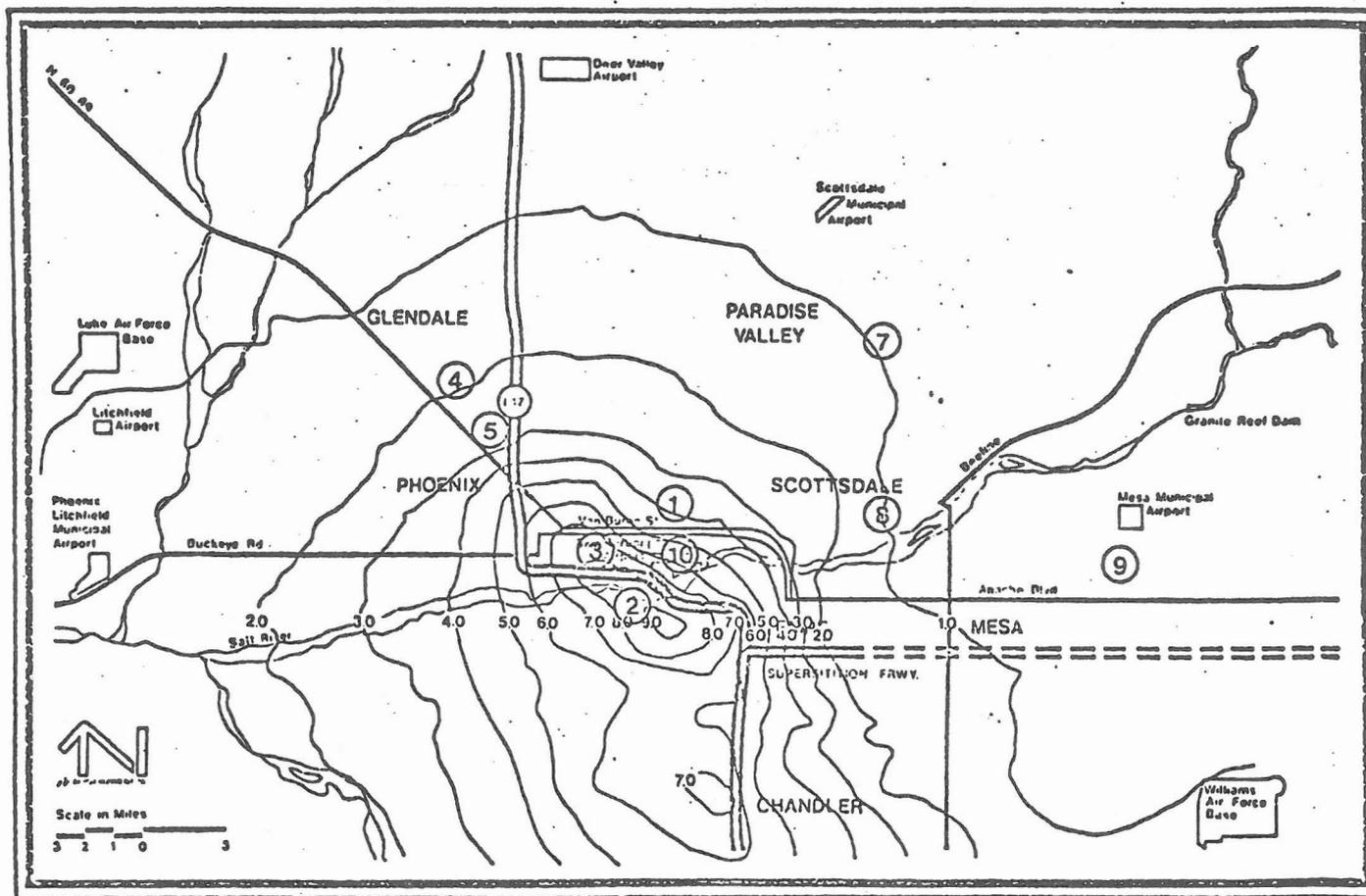
TOTAL NON-METHANE HYDROCARBON EMISSIONS
WITH CONTROL STRATEGY COMBINATIONS
(PHOENIX PRIMARY PLANNING AREA)



*Imperceptible differences between .2, .3, and .4 stringency factors.
 **Assuming maximum effectiveness of a carpooling program.
 Stage I. Controls vapors escaping during transfer of fuel from main storage tanks to delivery trucks and delivery trucks to station storage tanks.
 Stage II. Controls vapors escaping during transfer of fuel from station pumps to vehicles.

FIGURE 15
-80-

FIGURE 16
-81-



Isopleths of predicted 8-hour CO concentrations in ppm for 1985 with the implementation of inspection/maintenance and carpooling. The locations of the monitoring sites are shown.

CARBON MONOXIDE

HIGHEST HOURLY CONCENTRATION
(Milligrams per Cubic Meter)

MONTH	CENTRAL PHOENIX				NORTH PHOENIX				SOUTH PHOENIX				GLENDALE *			
	1977	1976	1975	1974	1977	1976	1975	1974	1977	1976	1975	1974	1977	1976	1975	1974
Jan.	24.1	26.3	32.1	39.0	19.5	21.8	27.5	-	13.7	19.5	12.6	-	12.6	17.2	16.0	-
Feb.	24.1	19.5	22.9	36.7	24.1	14.9	16.0	-	11.5	16.0	11.5	-	11.5	12.6	12.6	-
March	20.6	17.2	18.3	28.6	12.6	11.5	16.0	-	10.3	12.6	12.6	-	8.0	9.2	11.5	-
April	19.5	13.7	23.9	17.2	10.3	10.3	18.3	-	14.9	12.6	6.9	-	9.2	9.2	12.6	-
May	11.5	14.9	19.5	17.2	8.0	12.6	6.9	-	8.0	10.3	9.2	-	4.6	10.3	10.3	-
June	10.3	14.9	19.5	17.2	10.3	11.5	12.6	-	8.0	12.6	12.6	-	3.4	6.9	9.2	-
July	8.0	6.9	6.9	11.5	5.7	10.3	4.6	-	5.7	5.7	8.0	-	6.9	4.6	3.4	-
Aug.	11.5	12.6	10.3	14.9	9.2	9.2	11.5	-	11.5	11.5	9.2	-	5.7	8.0	8.0	-
Sept.	12.6	8.0	18.3	14.9	10.3	11.5	14.9	-	9.2	13.7	11.5	-	9.2	6.9	10.3	-
Oct.	17.2	21.8	22.9	21.8	13.7	12.6	13.7	16.0	11.5	13.7	13.7	13.7	9.2	10.3	12.6	8.0
Nov.	22.9	28.6	34.4	29.8	18.3	27.5	17.1	20.6	13.7	13.7	22.9	16.0	14.9	12.6	14.9	17.2
Dec.	30.9	27.5	34.4	26.3	24.1	18.3	20.6	25.2	19.5	17.2	24.1	13.7	13.7	13.7	17.2	14.9
Annual High	30.9	28.6	34.4	39.0	24.1	27.5	27.5	--	19.5	19.5	24.1	-	14.9	17.2	17.2	-

*Encompasses Maryvale Terrace 53A

CARBON MONOXIDE

HIGHEST EIGHT HOUR AVERAGE CONCENTRATION
(Milligrams per Cubic Meter)

MONTH	CENTRAL PHOENIX				NORTH PHOENIX				SOUTH PHOENIX				GLENDALE*			
	1977	1976	1975	1974	1977	1976	1975	1974	1977	1976	1975	1974	1977	1976	1975	1974
JAN.	18.3	20.5	23.2	24.9	9.2	8.7	8.5	-	8.2	9.6	7.0	-	6.2	8.7	9.5	-
FEBR.	15.8	10.5	13.9	21.5	6.6	7.4	7.9	-	4.7	7.9	5.6	-	5.2	6.4	5.2	-
MARCH	11.7	11.5	11.7	19.2	5.2	5.7	7.0	-	5.9	5.9	6.7	-	4.4	5.0	7.0	-
APRIL	14.3	7.6	14.2	10.3	8.2	5.7	9.6	-	7.3	6.4	3.4	-	4.3	5.0	5.2	-
MAY	6.6	9.0	15.0	10.2	3.7	7.2	4.2	-	3.9	5.7	5.4	-	3.2	4.9	7.0	-
JUNE	7.9	9.6	10.9	17.2	4.9	7.4	6.3	-	4.2	6.3	7.7	-	2.9	3.3	6.3	-
JULY	5.0	3.6	4.2	6.7	2.3	5.7	2.2	-	3.6	1.7	3.4	-	5.6	2.4	2.4	-
AUG.	7.2	9.2	8.2	8.6	4.4	4.6	5.2	-	7.4	5.0	6.2	-	3.2	2.6	5.4	-
SEPT.	8.2	5.3	13.3	11.0	6.7	5.9	8.5	-	5.2	6.6	8.9	-	7.0	3.0	4.7	-
OCT.	12.8	16.2	15.6	17.0	6.0	7.6	7.2	6.6	6.4	6.2	8.2	6.6	5.7	4.4	7.9	5.0
NOV.	22.9	20.9	23.9	22.5	8.6	10.7	10.7	11.3	10.6	8.0	12.3	10.0	8.2	7.3	10.9	8.0
DEC.	24.2	17.9	25.6	17.5	10.3	9.3	10.5	11.0	11.5	9.0	13.2	13.3	7.7	6.2	9.2	9.3
HIGHEST PER YR.	24.2	20.9	25.6	24.9	10.3	10.7	10.7	-	11.5	9.6	13.2	-	8.2	8.7	10.9	-

*Encompasses Maryvale Terrace 53A

VIOLATIONS OF THE EIGHT HOUR

CARBON MONOXIDE STANDARD OF 10,000 ug/m³

1977

MONTH	CENTRAL PHOENIX		NORTH PHOENIX		SOUTH PHOENIX		GLENDALE**		SCOTTSDALE		MESA		NORTH SCOTTSDALE		WEST PHOENIX	
	DAYS	TINES	DAYS	TINES	DAYS	TINES	DAYS	TINES	DAYS	TINES	DAYS	TINES	DAYS	TINES	DAYS	TINES
JAN.	8	9	0	0	0	0	0	0	0	0	0	0	0	0	-	-
FEBR.	10	13	0	0	0	0	0	0	0	0	0	0	NR	NR	5	5
MAR.	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2
APR.	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JUNE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JULY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUG.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPT.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
OCT.	4	4	0	0	0	0	0	0	1	1	0	0	0	0	3	3
NOV.	14	16	0	0	1	1	0	0	10	10	2	2	NR	NR	11	17
DEC.	14	20	1	1	1	1	0	0	8	9	5	5	0	0	20	32
TOTAL	57	69	1	1	2	2	0	0	19	20	7	7	0	0	42	60

*Encompasses Maryvale Terrace 53A

TABLE 15
-84-

VIOLATIONS OF THE TOTAL OXIDANTS

FEDERAL PRIMARY STANDARD

OF 160 ug/m³

1977

MONTH	CENTRAL PHOENIX		NORTH PHOENIX		SOUTH PHOENIX		GLENDALE*		SCOTTSDALE	
	DAYS	TIMES	DAYS	TIMES	DAYS	TIMES	DAYS	TIMES	DAYS	TIMES
JAN.	0	0	0	0	0	0	0	0	0	0
FEBR.	0	0	1	1	0	0	1	2	0	0
MAR.	0	0	0	0	0	0	0	0	0	0
APR.	0	0	0	0	0	0	0	0	0	0
MAY	2	6	1	2	NR	NR	1	3	3	4
JUNE	6	19	3	3	2	3	3	5	2	4
JULY	6	15	2	2	0	0	NR	NR	3	4
AUG.	7	12	5	8	1	1	10	17	1	2
SEPT.	4	9	2	5	1	1	3	5	1	1
OCT.	2	3	1	1	0	0	5	13	0	0
NOV.	0	0	0	0	0	0	0	0	0	0
DEC.	0	0	0	0	0	0	0	0	0	0
TOTAL	27	64	15	22	4	5	23	45	10	15

*Encompasses Maryvale Terrace - 53A

TABLE 16

SUMMARY OF CONTROL STRATEGIES
WHICH ENABLE FUTURE ATTAINMENT OF THE
NATIONAL AMBIENT AIR QUALITY STANDARDS
IN PHOENIX

<u>Carbon Monoxide</u>	<u>Attainment</u>	<u>Maintenance Through</u>
Carpooling, I/M @ 30 or 40% SF, and Modified Work Schedules	1981	2000
Carpooling, I/M @ 20% SF, and Modified Work Schedules	1982	2000
I/M @ 20, 30, or 40% SF and Modified Work Schedules	1982	2000
Carpooling and I/M @ 20, 30, or 40% SF	1982	2000
Inspection/Maintenance (I/M) @ 20% Stringency Factor	1983	2000
@ 30 or 40% Stringency Factor	1982	2000
Carpooling and Modified Work Schedules	1994	1995

Oxidants

Carpooling, I/M @ 20, 30, or 40% SF and Vapor Recovery, Stages I and II	1984	2000
I/M @ 20, 30, or 40% SF and Vapor Recovery, Stages I and II	1985	2000
Vapor Recovery, Stages I and II	1988	2000
Carpooling, I/M @ 20, 30, or 40% SF, and Vapor Recovery, Stage I	1991	1994
I/M @ 20, 30, or 40% SF and Vapor Recovery, Stage I	1993	1993

Stage I. Controls vapors escaping during transfer of fuel from main storage tanks to delivery trucks and delivery trucks to station storage tanks.

Stage II. Controls vapors escaping during transfer of fuel from station pumps to vehicles.

Stringency Factor (SF) is based on the Federal Certification Standards with allowances for deterioration and local conditions.

TABLE 17

TRANSPORTATION

In the Maryvale Terrace 53-A area, the predominate method of travel is by automobile--now and in the foreseeable future. The network of major streets and highways now serving Phoenix is a basic grid system, with a major street designated along almost every one-mile section line. A lack of freeways has put an excessive amount of traffic on this street system. Two major arterial streets, Camelback Road and 83rd Avenue adjoins the subdivision to the north and to the west, respectively. Camelback Road makes direct connections with the Black Canyon Freeway, which by-passes downtown Phoenix, seven miles east and the Central Business Corridor, nine miles east. At one mile intervals, 83rd Avenue connects with arterial streets leading to business, employment and shopping centers.

The average daily traffic as reported by Maricopa Association of Governments (MAG) for 1977 at the site on Camelback Road was 8,400 vehicles and 4,500 on 83rd Avenue. Continued extensive growth to the immediate west and north of this project is predicted, throwing an even heavier traffic load on Camelback Road and other arterial streets. The six-year major street improvement program prepared in 1977 by the Phoenix Public Transit Department does not include either Camelback Road or 83rd Avenue.

At the present time, 83rd Avenue has not developed beyond two lanes, but Camelback Road is a fully constructed four-lane street from the east to 75th Avenue. Further expansion to four lanes will be required of present and future developers by the Governmental bodies

having jurisdiction. The developer of Maryvale Terrace 53-A is presently expanding the half of both streets abutting this subdivision.

Projection for the year 1997 is for fully developed four-lane streets with an average daily traffic of 18-25,000 vehicles on Camelback Road and 10-15,000 on 83rd Avenue.

The regional average of 1.4 vehicles for each dwelling will generate an average of 3.5 automobile trips a day per unit. The 618 units will cause some impaction on the streets, but with the completion to four lanes of the arterial streets, this should alleviate most of the impact. Some adverse impact on air quality and noise may be expected due to this increased traffic.

The only public transit available is bus route #58 which leaves 74th Avenue and Camelback Road (9 blocks from subject site) every half hour and connects to all other bus lines. This line will be extended to 83rd Avenue within several years. However, the existing and projected low densities of land use, anticipated high levels of auto ownership and present trends in transit do not suggest a greatly expanded role for public transit in the Phoenix urban area.

Considerable relief of traffic congestion will occur upon completion of the Papago Freeway, which will pass three miles south of this site and will connect to the Central Business Corridor, downtown Phoenix and other freeways. Anticipated opening of this freeway is in 1985.

Some short-run amelioration may come from car pooling, which is being actively promoted by MAG.

SOURCES

Arizona Department of Transportation
205 S. 17th Avenue, Room 240, Phoenix, Arizona
Mario Saldamando, P.E., Supervisor
Richard Thurman, P.E., Civil Engineer

Maricopa Association of Governments
1801 W. Jefferson, Phoenix, Arizona
Dave French, Chief
Tom Ford, Engineer
Nickolas Reachmack, Transportation Planner

City of Phoenix
Bryce Rose, Right of Way Supervisor
Don Herp, Advance Planning
Dan Morgan, Acting City Traffic Engineer
T. J. Ross, Planner
Mr. Arthur, Engineer

Maricopa County Highway Department
3325 W. Durango Street, Phoenix, Arizona
R. C. Esterbrooks, P.E., Ass't County Manager & County Engineer
Joseph D. McNulty, P.E., Assistant County Engineer
Ed Snyder, Operations Supervisor

Phoenix Transit System (Buses)

Traffic Engineering Handbook

Six-Year Major Street Improvement Program
City of Phoenix

Regional Development Guide 1977 (MAG)

The Comprehensive Land Use Plan 1990

Arizona Department of Transportation
Transportation Planning Division
206 S. 17th Avenue, Phoenix, Arizona
Ronald D. McCready, Manager, Program Evaluation Section
Cathy D. Arthur, Senior Planner, Modeling and Research Section

MARYVALE TERRACE VEHICLE TRAVEL ASSUMPTIONS

Number of proposed dwelling units =	615	
Regional average vehicles/dwelling unit =	1.4	
Total vehicles =	860	
Regional average work trips/vehicle =	1.2	
Average work trip length on primary system =	10	Miles
Work trip vehicle miles of travel on primary system =	10,330	
Regional average home-based other trips/vehicle =	2.3	
Average home-based other trip length on primary system =	7	Miles
Other trip vehicle miles of travel on primary system =	13,860	
Total vehicle miles of travel on primary system =	24,190	
Regional average work and other trips =	3,010	
Average trip length on local streets =	.25	Miles
Secondary vehicle miles of travel =	750	

TABLE 18
-90-

58

ROUTE METROPOLITAN BUS SCHEDULE

- Indian School Cross-Town
- Indian School
- Veterna's Hosp
- Phoenix Indian Hosp



City of Phoenix Transit System
AN EQUAL OPPORTUNITY EMPLOYER M F

EXACT FARE REQUIRED IN PENNIES, NICKELS, DIMES AND QUARTERS		BASE ZONE FARE	OUTER ZONE FARE	SCOTTSDALE BOARDING ZONE FARE
REGULAR SERVICE	Adults	\$.35	\$.40	\$.50
	Senior Citizens, Handicapped, Food Stamp Card Holders, and Children 6-11 Years of Age	.15	.20	.25
	10 Ride Adult Ticket	3.50	4.00	5.00
	20 Ride Adult Ticket	7.00	8.00	N/A
	20 Ride Student Ticket (Under 21)	3.50	4.00	4.50
	Children Under 6 Free Accompanied by Adult Paying Passenger of Immediate Family	Free	Free	Free
Transfers	Free	Free	Free	
EXPRESS SERVICE	Adult	\$.50	\$.55	N/A
	10 Ride Adult Ticket	5.00	5.50	N/A
	Children 6-11 Years of Age	.25	.30	N/A
	Children Under 6 Free Accompanied by Adult Paying Passenger of Immediate Family	Free	Free	N/A
	Monthly Pass Valid On All Bus Routes	18.00	20.00	18.00

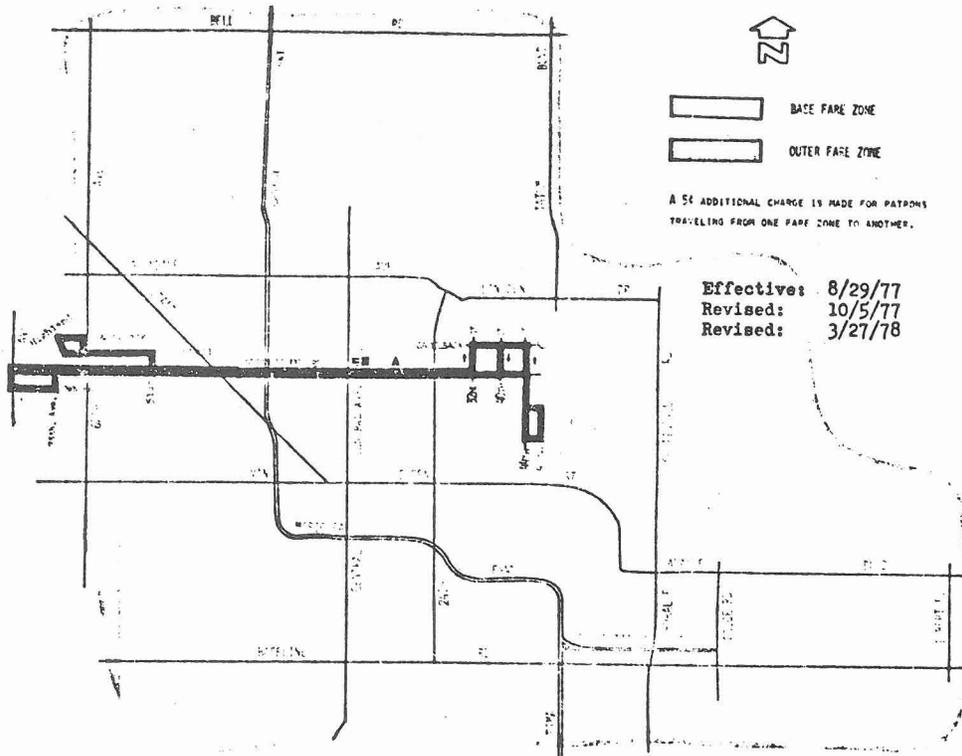
FARE INFORMATION

- Adult transit tickets are available at participating banks.
- Reduced fare authorization cards for the elderly are available at your local library.
- Reduced fare authorization cards for the handicapped may be obtained at participating health agencies and hospitals.

For Further Information
CALL TICO AT 257-T-I-C-O
(8 4 2 6)

City of
Phoenix Transit System
P. O. Box 4275
Phoenix, Arizona 85030

58



EDUCATIONAL FACILITIES

Maryvale Terrace 53-A is located in the Phoenix Union High School System and Cartwright School District #83. Elementary schools and junior high schools are under the control of Cartwright School District #83.

At the present time, elementary students will be bused to Starlight Park Elementary School at 7960 West Osborn, approximately one mile from the subdivision. Current enrollment is 1,429 pupils, which exceeds the maximum determined capacity of 1,000. Assigned to the school are 58 teachers, including 10.5 special teachers.

A 4.3 million dollar school bond was approved by vote of the people on December 7, 1977. Resulting from this approval, the proposed school, Penrod Elementary School, could be completed within a year. Present planned location is $\frac{1}{2}$ mile from Maryvale Terrace 53-A.

Cartwright School District #83 also has a school site within the project. It is not included in their immediate development plans.

Estrella Junior High School (7th and 8th grades) is located at 3733 North 75th Avenue. It is about one mile from the site so students will be bused. Estrella has a current enrollment of 908 pupils with a maximum capacity of 1,000. Any overcrowding problems will be met by redistricting the subject development into Desert Sands Junior High School at 6303 West Campbell, two miles away.

Phoenix Union High School System has jurisdiction over high schools in this area. Busing will be provided to Trevor Browne High School, 7402 West Catalina Drive, two miles from subject site. Current

enrollment is 2,741 with capacity of 3,200. The impact of Maryvale Terrace 53-A would be delayed as the typical family units, composed of smaller children, will be reaching high school ages at a future date. No new high school is planned, but sites have been acquired for new construction when needed.

Location of Colleges:

1. Arizona State University, Tempe - 22 miles
2. Grand Canyon College, 3302 W. Camelback, Phoenix - 5 miles
3. Phoenix Jr. College, 1202 W. Thomas, Phoenix - 10 miles
4. Glendale Jr. College, 6000 W. Olive, Glendale - 5 miles
5. Maricopa Technical College, 106 E. Washington, Phoenix -
12 miles

This subdivision of 618 units should generate around 495 more students, creating an impact on the existing schools. The impact will be alleviated with (1) the construction of an elementary school, and (2) redistricting, if necessary, this area into another Junior High School District. There will be no impact, at the present time, on the High School.

SOURCES

Cartwright School District #83
3401 - 67th Avenue, Phoenix, Arizona
L.L. Foley, Director, Administrative Services
Byron A. Berry, Jr., Ed. Dir., Superintendent

Phoenix Union High School System
415 E. Grant, Phoenix, Arizona
Dr. Kenneth Garland, Assistant Superintendent for Administrative
Services

Phoenix Union High School System
2526 W. Osborn, Phoenix, Arizona
Ivan J. Kinsman, Specialist Attendance and Residence

City of Phoenix Comprehensive Land Use Plan 1990

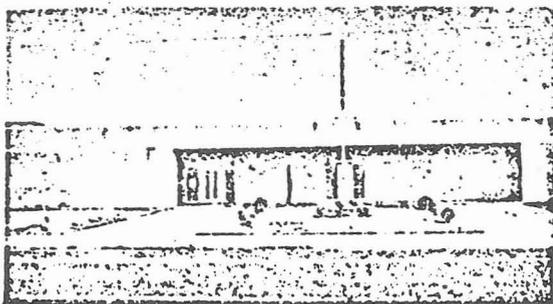
CARTWRIGHT DISTRICT SCHOOLS



STARLIGHT PARK SCHOOL
 7960 West Osborn Road
 Phoenix, AZ 85033

Starlight Park School, consisting of thirty-two classrooms and office, was built in 1962-63. From 1963 through 1970, eighteen additional classrooms, music room, library, multi-purpose room, were added. The cafeteria was built in 1976-77. Starlight Park serves children in grades K - 6. There are forty-three teachers for K - 6; six teachers for art, music and P.E.; one special reading teacher and four L.D. teachers.

The school has an approximate enrollment of 1400 students.



ESTRELLA JR. HIGH SCHOOL
 3733 North 75th Avenue
 Phoenix, AZ 85033

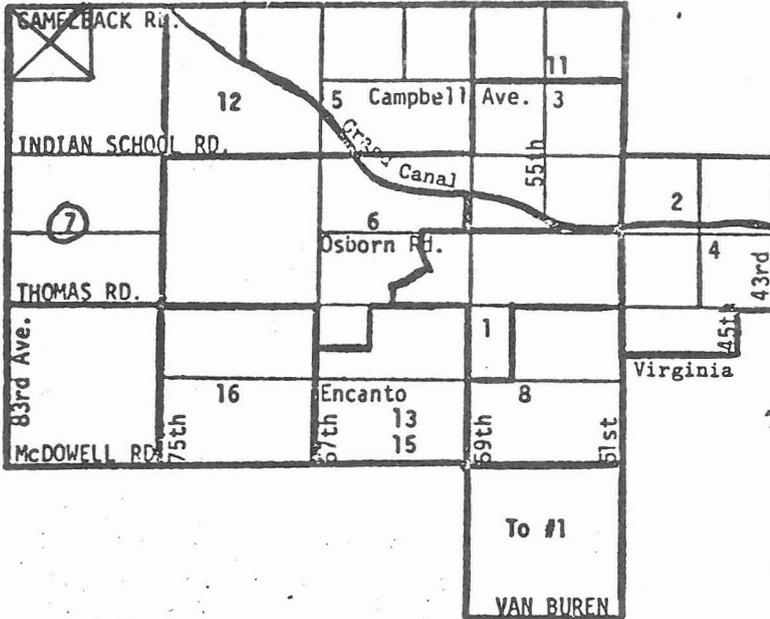
The first phase of Estrella Jr. High School was built in 1972-73. The final phase of the school, and the cafetorium, were completed in 1975-75. Estrella has twenty-eight regular classrooms, ten open, and one band room. The school has a teaching staff of forty-four teachers: Language Arts, 10; Math, 5; Social Studies, 5; Science, 5; Home Ec., 2; Industrial Arts, 2; Band, 1; Vocal Music, 1; Art, 1; P.E., 4; L.D., 5; E.H., 1; Special Reading, 1; Electives, 1.

Estrella has an approximate enrollment of 920 students.

Cartwright School District No. 03

ELEMENTARY & JR. HIGH SCHOOL MAPS - 1977-78

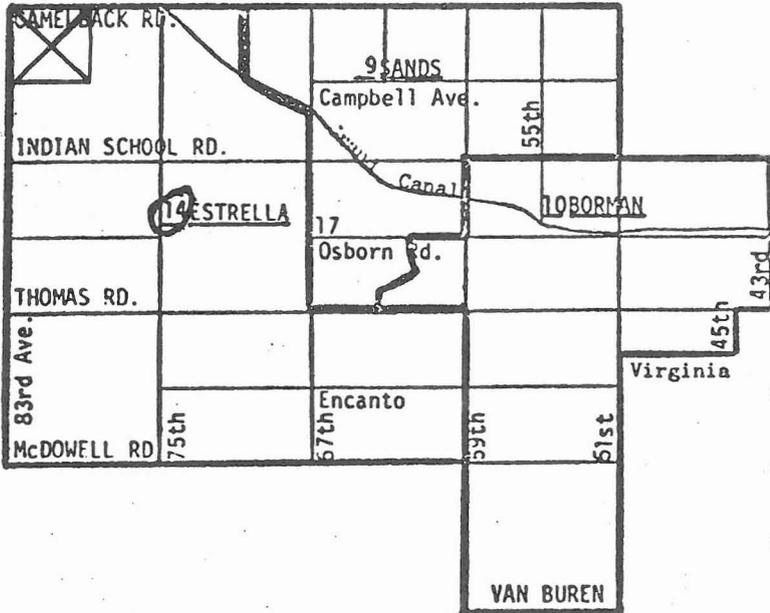
ELEMENTARY SCHOOL BOUNDARIES, GRADES K - 6



SCHOOLS-PRINCIPALS-ADDRESSES ELEMENTARY SCHOOLS, Gr. K-6:

- #1. CARTWRIGHT SCHOOL
Charles George, Principal
5833 W. Thomas Road, 85031
- #2. GLENN L. DOWNS SCHOOL
James Tussey, Principal
3611 N. 47th Ave., 85031
- #3. JOHN F. LONG SCHOOL
Donald Thrasher, Principal
4407 N. 55th Ave., 85031
- #4. JUSTINE SPITALNY SCHOOL
David L. Wells, Principal
3201 N. 46th Dr., 85031
- #5. HOLIDAY PARK SCHOOL
Ray Zehr, Principal
4417 N. 66th Ave., 85033
- #6. SUNSET SCHOOL
Evelyn Johnson, Principal
6602 W. Osborn Rd., 85033
- #7. STARLIGHT PARK SCHOOL
George White, Principal
7960 W. Osborn Rd., 85033
- #8. CHARLES W. HARRIS SCHOOL
Paul Dobash, Principal
2252 N. 55th Ave., 85035
- #11. JOHN W. POWELL SCHOOL
Martin Longseth, Principal
5480 W. Campbell Ave., 85031
- #12. HEATHERBRAE SCHOOL
Lynn Butler, Principal
7070 W. Heatherbrae, 85033
- #13. C.A.S.P. SCHOOL
Margaret Friesner, Hd. Tchr.
6339 W. MonteVista, 85035
- #15. PALM LANE SCHOOL
Hubert Patton, Principal
2043 N. 64th Drive, 85035
- #16. PERALTA SCHOOL
William Titus, Principal
7125 W. Encanto Blvd.

JUNIOR HIGH SCHOOL BOUNDARIES, GRADES 7 & 8



SCHOOLS-PRINCIPALS-ADDRESSES JUNIOR HIGH SCHOOLS, Gr. 7-8

- #9. DESERT SANDS JR. HIGH SCHOOL
Jerry H. McCoy, Principal
6308 W. Campbell Ave., 85033
- #10. FRANK BORMAN JR. HIGH SCHOOL
Emil Goimarac, Principal
3637 N. 55th Ave., 85031
- #14. ESTRELLA JR. HIGH SCHOOL
Stuart Zink, Principal
3733 N. 75th Ave., 85033
- #17. CARTWRIGHT DISTRICT OFFICE
B.A. Barry, Superintendent
3401 N. 67th Avenue, 85033



MARYVALE TERRACE 53-A

FIGURE 18

PHOENIX UNION HIGH SCHOOL SYSTEM

OPEN SCHOOL GUIDELINES

All schools in the Phoenix Union High School System are open schools, subject to the conditions listed below.

1. Prior to April 15 of each year, (or if April 15 falls on Saturday or Sunday, the Friday prior to April 15), a student must complete his registration at the high school of his choice. If he does not register prior to April 15, he will be expected to register at the school in his own attendance zone. Any student wishing to transfer to a different school in the District, or any incoming freshman who wishes to attend a school outside his residence zone, should obtain the R-55 (Registration Transfer) form. These forms are available at the Registration Office at either school or from counselors who register students at elementary schools. The form should be completed, signed by the student's parent or legal guardian, and returned prior to April 15 to the school the student expects to attend. A copy of the R-55 is sent to the school in whose attendance zone the student resides.
2. Once a student has committed himself to a high school by registering, he will be expected to attend that school for the entire year.
3. It is assumed that a student moving into the Phoenix Union High School District for the first time will attend the school in his own attendance zone. However, he may choose any other school in the District depending upon available space.
4. Students moving their place of residence from one attendance zone to another may transfer to the high school in their new attendance zone.

If there are any questions regarding Open School Guidelines, residency or tuition, please call Mr. Jim Kinsman, at 257-3084.

Questions regarding Athletic Eligibility should be referred to Mr. Edwin Long, at 257-3034.

LWC:IJK:mwg

2/4/77



MARYVALE TERRACE 53-A

PHOENIX UNION HIGH SCHOOL SYSTEM MAP
District No. 210

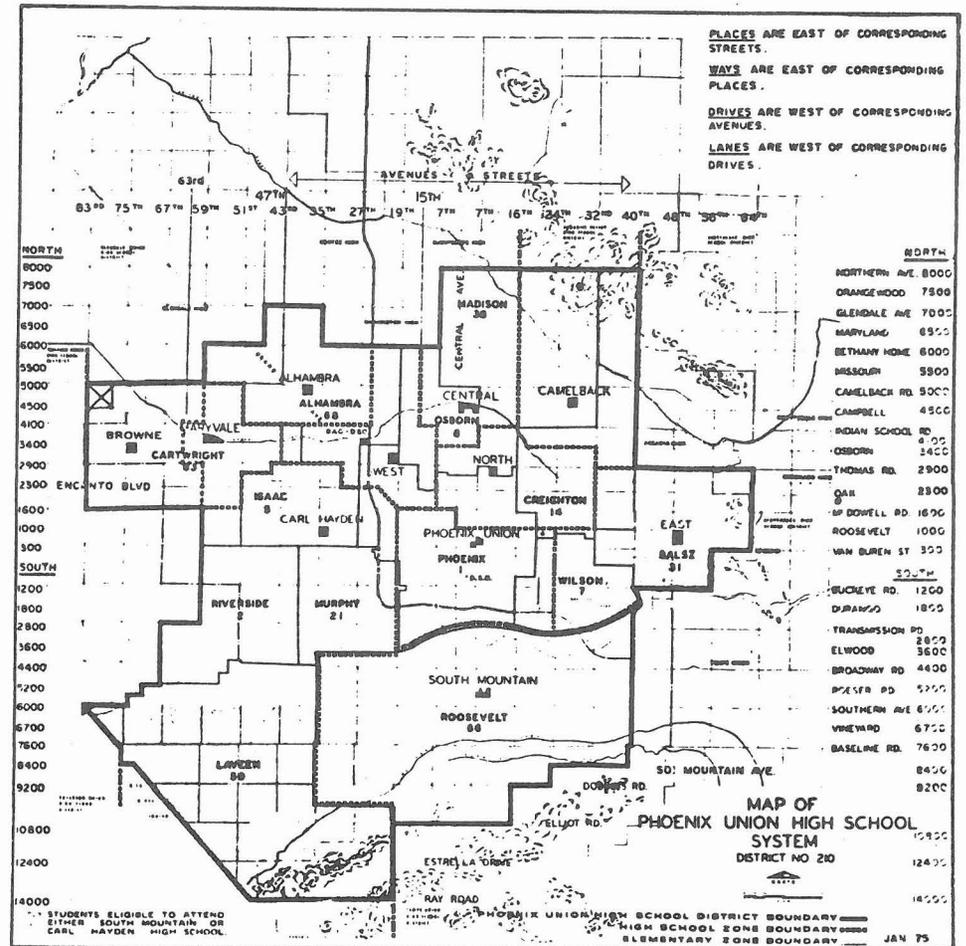


FIGURE 19
-99-

MARICOPA COUNTY CATHOLIC SCHOOLS

1. IMMACULATE HEART OF MARY (Closed)
 2. MOST HOLY TRINITY
 3. SACRED HEART
 4. SAINT AGNES
 5. ST. CATHERINE
 6. ST. FRANCIS XAVIER
 7. SAINT GREGORY
 8. SAINT JEROME
 9. SAINT MARK
 10. SAINT MARY
 11. SAINT MATTHEW
 12. SAINTS SIMON AND JUDE
 13. SAINT THERESA
 14. ST. THOMAS THE APOSTLE
 15. ST. VINCENT DE PAUL
 16. BOURGADE HIGH
 17. BROPHY COLLEGE PREPARATORY
 18. GERARD HIGH
— Formerly Good Shepherd Home
 19. PATTERDELL
 20. SAINT MARY HIGH
 21. XAVIER HIGH
 22. GLENDALE, OUR LADY OF PERPETUAL HELP
 23. GLENDALE, ST. LOUIS THE KING
 24. SCOTTSDALE, OUR LADY OF PERPETUAL HELP
 25. SCOTTSDALE, ST. DANIEL THE PROPHET
 26. TEMPE, OUR LADY OF MT. CARMEL
- Maryvale Terrace
 53-A

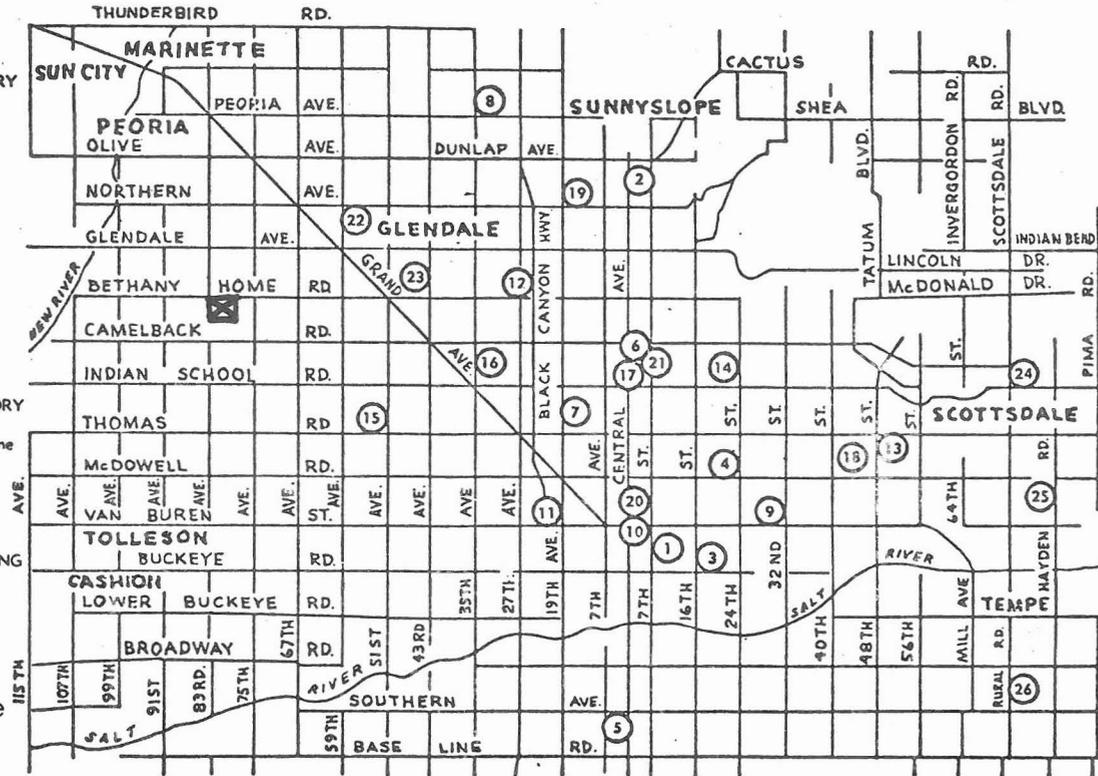


FIGURE 20
 -100-

RECOMMENDED SCHOOL PLANNING STANDARDS **

	Elementary	High School
Distance - Home to School (Miles)	1/2	2
Enrollment	500-1,000	1,500-2,500*
Classroom Size	28-30	25-30
Site Acreage (Acres)	10-15 (5 acres plus 1 acre per 100 pupils ultimate enrollment)	40-50 (25 acres plus 1 acre per 100 pupils ultimate enrollment)
Street Access	Access to Collector Type Street	Access to Major Type Street
Service Area	Neighborhood	Community
Population Served	4,000-7,000	16,000-32,000

* The enrollment standard for Phoenix Union High School District is 2,000-4,000 pupils per high school.

Objectives

There are three basic kinds of educational goals – cultural, economic and civic. The cultural objectives are aimed at enabling a person to acquire information to lead a full life. The economic objectives are concerned with one's preparation to make a living. The civic objectives are related to developing a degree of understanding of the political, economic, and social problems in order to participate in their solutions.

Physical facilities designed to inspire the young and to offer a variety of opportunities for educational development are important goals to follow. Proposals for location and distribution should be based on standards calling for convenience, multiple use, and good design.

**These standards compare very closely with practices followed in the Phoenix Union High School District. (Statement issued by Dr. Kenneth Garland, Assistant Superintendent for Administrative Services, Phoenix Union High School, in telephone conversation with DHUD June 21, 1978.)

CARTWRIGHT SCHOOL DISTRICT

STUDENT ENROLLMENT AND STAFF ASSIGNMENT

REGISTER MONTH NO. 10 FOR PERIOD ENDING 6/2/78

		Special Teachers	0	1	2	3	4	5	6	Ungraded	7	8	TOTAL
CARTWRIGHT	CHILDREN		116	121	169	142	151	158	147				1004
	TEACHERS	11	2.5	5	6	5	5	5	5				44.5
DOWNS	CHILDREN		79	83	53	68	54	53	71	48			509
	TEACHERS	5.5	1.5	3	2	3	2	2	2	6			27
LONG	CHILDREN		107	82	73	62	67	60	92	104			667
	TEACHERS	7	2	3	3	2	2	3	3	9			34
SPITALNY	CHILDREN		89	92	98	89	87	105	98	30			688
	TEACHERS	8	2	4	4	4	3	4	3	3			35
HOLIDAY	CHILDREN		101	131	119	129	126	136	145	30			917
	TEACHERS	8	2	5	5	5	4	4	5	3			41
SUNSET	CHILDREN		108	133	106	84	110	118	114	45			818
	TEACHERS	8	2.5	5	4	3	4	4	4	2			36.5
STARLIGHT	CHILDREN		212	208	217	209	171	197	215				1429
	TEACHERS	10.5	4.5	8	8	7	6	7	7				58
HARRIS	CHILDREN		160	190	211	164	140	171	158				1194
	TEACHERS	10	3.5	7	8	6	5	5	5				49.5
POWELL	CHILDREN		-	44	41	40	46	56	63	27			317
	TEACHERS	5	-	2	2	2	2	2	2	3			20
HEATHERBRAE	CHILDREN		106	121	112	89	85	107	91				711
	TEACHERS	7	2.5	5	4	3	3	3	3				30.5
PULM LANE	CHILDREN		154	152	154	126	111	111	86				894
	TEACHERS	9.5	3.5	6	6	5	4	4	3				41
PERALTA	CHILDREN		136	139	125	121	86	84	64				755
	TEACHERS	6.5	2.5	5	5	4	3	3	2				31
SANDS JR. HIGH	CHILDREN									22	347	445	814
	TEACHERS	16								2	11	14	43
BOBMAN JR. HIGH	CHILDREN									19	498	576	1093
	TEACHERS	12.5								2	15	17	46.5
ESTRELLA JR. HIGH	CHILDREN									18	444	474	936
	TEACHERS	6								2	18	18	44
										(41)			(41)
CASP TWH	CHILDREN									42			42
	TEACHERS									4			4
WOMBODUND	CHILDREN									11			11
	TEACHERS									1			1*
L. M. H.	CHILDREN									(104)			(104)
	TEACHERS									(9)			(9)
OTHER OUTSIDE AGENCIES	Brtn.												
	Dev.		14	6	8	1	2	1	2	45			45
No. of School TITLE I	#1												
	(2)		(1)	(2)	(2)	(2)	(2)	(2)	(.5)				11.5
CHILDREN		1368	1496	1478	1323	1234	1376	1344	441	1289	1495		12,844
TOTAL TEACHERS		142	29	58	57	49	43	46	44	37	44	49	598

*1 Full Time
2 Part Time

TABLE 22
-102-

CARTWRIGHT SCHOOL DISTRICT #83

PROJECTED FACILITY NEEDS

P R E F A C E

The survey based on a cluster approach - schools with common boundaries and subdivisions.

Elementary Schools:

- I. Cartwright, Harris, Sunset, Palm Lane and Peralta
 - A. Total additional classrooms needed = 25
 - 1. Build plant at 59th Avenue and Ercanto.
- II. Downs, Spitalny
 - A. Self-sustaining
- III. Long, Powell
 - A. Self-sustaining
- IV. Holiday Park, Heatherbrae
 - A. Self-sustaining
- V. Starlight Park
 - A. Total additional classrooms needed - 45.
 - 1. Build Penrod plant
- VI. C. A. S. P.
 - A. Self-sustaining

Junior High Schools:

- VII. Estrella, Sands and Borman
 - A. Total additional classrooms needed - 16.
 - 1. Boundary changes may be necessary.

PROJECTED FACILITIES NEEDS BY YEAR

SCHOOL	YEAR	ENROLLMENT	YEAR	PROJECTED ENROLLMENT	ROOMS NEEDED AT 30	SURPLUS	TOTAL NEEDS
STARLIGHT	76-77	1297	77-78	1614	23 CR	-	-
	77-78	1614	78-79	1927	10 CR	-	-
	78-79	1927	79-80	2258	12 CR	-	-
	79-80	2258			-	-	45

- I. In 1976-77, this school is over efficient capacity by 397.
- II. The area west of 75th Avenue and North of Indian School Road, Quarter Sections #1, 2, 9, and 10. (Penrod School Site).
 - A. There are 280 students enrolled at Starlight Park from this area.
- III. The following subdivisions have intensified new construction and are moving ahead in their development:

(Based on 1/2 home platted)

A. 1 - John Long 53A - Projected completion - one year	Potential student population	310
B. 4 - Building Corp. of Arizona	Potential student population	300
C. 5 - Marlborough	Potential student population	230
D. 2 - Ponderosa	Potential student population	174
E. 3 - Levitt West - Subdivision is not moving at this time.	Potential student population	162
TOTAL Potential student population (Penrod Site)		1,176

- IV. The projection of .50 student per home has not held true at subdivisions 2 - Ponderosa and 5 - Marlborough, but exceeds in 4 - Building Corp of Arizona and John Long subdivisions. The average of 1,176 students should be a reasonable estimate (for Penrod School).

V. Approach for this area:

- A. Begin construction of school plant in accordance to preliminary plans of 1973 -- see attached.

* * *

I. Starlight Park - projected 1979-80 enrollment	1,247
A. With the development of Penrod site, the enrollment at Starlight would decrease by 280 students	- 280
B. 11 - Design Master's - Potential student population @ .50 per home	+ 230
C. Bringing Starlight Park enrollment to estimate of: Over capacity -- but containable.	1,197

PROJECTED FACILITIES NEEDS BY YEAR

SCHOOL	YEAR	ENROLLMENT	YEAR	PROJECTED ENROLLMENT	ROOMS NEEDED AT 30	SURPLUS	TOTAL NEEDS
ESTRELLA	76-77	922	77-78	1169	5		
	77-78	1169	78-79	1412	8		
	78-79	1412	79-80	1612	7		
	79-80	1612					20
DESERT SANDS	76-77	952	77-78	860		4	
	77-78	860	78-79	842		1	
	78-79	842	79-80	843			
	79-80	843					(5)
BORMAN	76-77	1150	77-78	1147	5		
	77-78	1147	78-79	1050	(3)		
	78-79	1050	79-80	997	(1)		
	79-80	997					(1)

1980
FACILITIES NEEDS CLUSTER

	PE	BAND	SPEECH	CLASSROOMS	TOTAL NEEDS
ESTRELLA				20	20
DESERT SANDS				1 (art)	(4)
BORMAN	1				0
					<u>16</u>

I. Estrella Jr. High School:

- A. In 1976-77, this Jr. High School is over efficient capacity by 132 students.
- B. With a potential student growth by 1980 of 1,508, or 508 students over capacity.

II. Approaches:

- A. Place that part of Estrella north of Indian School Road to Camelback west of 71st Avenue to 83rd Avenue in Desert Sands Jr. High School.
- B. If necessary, place that part of Desert Sands from 51st Avenue west to 59th Avenue, Indian School Road north to Camelback in Borman Jr. High.

III. Junior High Site:

- A. Twenty acres owned by the District north of Encanto to Virginia, west of 61st Drive to approximately 63rd Avenue: In not the too far distant future, probable changes in student projection in future planning will involve the development of this school plant.

LLF:ah
1/31/77

TABLE 24

REPORT

TO: Robert E. Smith
FROM: L. L. Foley
DATE: September 28, 1977
RE: ANTICIPATED CONSTRUCTION AND STUDENT GROWTH

Construction between 75th and 83rd Avenues, south of Camelback and north of Indian School Road:

	<u>PLATTED</u>	<u>STARTED BUILT</u>	<u>REMAINING</u>	<u>SOLD</u>	<u>TO BE SOLD</u>
1. Maryvale 53A Long Homes	618	73	545	-0-	618
2. Marlborough/Penrod	633	435	198	399	234
3. Ponderosa	345	205	140	174	171
4. Levitt West	322	-0-	322	-0-	322
5. Building Corp. of Arizona (Willow West)	<u>618</u>	<u>302</u>	<u>316</u>	<u>262</u>	<u>356</u>
TOTAL	2,536	1,015	1,521	835	1,701

All above data based on the latest Landis Aerial Survey for West Phoenix dated August 1977.

September 27, 1977 Student Count:

K thru 6	317
7 thru 8	<u>156</u>
Total students	473

473 students ÷ 835 homes sold = .57 student per home.

2,536 homes platted x .57 students per home = 1,445 potential students

20% x 1,445 students = 289 students for jr. high leaving 1156 students - K thru 6.

1156 potential students ÷ 2 school plants = 578 students per plant.

Recommend: 600 students per school when K thru 6.

NOT FINAL
Estimate Only
L. Foley

LLF:ah

TABLE 25
-106-

HEALTH CARE/SOCIAL SERVICES

Metropolitan Phoenix is served by 23 hospitals with some 6,500 beds. Within a 12-mile radius of Maryvale Terrace 53-A, there are 13 hospitals with approximately 3,600 beds.

Phoenix has five major hospitals that offer ultramodern facilities and highly skilled personnel in a complete spectrum of medical and surgical specialties. Each one, of course, being a total general hospital.

Maricopa County Department of Health Services provides health care services to residents at primary care centers, specialty clinics and through admission to Maricopa County General Hospital. (This hospital is one of the five major hospitals). Besides treating illnesses, their services are used to prevent illnesses, where possible, and are used mostly by indigents.

There are also 19 licensed nursing homes and skilled nursing facilities with 1,545 beds as well as 8 licensed personal care homes with 430 beds within 12 miles of the subject site.

In 1976, Maricopa County had a total of 1,442 licensed physicians plus 1,001 other health professionals.

The Central Arizona Health Systems Agency has projected a hospital bed surplus of 317 for the year 1983 for the westside of Phoenix, which includes the subject site. The need for additional skilled and personal care facilities is presently under study.

SOURCES

Central Arizona Health System Agency
124 W. Thomas, Phoenix, Arizona
Milton Gann, Executive Director
Mike Brinckley

Arizona Department of Health
17th Avenue & Adams, Phoenix, Arizona

Phoenix Chamber of Commerce
33 West Monroe, Phoenix, Arizona

Maricopa County Department of Health Services
1825 E. Roosevelt, Phoenix, Arizona
Dr. Rowland, Director

Inside Phoenix '77

Hospital Bed Plan of the Central Arizona Health Systems Agency
for Planning Period 1977-1983 - September 15, 1977

Phoenix Fact Sheet
Phoenix Chamber of Commerce - Fall, 1977

Valley Medical Facilities
Phoenix Magazine - 7/75

Comparative Study of Rates & Changes
Arizona Health Care Institutions
Arizona Department of Health Services

Bureau of Health Economics - 7/77

Inventory of Inpatient Facilities
Department of Health, Education and Welfare
Public Health Service - Fiscal Year 1976

Inventory of Selected Health Professionals - Arizona 1976
Arizona Department of Health Services

Comparative Inventory of Skilled Nursing Facilities as of 10/24/77

Comparative Inventory of Personal Care Facilities as of 10/24/77

Arizona Licensed Nursing Homes and Skilled Nursing Facilities - Rev 7/76

Arizona State Licensed Personal Care Homes as of 7/15/77

FIRE PROTECTION

The City of Phoenix provides fire protection within Maryvale Terrace 53-A. The nearest fire station (Station 25) is located at 4032 North 59th Avenue, four miles from the site. It has one 1250 GPM Pumper. Four men are on duty at all times including one captain, one engineer and two fire fighters. Another station, two miles from the site and offering similar services, is planned for completion during the fiscal year 1979-1980.

The response time from fire station to site is approximately six minutes. Several major arterial streets aid in providing this rapid running time. Multiple access streets into the subdivision and relatively regular interior street patterns will provide good traffic mobility.

The developer furnishes and installs the fire mains and hydrants during construction. Fire flow should be adequate, exceeding 1,000 gallons per minute.

The insurance rating for the City of Phoenix is in Protection Zone 1, Class 2 (on a descending scale of 1-10). This is a high rating allowing lower insurance rates.

This project of 618 detached one story units will have some effect on the existing fire service. With the completion of the planned new fire station, this should be alleviated.

SOURCES

City of Phoenix Fire Department
620 W. Washington - Room 343
Phoenix, Arizona
G.G. Holzner, Fire Chief
Gordon Routley

Insurance Service Office
255 E. Osborn Road
Phoenix, Arizona
Mr. Korstad

City of Phoenix Comprehensive Plan 1990

STOP DATE: Reductions in specific rates published herein are applicable to all policies in effect on a pro rata basis from the published effective date except policies attaching prior to stop dates published on the circular page(s) or on a specific rate page.

PUBLICATION OF DECIMAL POINT FOR SPECIFIC RATES: Where rates are published without a decimal point, they are 50 cents or over.

PHOENIX MARICOPA CO., ARIZONA

Area	Eff. Date	Stop Date
Phoenix (City Limits Only) — See Map, Circ. Pages C-1, C-1-A, C-2, C-3 & C-4:		
Zone 1 .. Prot. Class 2	11-3-76	9-3-76
Specific Rates		
Zone 2 .. Prot. Class 9	9-28-77	7-28-77
Specific Rates	12-28-74	10-28-74
Zone 3 ... Prot. Class 7	9-15-77	7-15-77
Specific Rates	9-15-77	7-15-77

ZONE INFORMATION: Where an area is divided into two or more zones, unless otherwise provided, specifically rated risks are located in Zone 1.

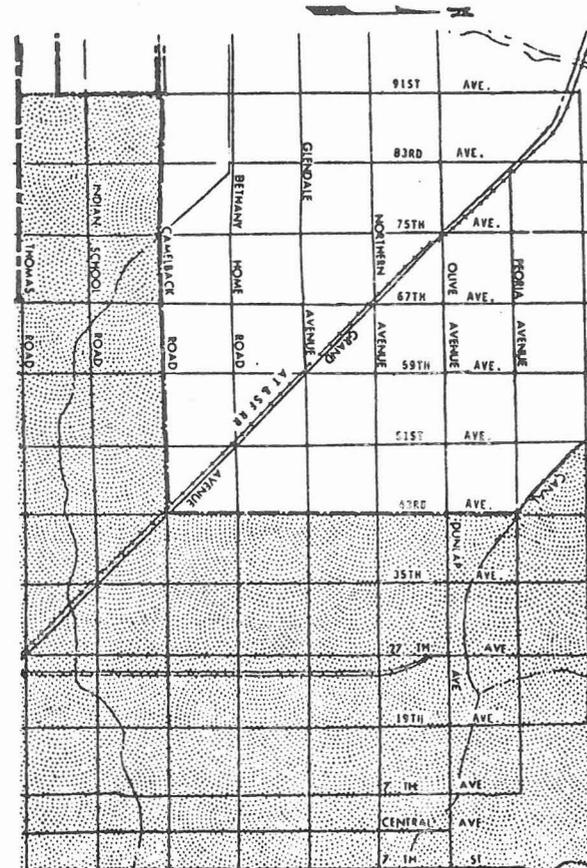
*NOTE: Rates reduced by the following Fire Rate Modification Factors, and specific rates for all properties published herein with an effective date on or after 11-3-76 are subject to a circular page stop date of 9-3-76 unless otherwise noted.

Continued on Page A-1 & B

*255 E. Oshtemo Suite 201
Phoenix, AZ 85012*

**INSURANCE SERVICES OFFICE
of Arizona**

PHOENIX, ARIZONA





CITY
OF
PHOENIX
FIRE DEPARTMENT

PHOENIX FIRE DEPARTMENT PARAMEDIC PROGRAM

The Phoenix Fire Department paramedic rescue vehicles are staffed by a minimum of two state certified emergency paramedics, who act in accordance with The Arizona paramedic law which was passed by the Arizona Legislature in June of 1974.

Under the provisions of this law, personnel certified as Arizona Emergency Paramedics may provide the following medical service when in voice contact with a physician at a hospital which has been state certified as an emergicenter:

1. Perform defibrillation
2. Administer intravenous saline or glucose solutions
3. Perform gastric suction by intubation
4. Perform esophageal intubation
5. Perform endotracheal intubation and suction
6. Administer parenteral injections of any of the following classes of drugs:
 - a. Antiarrhythmic agents
 - b. Vagolytic agents
 - c. Chronotropic agents
 - d. Analgesic agents
 - e. Alkalinizing agents
 - f. Vasopressor agents
 - g. Diuretics
 - h. Sedatives
 - i. Steroids
 - j. Cardiotonics
 - k. Narcotic antagonists

To apply for instruction as a paramedic, Fire Department personnel are required to have a minimum of 2 1/2 years service with the Phoenix Fire Department. All are required to be certified as basic emergency medical technicians. During their required 2 1/2 years of service, their EMT work must be of a high standard. The time requirement also allows professional attitude evaluation of the firefighter, and insures that he is well versed in the overall function of the Fire Department Emergency Medical Services program. This is necessary because of the dedication of the Phoenix Fire Department to an integrated system of firefighting and emergency medical services operations. Before a paramedic can provide his sophisticated medical service as a supplement to line Fire/Rescue crew activities, he must thoroughly understand how the line Fire/Rescue system operates.

The instruction which prepares Phoenix Fire Department personnel for certification as paramedics lasts approximately 4 1/2 months. The training is received at selected Phoenix area hospitals with classroom work at the Fire Department Training Academy and field application of the techniques performed during field duty tours on Fire Department paramedic rescue vehicles. During the field duty phase of the instruction period, the student paramedics are accompanied by a registered nurse who has received doctors' standing orders to allow the paramedic function in the field for training purposes. During the training phase, heavy emphasis is placed on cardiology.

Following the training phase, prospective paramedics must take a written test administered by the Arizona Department of Health Services and receive the approval of the DHS Medical Board following an oral interview.

Phoenix Fire Department paramedics also retain firefighting duties as well as their EMS functions. At a fire scene, they are assigned search and rescue duties in a burning building, and treat all personnel, Fire Department or civilian, who may be injured in the fire incident.

Fire Department paramedic units respond automatically to each residential and commercial fire call dispatched by the Phoenix Fire Department.

Phoenix Fire Department rescue vehicles are modular-type units with transport capability. Fire Department policy prohibits transporting patients except in a situation where an ambulance is unavailable or delayed in a life-threatening situation.

The units are equipped with extrication tools which include:

1. Hurst Power Tool ("Jaws of Life")
2. Air chisel
3. Circular saw
4. Selected hand extrication tools

The trucks are also equipped with line oxygen and suction systems. The modules are completely air conditioned. Radio contact with emergicenters is coordinated through the Fire Department Alarm Room on a separate medical radio frequency. Once contact has been established, the paramedic talks directly to the emergicenter physician without interference from firefighting operations return traffic. All rescue units are, of course, equipped with EKG Monitor Defibrillators.

Those interested in becoming Phoenix Fire Department paramedics should contact the City of Phoenix Personnel Office, 251 West Washington for information on employment as a Phoenix firefighter which is the prerequisite.

Stephen A. Jensen
Public Information Officer

POLICE PROTECTION

Maryvale Terrace 53-A will receive police protection from the City of Phoenix Police Department (District 8). The nearest station is located at 4020 West Glenrosa, five miles away.

This project lies within patrol beat 844, and a police unit is normally assigned 24 hours a day to patrol and respond to calls for service within this beat area. The area of this beat is 4.5 square miles, and the department cannot project how often a police car will patrol any one portion of this area.

For the entire City of Phoenix, the overall average response time is 16 Minutes; the non-emergency response time is 17 minutes; and the emergency response time is 5 minutes. Within District 8, the overall average response time is 16 minutes; the non-emergency response time is 16 minutes; and the emergency response time is 4 minutes.

The present authorized police-to-population ratio for Phoenix is one officer per 419 inhabitants. Ratio for District 8 is one officer per 350 inhabitants.

Phoenix Police Department is involved in many programs to alert citizens in ways to protect themselves and their property. These programs are offered to civic, business, church and school groups upon request and cover such subjects as (1) Residential and Business Security, (2) Crime Prevention, (3) Self Protection, (4) Drugs, (5) Play Safe, (6) Pedestrian and Bicycle Safety, (7) Police and Youth (8) Police and Community, (9) Child Abuse, etc.

The construction and occupation of 618 homes in Maryvale Terrace

53-A will result in approximately 75-80 more calls for police services each month over the number which are presently occurring in this area. This increase should not significantly affect the levels of police service now being supplied to citizens in this area.

SOURCES

City of Phoenix Police Department
Planning and Research Bureau
620 W. Washington, Room 342
Phoenix, Arizona
S.A. Lewis, Director

RECREATION

Metropolitan Phoenix is ringed by a series of spacious mountain-desert parks and lake-recreation areas totaling over 110,000 acres. Maryvale Terrace 53-A is located 10-30 miles from these areas which well meets future needs for this type of facility.

Regional parks are the largest of all parks and serve the population of an entire region that may include all or part of a city. Location of these are unique in that it is not tied directly to a population base. The regional park serves three functions:

1. It preserves natural landscape and resources
2. Supplements urban recreational facilities
3. Acts as open space or a greenbelt to separate cities in large urban areas.

There are three regional parks within the City of Phoenix and one proposed. One of these, South Mountain Park, is the largest municipally owned park in the world. It consists of approximately 16,000 acres and is about 12-15 miles from Maryvale Terrace 53-A.

There is one proposed district park within five miles of this development. This will cover 160 acres and have a golf course. District park standards are 2.5 acres per 1,000 population and will serve 100,000-200,000 people.

The nearest community park is $1\frac{1}{2}$ miles away along with three proposed sites for the area. The standards for community parks are 2.0 acres per 1,000 population and serve 20,000-50,000 people with a 20-40 acre-size depending on the service area. Whenever feasible, these are

located next to a high school so joint use of facilities, particularly the gymnasium, can serve recreational needs.

Neighborhood parks are intended to serve the near-to-home outdoor recreational needs of the residents of one neighborhood. They are ideally located near elementary schools. These average 8-10 acres in size with standards of 2.7 acres per 1,000 population and usually serve 4,000-7,000 people. There is a lack of neighborhood parks within the City of Phoenix. The nearest one to Maryvale Terrace 53-A is a distance of one mile. If the proposed elementary school on the subject site is completed, there will also be an adjoining neighborhood park. Several suitable sites are available in this area. The City of Phoenix projects the need for new neighborhood parks for the city to be 33 for 1985 and 50 for 1990.

The nearest hiking and riding trail is approximately 10 miles from the site. An 18.5 mile trail is proposed four miles to the west.

No public transportation is available to the parks from Maryvale Terrace 53-A.

At the present time, the proposed development may have some impact on the parks in the area, but this should be alleviated when the other proposed parks are developed.

SOURCES

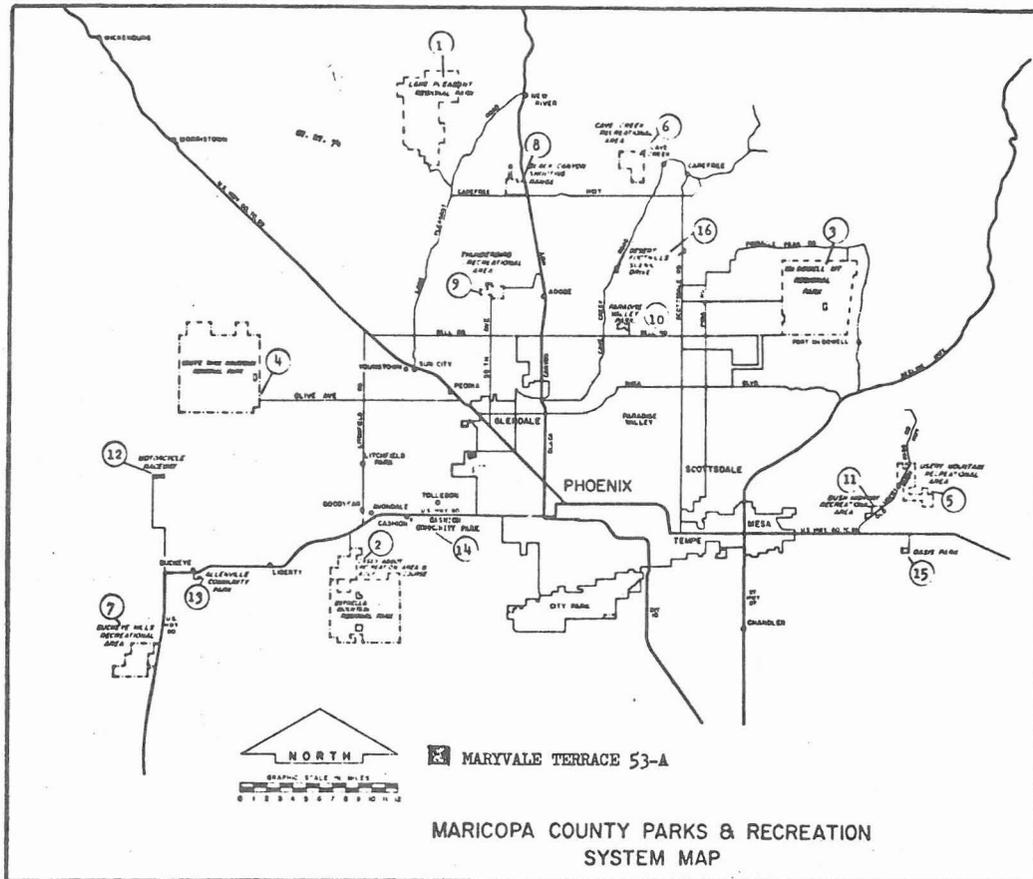
The Comprehensive Plan, Phoenix, Arizona - 1990

Maricopa County Parks and Recreation Department
4701 E. Washington
Phoenix, Arizona

City of Phoenix - Park and Recreation Board
Planning Commission
The Park and Recreation Plan, Phoenix, Arizona - 1976

Maricopa County Parks & Recreation Map

Hiking and Riding Trails Map



1. LAKE PLEASANT REGIONAL PARK -- 14,400 acres partially developed, 10 miles west of Black Canyon Hwy on Carefree Hwy, about 30 miles north of Phoenix, 21 miles north of Sun City via 93rd Ave. Upper and Lower Lakes are created by Uddell Dam, which stores waters of the Agua Fria River for irrigation purposes. The Lower Lake has a sandy beach for swimming and lifeguards on duty during summer. Electric trolling motors are the only type permitted on the Lower Lake. A Snack Bar and Ranger Headquarters are located near the entrance of the Lower Lake, and across the Lake an Outdoor Center for use of youth service groups - on advance registration basis. Three concrete boat launching ramps, two floating docks and a gasoline fueling dock are available at the Upper Lake. A Safety-First Aid Center is located near the boat launching area. The "Dirty Shirt" campground, with 46 campsites by the water at the Upper Lake has parking for a car and boat trailer, and comfort stations, but no water or electricity. Picnic facilities, with concrete tables and grills are located throughout the park, and there is a group camping area available on advance reservation. A park entrance fee of 50¢ per vehicle is charged.
2. ESTRELLA MOUNTAIN REGIONAL PARK & CASBY ABBOTT RECREATION AREA -- 16,600 acres, 3 miles south of Goodyear via Bullard Road, south of Hwy 80. The Casby Abbott Recreation area has approx. 16 acres turfed, with 150 picnic tables, grills, rest rooms and playground equipment. Water is available, but no electric outlets. An amphitheater is nestled against the hill on the south side of the parking area, and a site in the east end of the park will accommodate about 25 tent campsites. An Archery Range is located in the southwest corner. A primitive desert group campground site is available (without water), by advance reservation 262-3711.
SIENNA ESTRELLA GOLF COURSE -- an 18 hole course, with driving range and putting green, complete with a Pro Shop and snack bar is located in the northwest corner.
3. McDOWELL MOUNTAIN REGIONAL PARK -- 20,941 acres, 15 miles northeast of Scottsdale. Entrance road from Dynamite Blvd - also known as Rio Verde Drive to picnic grounds, with approx. 70 picnic tables and grills and 3 vault-type rest rooms. No water.
4. WHITE TANK MOUNTAIN REGIONAL PARK -- 26,337 acres, 15 miles west of Peoria, via Olive Ave. Now paved entrance now leads directly into the Park. There are approx. 260 picnic sites with covered concrete tables, grills and vault-type rest rooms; a 40-site group campground with rest rooms, and marked hiking trails lead into the various canyons. There is no water or electricity in the park.
5. DESERT MOUNTAIN RECREATION AREA -- approx 3,000 acres, 12 miles northeast of Mesa. Can be reached by going east on Apache or McKellips Rd. to Ellsworth Rd, then go north on Ellsworth Rd into the park. 25 acres developed now for picnicking, with vault-type rest rooms. No water or electricity. An Archery Range with a practice area (two 28-target field courses), target archery field with shade structure, parking area and rest rooms. A campground, with 75 campsites, and a special area for group camping by reservation, is located across the road from the Archery Range.
6. CAVE CREEK RECREATION AREA -- 3,000 acres undevel. desert approx 8 mile west of Cave Creek.
7. BUCKEYE HILLS RECREATION AREA -- 4,474 acres, 5 mile southwest of Buckeye, on U.S. Hwy 80. An entrance road into the park is completed and 20 acres developed with approx. 50 picnic sites, grills, rest rooms and a small shooting range. No water or electricity available.
8. BLACK CANYON SHOOTING RANGE & RECREATION AREA -- 1,433 acres, 25 mile north of Phoenix on the Carefree Hwy, off Black Canyon Hwy. Consists of small bore, large bore, pistol and air rifle ranges; two running target ranges, archery range with three 28-target courses and a Mexican Silhouette Range. Two Sun houses and a Range facilities building with rest rooms; a camping area with 52 trailer spaces with elec. for \$2.00 fee per night, and 40 spaces without elec. for \$1.50 - water and rest rooms nearby. The Shooting Range is closed on Monday and Tuesday.
BLACK CANYON TRAP & SKEET RANGE, under mgmt. of John Ruf, has 5 trap and 3 skeet fields and he invites all types of clubs, as well as individuals. He has evening hours on Wednesday and Friday and is closed on Tuesday. Telephone 582-2850
9. THUNDERBIRD RECREATION AREA -- 720 acres partially developed, 9 miles north of Glendale, via 59th Ave or can be reached from Black Canyon Hwy from Pinnacle Peak Road, west. An amphitheater, picnic areas, water and rest rooms available.
10. PARADISE VALLEY COMMUNITY PARK -- 340 acres partially developed at 60th Street & Union Hills Dr. with picnic areas, rest rooms, lighted gymnasium & Community Center Building available by reservation -- 262-3711.
PARADISE VALLEY PARK GOLF COURSE -- a 9 hole golf course, with entrance located at 3600 E. Union Hills Dr. Course is closed on Monday during June, July & August.
11. BUSH HIGHWAY RECREATION AREA -- 267 acres located 1.5 mi north of Apache Blvd via old Bush Hwy (Power Road) at the intersection of Usery Pass Rd, continue north-south on Usery Pass and the park is located on the left-hand side -- across from Mesa Palo Verde Park. Contains a 5-acre picnic area with 2 picnic tables, 4 tables, grills and rest rooms. Site of a future 18-hole golf course.
12. MOTORCYCLE RACKWAY -- 140 acres 5 mi s.w. of White Tank Park, pending development.
13. ALLENVILLE COMMUNITY PARK -- 5 acres, 1 mi south of Buckeye, via Miller Road, with picnic facilities and playground equip., ball diamond and basketball court.
14. CASHION COMMUNITY PARK -- 6 acres, south of U. S. 80 via 109th Ave. Lighted ball field and playground area with picnic facilities and rest rooms.
15. GABIS PARK -- 9.5 acres at Apache Junction, 5 mile south of U.S. 70-80 at 106th St. (Signal Butte Rd.) just south of Broadway. A Community Center Building with playground, picnic facilities, shuffleboard courts and ball diamond. Res. 336-1531
16. DESERT FOOTHILLS SCENIC DRIVE -- Two 5-acre park sites with rest rooms, sunbaths, and picnic facilities that mark the beginning of a scenic loop drive in an area just north of Pinnacle Peak Rd. on portions of Cave Creek Rd & Scottsdale Rd. Way are signed with names of the desert plant species.

FIGURE 23

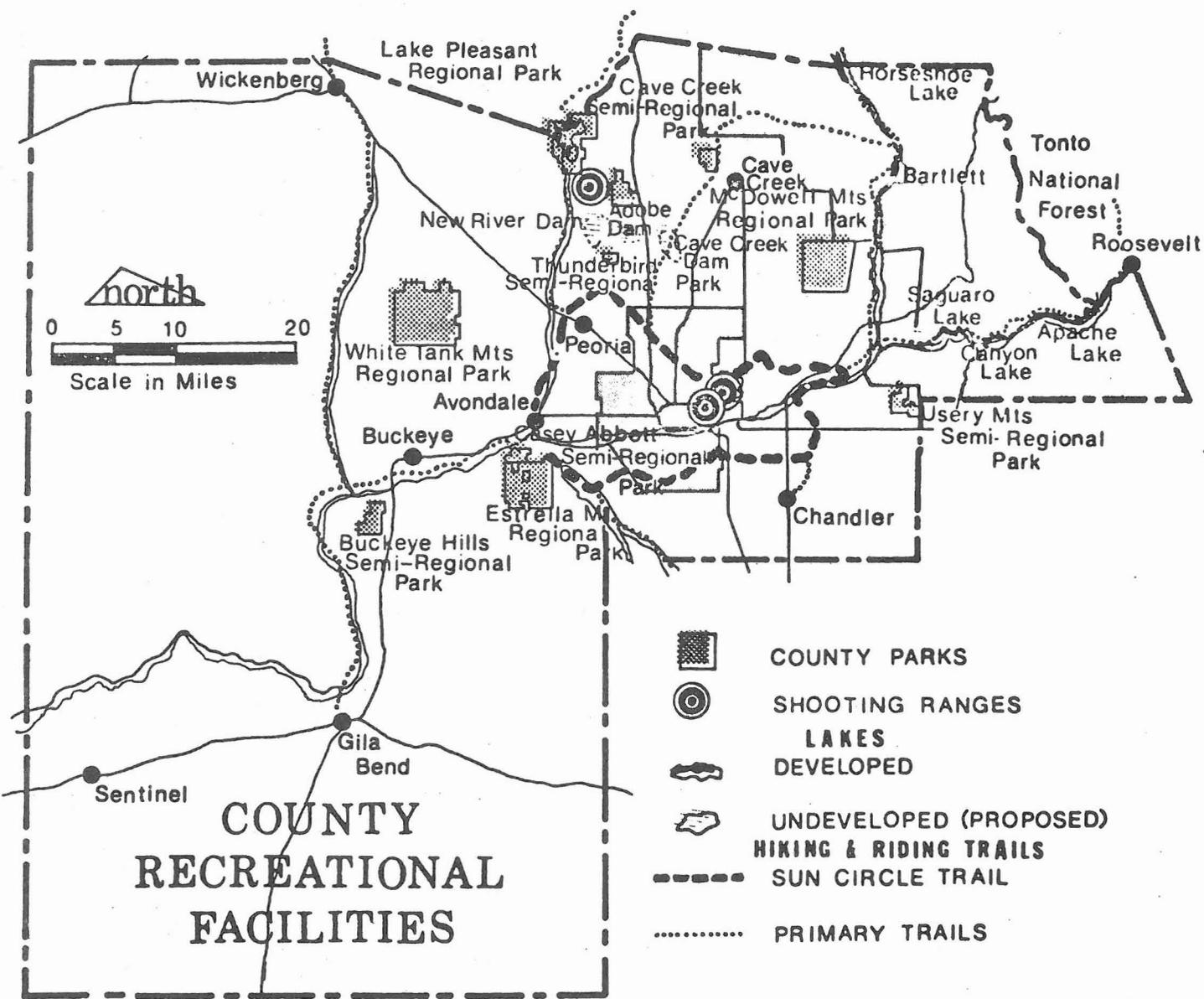
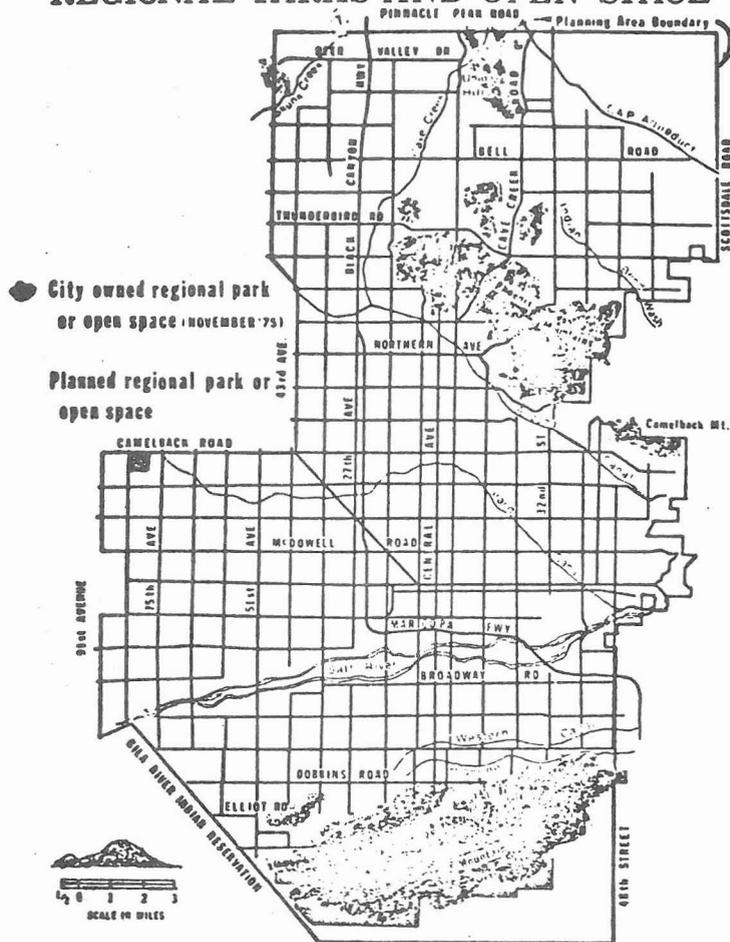


FIGURE 24
-120-

REGIONAL PARKS AND OPEN SPACE



▨ MARYVALE TERRACE 53-A

SOUTH MOUNTAIN PARK current land ownership

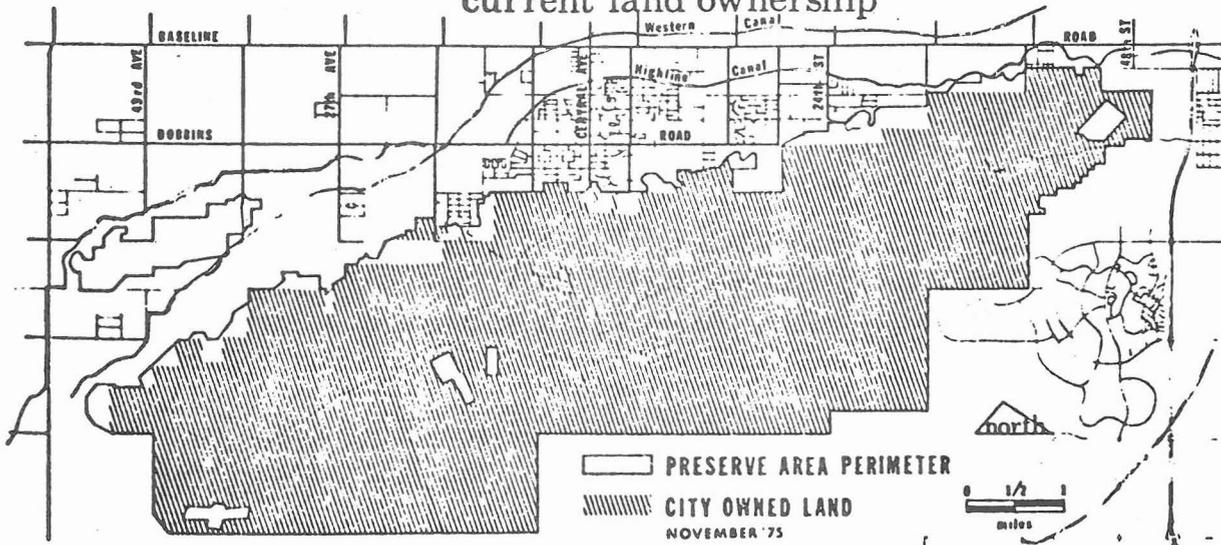


FIGURE 25

DISTRICT PARK LOCATIONS

Districts



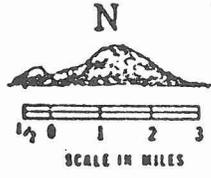
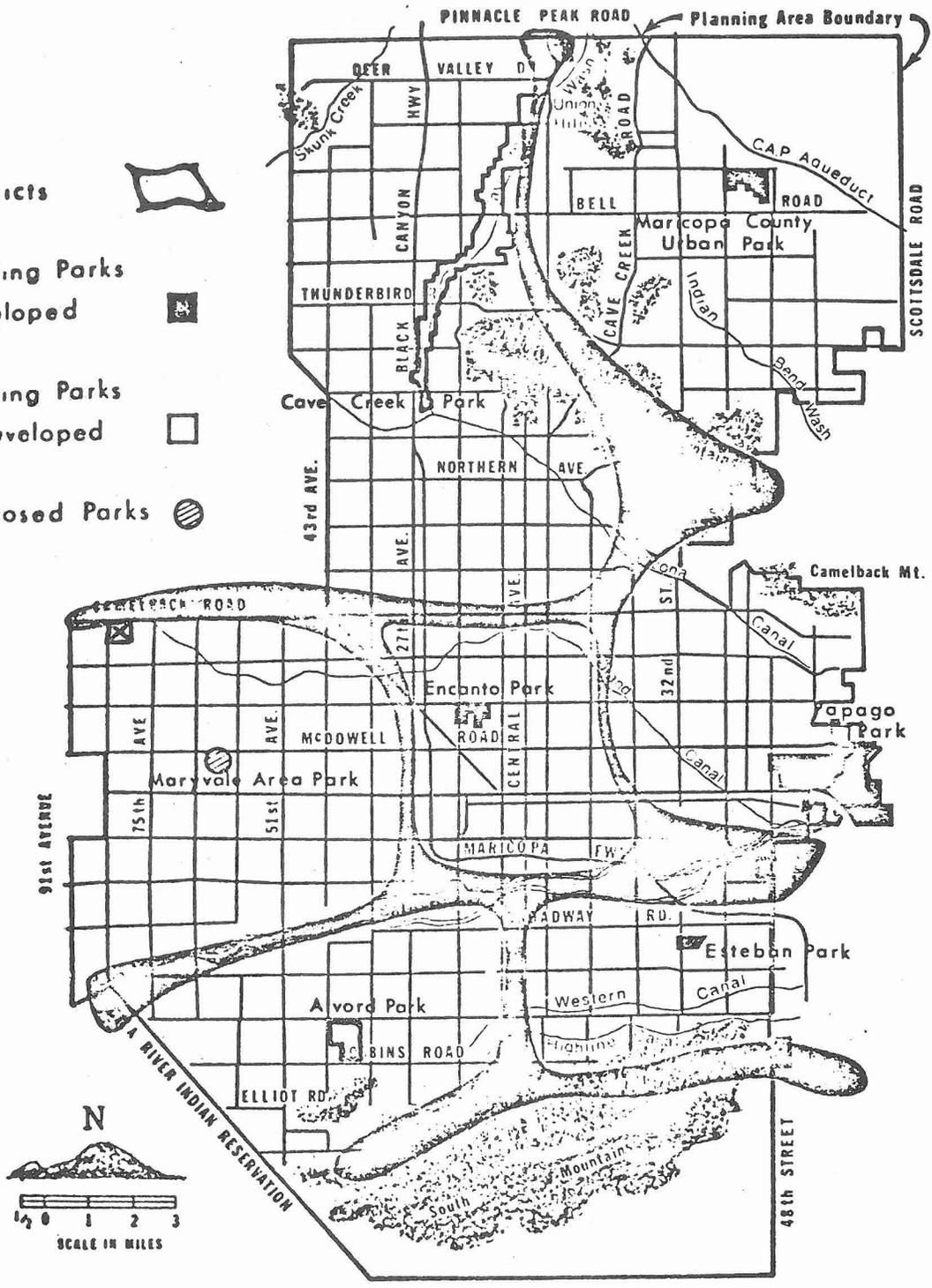
Existing Parks
Developed



Existing Parks
Undeveloped



Proposed Parks

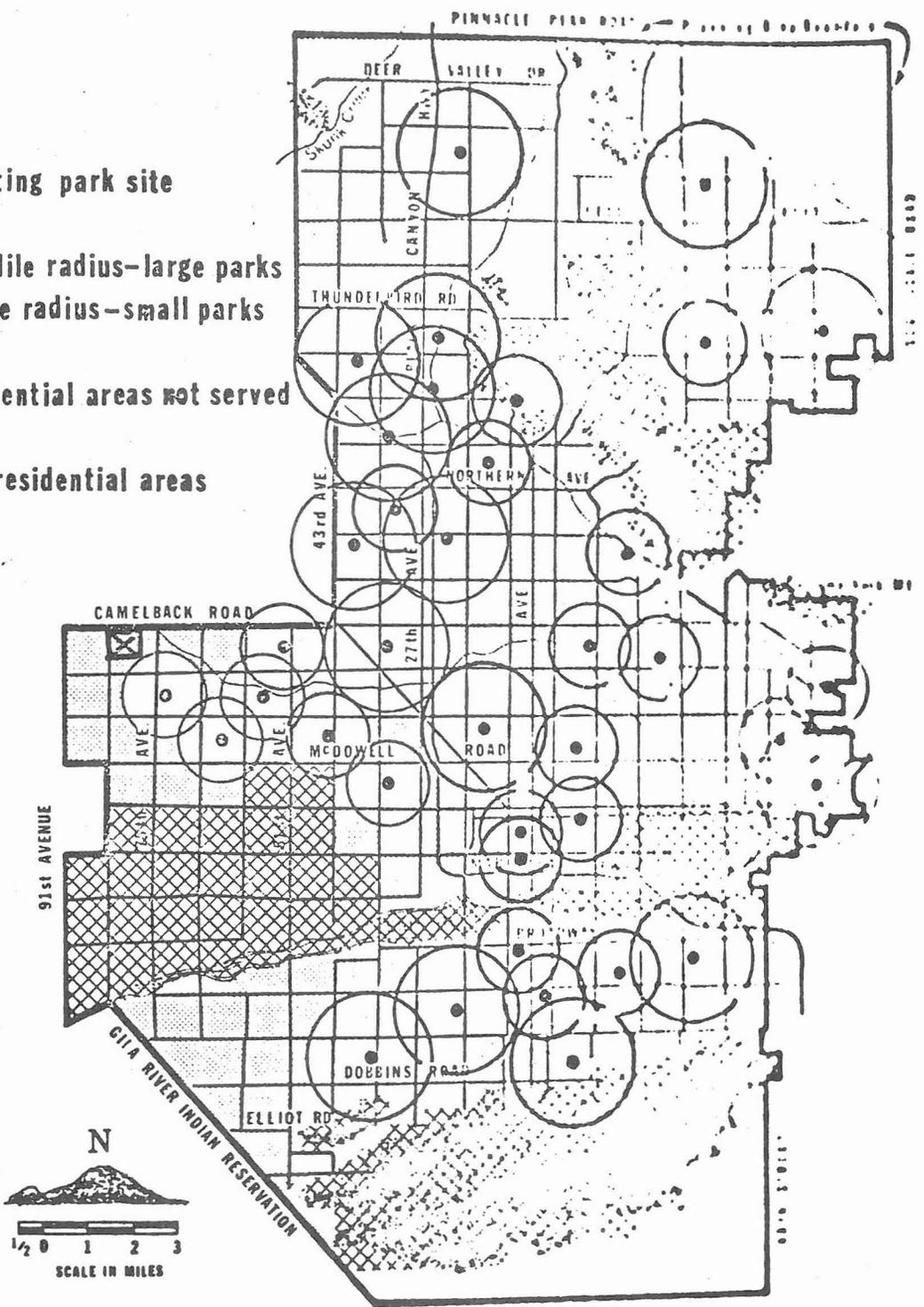


 MARYVALE TERRACE 53-A

FIGURE 26

COMMUNITY PARK EXISTING SERVICE AREAS

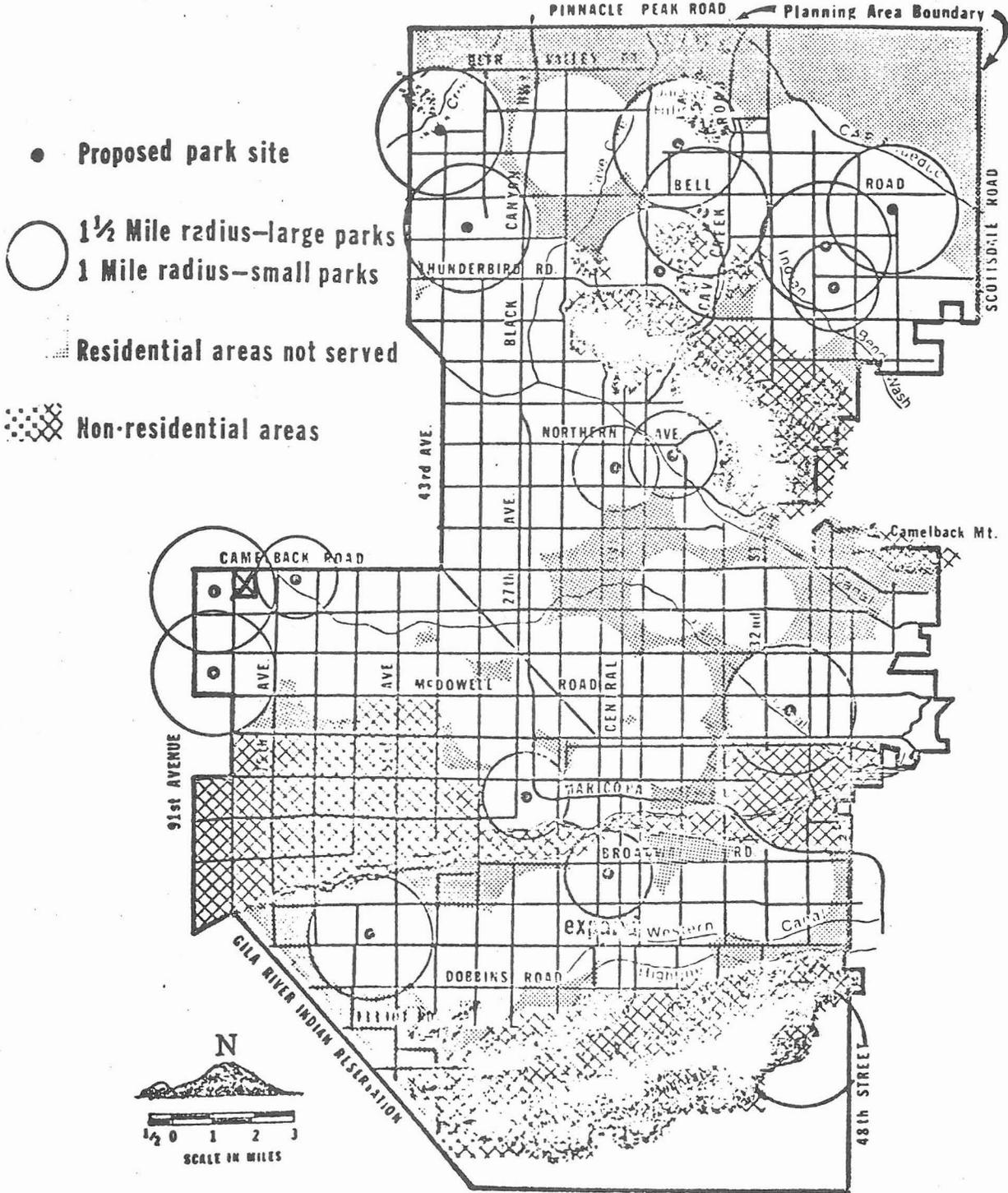
- Existing park site
- 1 1/2 Mile radius—large parks
- 1 Mile radius—small parks
- ▨ Residential areas not served
- ▩ Non residential areas



▣ MARYVALE TERRACE 53-A

FIGURE 27

COMMUNITY PARK PROPOSED SITES



▣ MARYVALE TERRACE 53-A

FIGURE 28

NEIGHBORHOOD PARK NEEDS — 1985

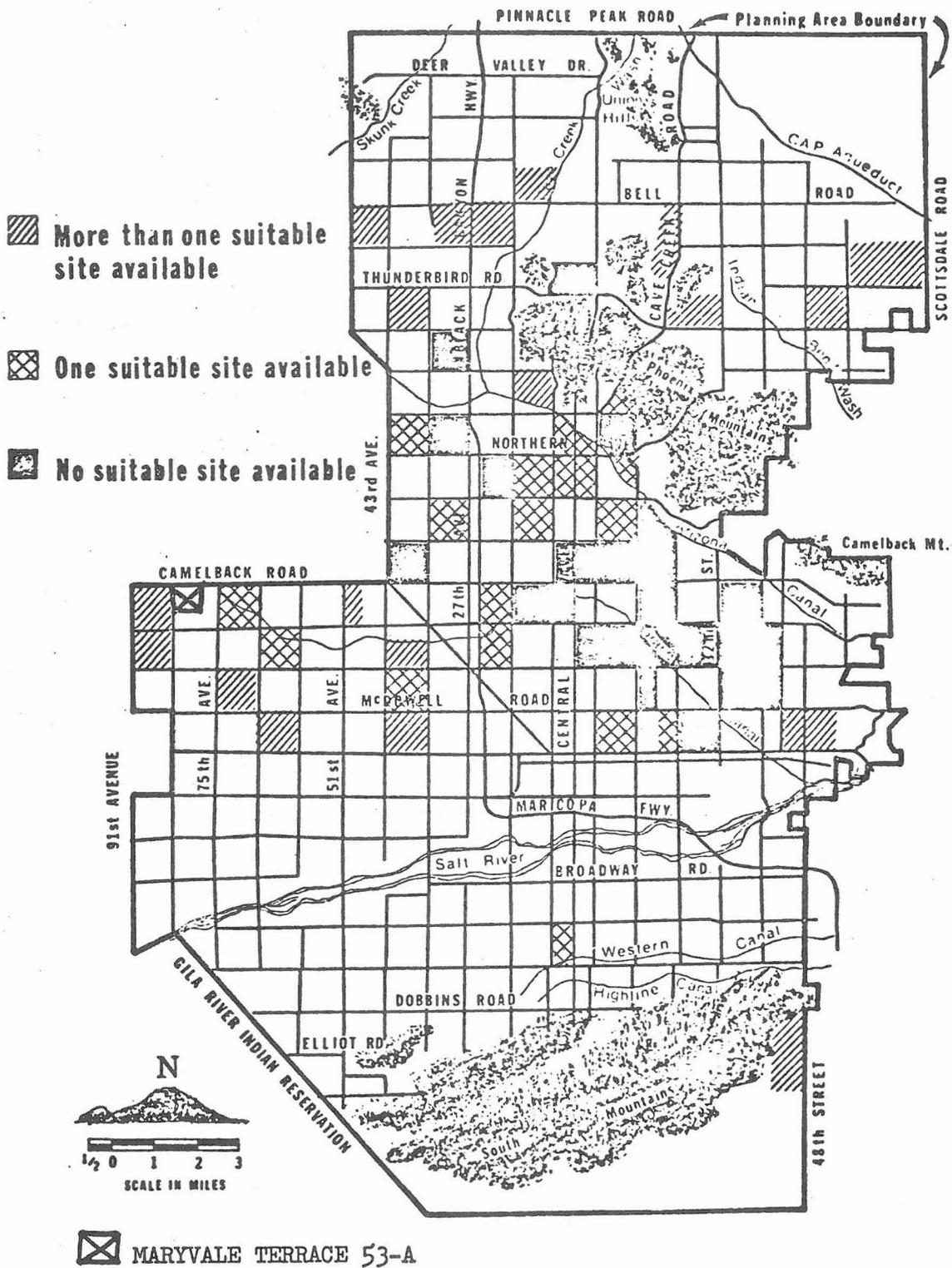
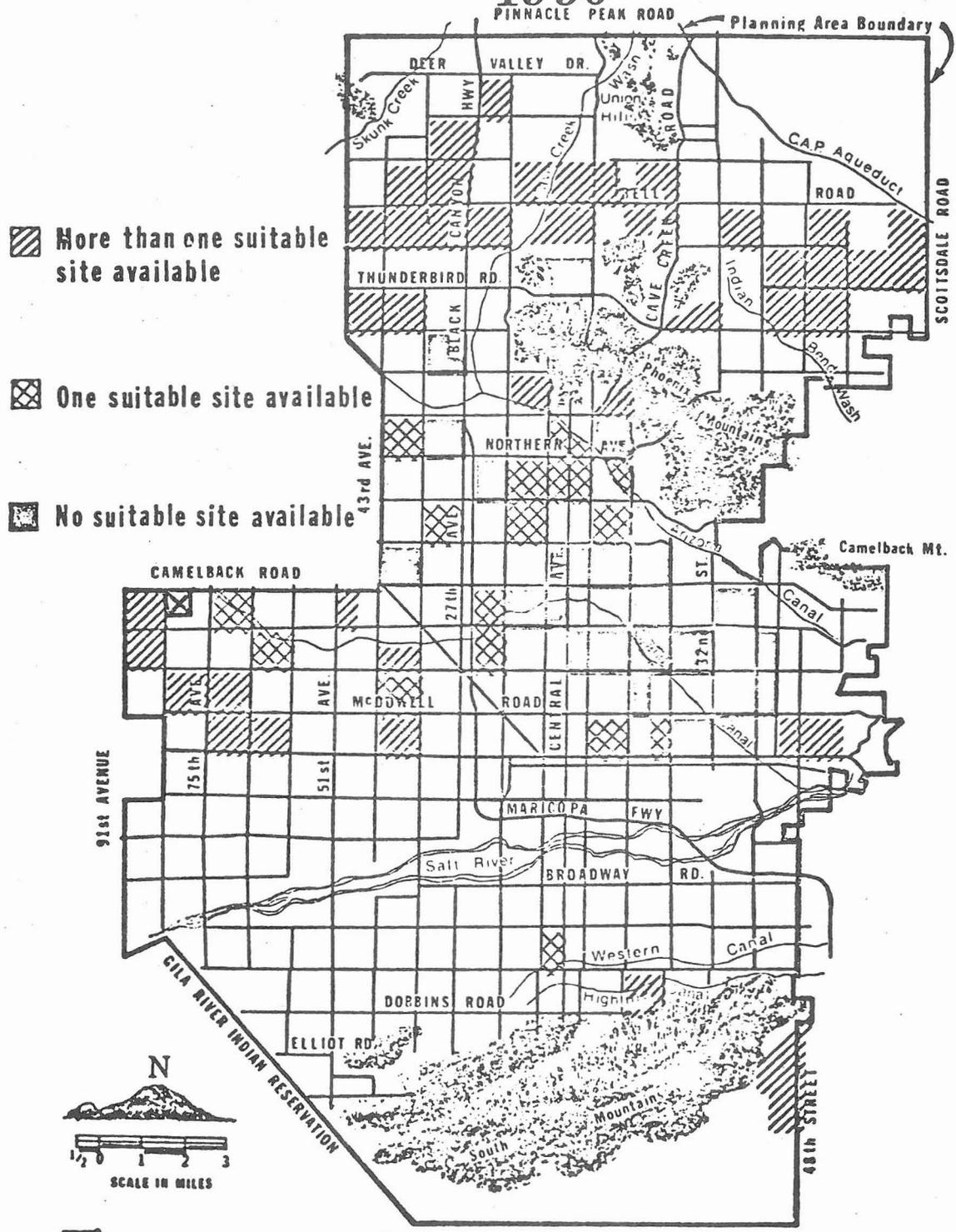


FIGURE 29

NEIGHBORHOOD PARK NEEDS 1990



 More than one suitable site available

 One suitable site available

 No suitable site available

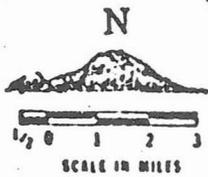
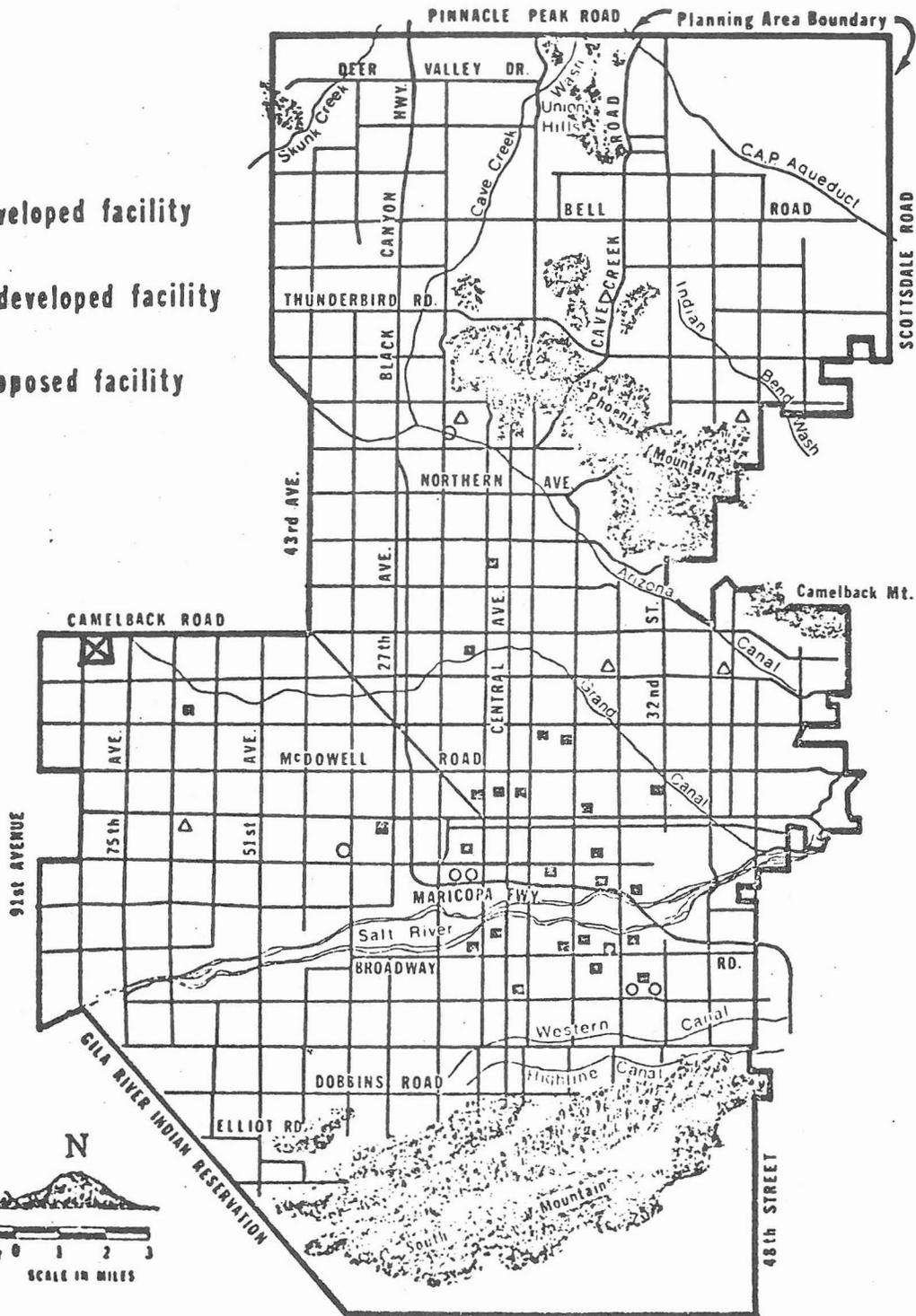


 MARYVALE TERRACE 53-A

FIGURE 30
-126-

MINI-PARK SITES

- Developed facility
- Undeveloped facility
- △ Proposed facility

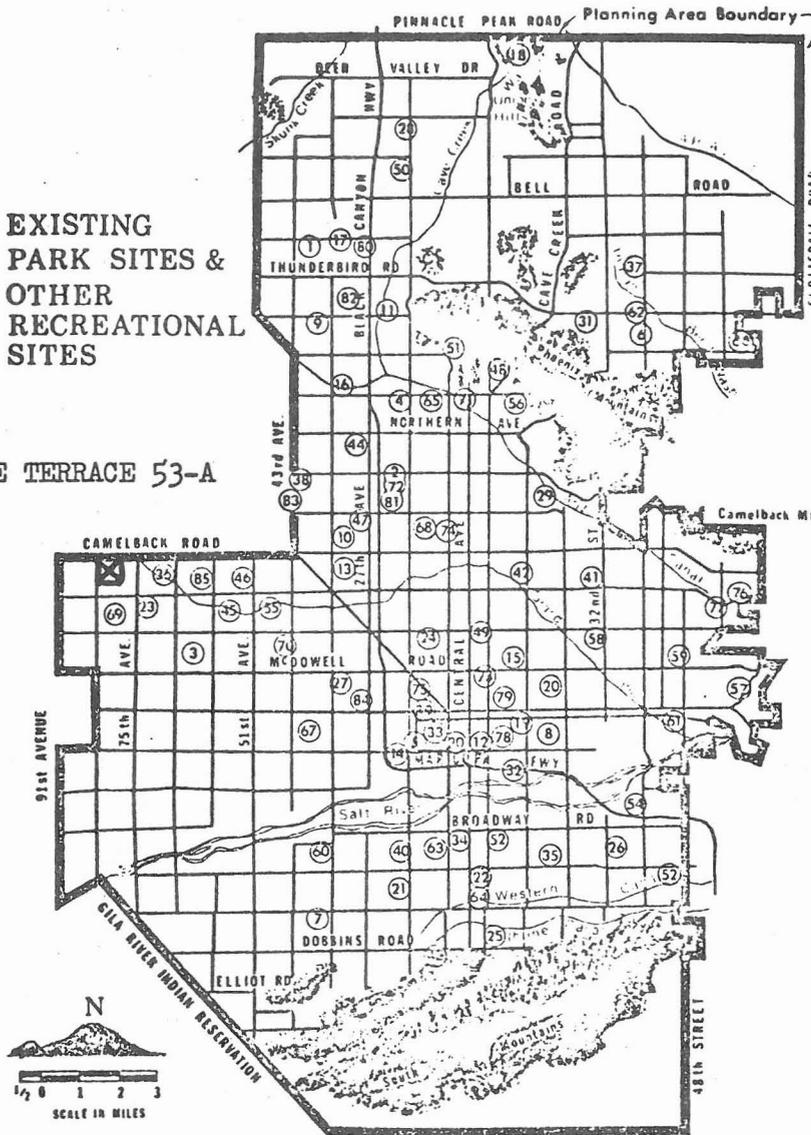


☒ MARYVALE TERRACE 53-A

FIGURE 31

**EXISTING
PARK SITES &
OTHER
RECREATIONAL
SITES**

☒ MARYVALE TERRACE 53-A



- | | | | | |
|-----------------------|---------------|----------------------|---------------------|-------------------|
| 1. ACOMA | 19. EAST LAKE | 37. INDIAN BEND | 55. ORME | 73. TOWNSEND |
| 2. ADULT CENTER | 20. EDISON | 38. LA PRADERA | 56. PALMA | 74. TREE FARM |
| 3. ALEGRE | 21. EL PRADO | 39. LIBRARY | 57. PAPAGO | 75. UNIVERSITY |
| 4. ALICIA | 22. EL REPOSO | 40. LINDO | 58. PERRY | 76. UNNAMED |
| 5. ALKIRE | 23. EL OSO | 41. LOS OLIVOS | 59. PIERCE | 77. UNNAMED |
| 6. ALTADENA | 24. ENCANTO | 42. MADISON | 60. PLAYA MARGARITA | 78. UNNAMED |
| 7. ALVORD | 25. ESCONDIDO | 43. MA-HA-TUOCK | 61. PUEBLO GRANDE | 79. VERDE |
| 8. BERNEY | 26. ESTEBAN | 44. MARIPOSA | 62. ROAD RUNNER | 80. VISTA |
| 9. CACTUS | 27. FALCON | 45. MARIVUE | 63. ROESELY | 81. WASHINGTON |
| 10. CANON | 28. FUENTE | 46. MARYVALE | 64. ROOSEVELT POOL | 82. WESTOWN |
| 11. CAVE CREEK | 29. GRANADA | 47. MARYVALE POOL | 65. ROYAL PALM | 83. WEST PLAZA |
| 12. CENTRAL | 30. GRANT | 48. MONFORT MEMORIAL | 66. SERENO | 84. WILLOW |
| 13. CELITO | 31. GRATO | 49. MONTEREY | 67. SMITH | 85. MARYVALE GOLF |
| 14. COFFELT-LANDREAU | 32. GREEN | 50. MORNINGSIDE | 68. SOLANO | |
| 15. CORONADO | 33. HARMON | 51. MOUNTAIN VIEW | 69. STARLIGHT | |
| 16. CORTEZ | 34. HAYDEN | 52. NEVITT | 70. SUENO | |
| 17. COUNTRY GABLE | 35. HERMOSO | 53. NUEVE | 71. SUNNYSLOPE POOL | |
| 18. DEER VALLEY CYCLE | 36. HOLIDAY | 54. OKEMAH | 72. TENNIS CENTER | |

FIGURE 32

HIKING AND RIDING TRAILS

CENTRAL PORTION OF MARICOPA COUNTY, ARIZONA

■ MARYVALE TERRACE 53-A

LEGEND

PRIMARY TRAILS

- MARKED TRAIL
- UNMARKED TRAIL
- - - PROPOSED TRAIL

SECONDARY TRAILS

- MARKED TRAIL
- UNMARKED TRAIL
- - - PROPOSED TRAIL

PREPARED BY
 MARICOPA COUNTY
 PLANNING AND ZONING DEPARTMENT
 PARKS AND RECREATION DEPARTMENT
 AUGUST, 1969 G.L.B.

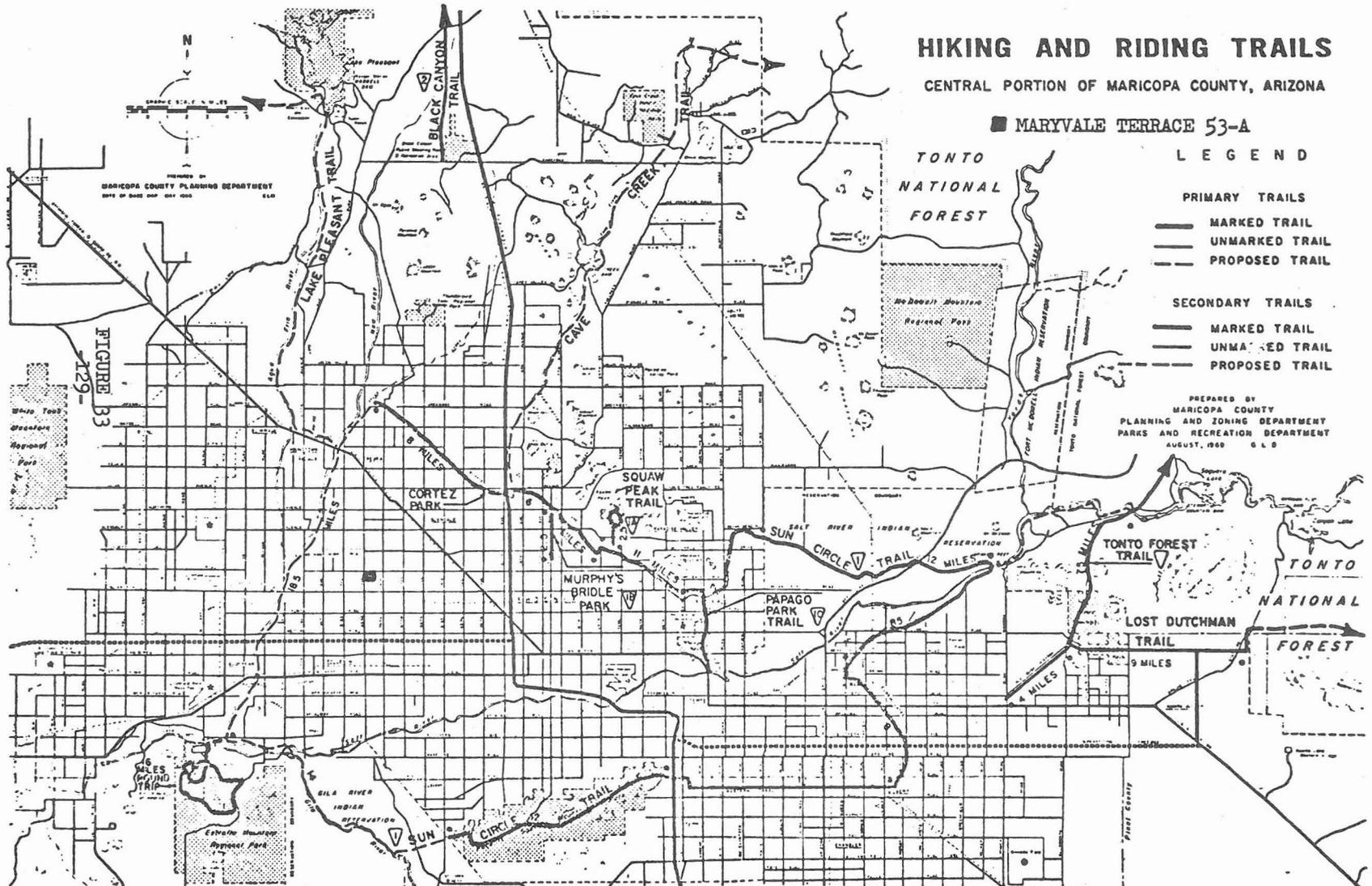


FIGURE 33
 129

MARICOPA COUNTY PLANNING DEPARTMENT
 DATE OF BASE MAP MAY 1968

CULTURAL FACILITIES

Metropolitan Phoenix has a wide variety of cultural and entertainment activities.

The new downtown Phoenix Civic Plaza, 13 miles from Maryvale Terrace 53-A, includes a Convention Center and Symphony Hall surrounded by spacious plazas. It is designed to accommodate several major events simultaneously and contains 250,000 square feet of variable operating space. The entire facility covers 16.5 acres or six city blocks with two additional blocks for surface parking.

The Arizona Veteran's Memorial Coliseum and Exposition Center, 1826 West McDowell Road, is approximately 10 miles from the proposed development. It contains an Exhibit Hall with 140,000 square feet, an Arena and State Fair Grandstand that seats 14,250 and 7,000 respectively, horse areas and other facilities.

The Desert Botanical Garden, a service organization, is famous internationally for its tremendous growing collections of native Arizona cactus, cactus from both Central and South America, succulents from African deserts and other plants collected from the arid lands of the whole world. It is also a place for botanical research, as well as a place for anyone to enjoy the desert beauty. The scientific libraries of a botanist are three - a library of living plants; the herbarium, a library of pressed, dried and identified plants; and the more familiar library of books, dating back to the late 1500's. This garden is located about 18 miles southeast of the proposed project.

Other cultural facilities include the Heard Museum which houses

the Southwestern Indian arts and gift shop, Phoenix Art Museum, Phoenix Zoo, Phoenix Public Library, plus many other facilities offering music, dance, theaters, arts and crafts, etc.

The Phoenix Public Library has a collection of over a million volumes. Palo Verde Branch Library, a segment of the Phoenix Public Library, is located at 4402 North 51st Avenue, some five miles from Maryvale Terrace 53-A. Bookmobile service is available biweekly at 75th Avenue and Indian School Road, two miles from the site.

Lectures, films and plays are regularly presented by the Community Colleges, Grand Canyon College and Arizona State University.

These facilities have limited public transportation, but are readily accessible by automobile.

The 1,970 to 2,150 additional people generated by the development of this project would create only a minimal impact on the cultural facilities available in Metropolitan Phoenix.

SOURCES

Arizona Veteran's Memorial Coliseum & Exposition Center
1826 W. McDowell Road, Phoenix, Arizona
Leslie Green, Public Relations

Phoenix Civic Plaza
City of Phoenix
225 E. Adams Street, Phoenix, Arizona
Dorothy Miles, Public Information Specialist

Central Public Library
12 E. McDowell Road, Phoenix, Arizona
Rosemary Nelson, Administration

The Desert Botanical Garden Fact Sheet - 5/77

City of Phoenix Planning Department
The Comprehensive Plan 1990

AESTHETIC ENVIRONMENT

The development, located on flat land, has been converted from virgin desert to irrigated farm land which is typical of the area.

Looking to the north of the subject, we find level farm land and several one-story structures. To the south, the land is built up with typical one-story single family dwellings. The property to the east is partially developed with the same type single family dwellings with the remainder in farm land. Open farm land is to the west.

The view from the subdivision is generally pleasant. The proposal itself is designed to be harmonious with the surrounding areas.

Camelback Road and 83rd Avenue are major arterial streets. They provide easy access to and from the development. These streets will have a decorative six foot high masonry wall that will serve as a noise barrier from vehicular traffic as well as provide privacy to the homeowners. The curvature of the streets within the subdivision, the sidewalks and the curbs lend themselves to a pleasant living atmosphere.

This development will have a positive impact on the visual content of the area. However, the impact should be favorable to the overall area.

HISTORIC AND ARCHAEOLOGIC FEATURES

Maryvale Terrace 53-A was field inspected by the City of Phoenix Archaeologist to determine if there was surface evidence of historical and/or archaeological features. No such surface evidence was found.

A search through the Pueblo Grande Museum's library, site file and reference to Turney's Prehistoric Irrigation Map did not reveal any sites in the area.

The Federal Register and the State Register for Arizona of Historic Places were also consulted. The area contained no archaeological or historic sites which either appear on or have been recommended or nominated for inclusion in these registers.

According to the Department of Anthropology, University of Arizona, no archaeological sites were known on the property or surrounding property within a distance of one mile.

Since no known archaeological materials or evidence of historical sites have been found or inferred to exist on the site, there would not be any impacts.

SOURCES

Pueblo Grande Museum
4619 E. Washington
Phoenix, Arizona
Donald H. Hiser, City Archaeologist

Federal Register
Arizona State Parks Board
State Register Sites
1688 W. Adams
Phoenix, Arizona

Archaeological Research Service
2124 S. Mill Avenue
Tempe, Arizona
Dr. Lyle Stone, Archaeologist

Arizona State Parks
1688 W. Adams Street
Phoenix, Arizona
Dorothy H. Hall, State Historic Preservation Officer

Arizona State Museum
Tucson, Arizona
Dr. R. Gwinn Vivian, Arizona State Archaeologist

Center of Environmental Studies
Department of Anthropology
Arizona State University
Tempe, Arizona

Arizona State Museum
Department of Anthropology
University of Arizona
Tucson, Arizona
Sharon F. Urban, Assistant Archaeologist

BIBLIOGRAPHY

- Algermissen, S.T. and Perkins, D.M. 1976. A Probabilistic Estimate of Maximum Acceleration in Rock in the Contiguous United States. U.S. Geologic Survey, Open File Report 76-416. U.S. Dept. of the Interior.
- Archaeological Research Service, 2124 S. Mill Avenue, Tempe, Arizona. Dr. Lyle Stone, Archaeologist.
- Arizona Commission of Agriculture and Horticulture, 1688 W. Adams, Phoenix, Arizona. James R. Carter, Dir. R.A. Countryman, Ass't Dir.
- Arizona Department of Health Services, Division of Environmental Health Services, 1740 W. Adams Street, Phoenix, Arizona. Robert L. Munari, P.E., Environmental Engineer - Planner. Art Aymar, Ass't Chief.
- Arizona Department of Transportation, Environmental Planning, 205 S. 17th Avenue, Room 240. Mario Saldamando, P.E., Supervisor. Richard Thurman, P.E., Civil Engineer.
- Arizona Department of Transportation, 206 S. 17th Avenue, Phoenix, Arizona. Highways Division - Oscar T. Lyon, Jr., State Engineer, and James E. Dorre, Manager, Environmental Planning Service. Transportation Planning Division - Ronald D. McCready, Manager, Program Evaluation Section. Cathy Arthur, Senior Planner.
- Arizona Game and Fish Department, 2222 W. Greenway Road, Phoenix, Arizona. Robert A. Jantzen, Dir. Bruce R. Duke, Project Eval. Spec.
- Arizona Licensed Nursing Homes and Skilled Nursing Facilities - Rev July 1976.
- Arizona Public Service Co., 411 N. Central, Phoenix, Arizona Dave Folz
- Arizona Public Service Company Annual Report - 1976
- Arizona Republic/Phoenix Gazette. Inside Phoenix - 1977
- Arizona State Clearinghouse, 1700 W. Washington St., Phoenix, Arizona.
- Arizona State Licensed Personal Care Homes as of July 15, 1977.
- Arizona State Museum, Department of Anthropology, University of Arizona. Sharon F. Urban, Assistant Archaeologist. Tucson, Arizona.
- Arizona State Museum, Dr. R. Gwinn Vivian, Arizona State Archaeologist, Tucson, Arizona.
- Arizona State Parks, 1688 W. Adams Street, Phoenix, Arizona. Dorothy A. Hall, State Historic Preservation Officer.

- Arizona State University, Tempe, Arizona. Professor Péwé. Dr. Durrenberger, State Climatologist.
- Center of Environmental Studies, Department of Anthropology, Arizona State University, Tempe, Arizona.
- Arizona Statistical Review - September, 1976
- Arizona Tax Research Association
Arizona Property Tax Rate & Assessed Valuations - 1976 Supplement
- Arizona Veteran's Memorial Coliseum and Exposition Center, 1826 W. McDowell Road, Phoenix, Arizona. Leslie Green, Public Relations.
- Arizona Water Commission, 222 N. Central Avenue, Suite 800, Phoenix, Arizona. Philip C. Briggs, Chief Hydrologist. Inventory of Resource and Uses - Phase I. Arizona State Water Plan. 7/75. Alternative Futures - Phase II. Arizona State Water Plan. 2/77.
- Central Arizona Health System Agency, 124 W. Thomas Road, Phoenix, Arizona. Milton Gann, Executive Director. Mike Brinckley.
- Central Public Library, 12 E. McDowell Road, Phoenix, Arizona. Rosemary Nelson, Administration.
- City of Phoenix Department of Water & Sewers, Gerald Copeland, Engineering Superintendent. Art F. Vondrick, Water & Sewers Director.
- City of Phoenix Engineering Department, Phoenix, Arizona. Thomas Wesas Batten, Senior Sanitary Engineer.
- City of Phoenix Fire Department, 620 W. Washington Street, Room 343, Phoenix, Arizona. G.G. Holzner, Fire Chief. Gordon Routley.
- City of Phoenix Grading & Drainage Section, 251 W. Washington, Phoenix, Arizona. Leon Este, Civil Engineer III.
- City of Phoenix Maintenance & Sanitation Department, Phoenix, Arizona. W.C. McSpadden, Assistant Director.
- City of Phoenix Park and Recreation Board, Planning Commission.
The Park and Recreation Plan, Phoenix, Arizona - 1976
- City of Phoenix Planning Department, John W. Beatty, Planning Director.
Schools in Phoenix - September, 1972
- City of Phoenix Police Department, Planning and Research Bureau, 620 W. Washington Street, Room 342, Phoenix, Arizona. S.A. Lewis, Director.
- City of Phoenix Pueblo Grande Museum, 4619 E. Washington Street, Phoenix, Arizona. Donald H. Hiser, City Archaeologist.

- City of Phoenix. Bryce Rose, Right of Way Supervisor. Don Herp, Advance Planning. T.J. Ross, Planner. Mr. Arthur, Engineer. Jim Wong, Disposal Engineer.
- City of Phoenix Traffic Engineering Department, 251 W. Washington Street, Phoenix, Arizona. Dan Morgan, Acting Chief Traffic Engineer.
- City of Phoenix Transit System (Buses)
- City of Phoenix, Arizona. Urban Form Directions-Phase II - June, 1976
- City of Glendale, Glendale, Arizona. Ray Morse, Airport Manager. City of Glendale Airport NEF Contour Map
- Cartwright School District #83, 3401 - 67th Avenue, Phoenix, Arizona. L.L. Foley, Director Administrative Services. Byron A. Berry, Jr., Superintendent.
- Comparative Inventory of Personal Care Facilities as of 10/24/77.
- Comparative Inventory of Skilled Nursing Facilities as of 10/24/77.
- Comparative Study of Rates & Changes - Arizona Health Care Institutions, Arizona Department of Health Services.
- Construction Inspection & Testing Co., January 19, 1977. Preliminary Soil Investigation Maryvale Terrace 53-A, 83rd Avenue & Camelback Road, Phoenix, Arizona.
- Federal Aviation Administration, Phoenix, Arizona.
- Federal Register, Arizona State Parks Board, State Register Sites, 1688 W. Adams, Phoenix, Arizona.
- Geologic and Mineral Maps of Arizona by the Bureau of Mines.
- Hiking and Riding Trails Map
- Hospital Bed Plan of the Central Arizona Health Systems Agency for Planning Period 1977-1983 - September 15, 1977
- Insurance Service Office, 255 E. Osborn Road, Phoenix, Arizona. Mr. Korstad.
- Inventory of Inpatient Facilities - Department of Health, Education and Welfare. Public Health Service - Fiscal Year 1976.
- Inventory of Selected Health Professionals - Arizona 1976
- John F. Long Homes, 63rd Ave. & Indian School Road, Phoenix, Arizona. Jerry Miller

- Maricopa Association of Governments, 1801 W. Jefferson, Phoenix, Arizona. Dave French, Chief, Tom Ford, Engineer. Nickolas Reachmack, Transportation Planner.
- Maricopa County Department of Health Services, 1825 E. Roosevelt, Phoenix, Arizona. Dr. Rowland, Director. 1845 E. Roosevelt - Robert C. Taylor, Chief, Bureau of Air Pollution Control, Environmental Health Services Division. James Layden. Harry T. Crohurst, P.E., Chief.
- Maricopa County Flood Control District, 3335 W. Durango, Phoenix, Arizona. Herbert P. Donald, P.E., Chief Engineer and General Manager. Leslie A. Bond, Chief Hydrologist.
- Maricopa County Highway Department, 3325 W. Durango Street, Phoenix, Arizona. R.C. Esterbrooks, P.E., Assistant County Manager and County Engineer. Joseph D. McNulty, P.E., Assistant County Engineer. Ed Snyder, Operations Supervisor.
- Maricopa County Land Use Plan - MAG 1973
- Maricopa County Office of the Sheriff, 120 S. 1st Avenue, Phoenix, Arizona. Jerry I. Hill, Sheriff.
- Maricopa County Parks & Recreation Department, 4701 E. Washington Street, Phoenix, Arizona. Maricopa County Parks & Recreation Map
- Maricopa County Planning Department, 111 S. 3rd Avenue, Phoenix, Arizona. Frank A. Schuma, Principal Planner. Greg Marek, Advance Planning.
- National Weather Service, Department of Commerce. Mr. Ingram, Chief Meteorologist, Skyharbor, Room 135, Phoenix, Arizona. Climate of Phoenix - 1976.
- Noise Abatement and Control - HUD Circular 1390.2
- Noise Abatement and Control Policy - HUD April, 1977
- Noise Assessment Guidelines - HUD
- Phoenix - August 1977
- Phoenix Civic Plaza, 225 E. Adams, Phoenix, Arizona. Dorothy Miles, Public Information Specialist.
- Phoenix Fact Sheet - Phoenix Chamber of Commerce - Fall, 1977
- Phoenix Flood Insurance Administration Map
- Phoenix Union High School System, 2526 W. Osborn, Phoenix, Arizona. Dr. Colvin - Mr. Kinsman

- Regional Development Guide 1977 - MAG
- Report on Environmental Characteristics of the MAG Planning Area
- Salt River Project, P.O. Box 1980, Phoenix, Arizona. Frank T. Darmiento, Environmental Division. Mike Webb. R.G. Ricard, Supervisor, Electric Service Division, Power Service Department; Lee Athmer, Manager, Consumer Services Division; Jim Grady, Consumer Affairs; Dave Gross or Bill Cassady
- Salt River Project Annual Report - 1976
- Six-Year Major Street Improvement Program - City of Phoenix
- Soils Report for Maryvale Terrace 53-A
- The Comprehensive Land Use Plan 1990 - City of Phoenix Planning Dept.
- The Desert Botanical Garden Fact Sheet - May 1977
- The Story of the Salt River Project - 1975
- Traffic Engineering Handbook
- U.S. Army Engineer's Flood Map - 1963
- U.S. Bureau of Health Economics - July 1977
- U.S. Bureau of Reclamation, Phoenix, Arizona. Mr. Richard Raymond September 1972 - Final Environmental Statement, Proposed Central Arizona Project. U.S. Department of the Interior.
- U.S. Department of Commerce
1970 Census of Population & Housing for the Phoenix, Arizona SMSA
- U.S. Geologic Service Quadrangle Sheet (Fowler)
- U.S. Geologic Survey, 201 N. Central Avenue, Phoenix, Arizona.
- U.S. Geological Survey, February 4, 1947. Geology & Ground Water Resources of the Salt River Valley Area, Maricopa & Pinal Counties, Arizona. Open File Report - U.S. Department of the Interior.
- U.S. Geological Survey, 1968. Electrical Analog Analysis of Ground Water Depletion in Central Arizona. Water Supply Paper 1860. U.S. Department of the Interior.
- U.S. Geological Survey, 1973. Thickness of Alluvial Deposits, Phoenix Area, Arizona. Map I-845-C. U.S. Department of the Interior.

- U.S. Geological Survey, 1973. Depth to Water in Wells in the Phoenix Area, Arizona. Map I-845-D. U.S. Department of the Interior.
- U.S. Geological Survey, 1974. Chemical Quality of Ground Water, Phoenix Area, Arizona. Map I-845-F. U.S. Department of the Interior.
- U.S. Geological Survey, 1974. Dissolved-Solids Content of Ground Water, Phoenix Area, Arizona. Map I-845-G. U.S. Department of the Interior.
- U.S. Geological Survey, 1974. Land Subsidence and Earth Fissures in Alluvial Deposits, Phoenix Area, Arizona. Map I-845-H. U.S. Department of the Interior.
- Valley Medical Facilities - Phoenix Magazine - July 1975
- Valley National Bank of Arizona
Annual Statistical Review for Arizona - September 1976
- 1977 Directory of Arizona Manufacturers - Phoenix Chamber of Commerce, 33 W. Monroe, Phoenix, Arizona.
- Ms. Barbara Sherman, 120 E. McKellips Road, Tempe, Arizona.
- The Power Saver Diet - Salt River Project
- Appliance Ownership Data - Republic and Gazette Consumer Surveys
- Federal Register, Volume 43, No. 2 - Wednesday, January 4, 1978
- DHUD Handbook 1390.1
- Air Quality Data for Arizona - 1976 Arizona Department of Health Services
- Executive Summary - Phoenix Air Quality Maintenance Area Analysis - August 1977
- EPA Document - Supplement No. 5 for Compilation of Air Pollution Emission Factors - April 1975
- Draft Report - "Technical Support Documentation, Phoenix Air Maintenance Plan for Carbon Monoxide and Photochemical Oxidants" prepared by ADOT for Arizona Department of Health Services (ADHS) February, 1978.

ALTERNATIVES TO THE PROPOSED ACTION

A. No Development

This site lies directly in the westerly path of growth for metropolitan Phoenix. Tracts of farm land lie to the immediate west. If this site were to remain as agriculture, the pressure for housing development in the immediate vicinity would continue and a similar project possibly would be completed nearby. Increases in traffic volume, air and water pollution, and demand upon community services and public utilities would not be avoided by merely relocating to a close-by area. The impacts would remain constant. Selecting another site within this area could delay the delivery of needed new housing, as well as aid in creating urban sprawl by causing a leap-frog type of development.

B. Increased Density

Condominium or PUD development would reduce cost per unit through more intensive use of land, but would encounter limited market demand. Aesthetics would be downgraded while density, traffic and pollution would be exacerbated locally. Overcrowding of the schools could occur.

C. Decreased Density

A decrease in the number of units on this site would reverse the impacts of increased density, but would raise land costs and fail to generate the needed number of housing units this development could provide under present plans. Low density is not economically feasible given the typical price-range in this area.

D. Recreation Use

Parks, playgrounds and open space could be development on this site. The proposed housing development and its adverse impacts would be transferred to another available location. However, this would be a duplication of park facilities already planned for the square mile west of the subject by the Phoenix Park Commission.

E. Conclusion

Maryvale Terrace 53-A as proposed, would be an appropriate use for this site. Situated contiguous to the thrust of Phoenix's growth pattern, sprawl or leap-frogging are averted. As planned, it is compatible with existing uses and is harmonious with neighborhood homes in size and design. City of Phoenix zoning and planning have been established for this single family development. The infrastructure is in place or approved. School bonding issues have been voted on. By approving this project, HUD will be meeting its goal of providing decent, moderate income housing for an area of Phoenix heavily dependent upon HUD financing.

PROBABLE ADVERSE ENVIRONMENTAL IMPACTS
WHICH CANNOT BE AVOIDED SHOULD THE
PROPOSAL BE IMPLEMENTED

Water: Surface sources and natural underground reservoirs provide an adequate supply of water for metropolitan Phoenix at this time. However, a rapidly expanding population combined with a gradual depletion of these underground supplies indicate possible shortages at some future time. Maryvale Terrace 53-A will contribute to the increasing demand for water, even though less water will be required than was previously used for agricultural purposes.

Air Quality: Air pollution in Maricopa County did violate the national clean air standards several days during the year 1977. This was primarily due to motor vehicle emissions. Only very limited public transportation will be available to Maryvale Terrace. Residents will be using the automobile as the principal mode of travel. This will contribute to the deterioration of air quality in the area.

Hydrology and Drainage: The major adverse impact will be increased runoff rates. Natural hydrologic characteristics will be altered and runoff will be increased by the construction of impermeable surfaces such as streets and driveways.

Traffic: Current ADT volumes on streets in the project vicinity will be increased by project generated vehicle traffic.

Climate: Development of the project may contribute to the "urban dome" effect, which increases nighttime temperature in urbanized areas.

Noise: The overall ambient noise level in the project area will increase. Traffic generated by the project will have a small

measurable decibel impact on Camelback Road and on 83rd Avenue.

Energy: The project will contribute to the total metropolitan demand for electrical energy.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES
OF MAN'S ENVIRONMENT AND THE MAINTENANCE
AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short-term land use involves the period of site preparation and building construction. This will be minimal for Maryvale Terrace 53-A. With an "early-start" approval, construction has begun on 199 of the proposed 618 units. Construction stage of the remaining lots should be for a relatively short time.

Impacts from the construction period will include noise, fugitive dust and traffic disruptions. At the same time, employment opportunities will be provided. With the completion of the homes, these impacts should cease except for normal street maintenances and services.

The long-term effect of this subdivision will be the conversion to residential use. The previous long-term land use was agricultural farming. Homes will be available which are presently in demand. This ultimate land use will provide living units in a suitable living environment designed to benefit man.

The result of these homes will create impacts which includes (1) an increase in demand for public services and utilities, (2) additional school children for educational facilities, (3) additional noise created by residents and traffic, (4) increased traffic volume and (5) a minute increment degradation of air quality in the Valley.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Population Distribution: The development of Maryvale Terrace 53-A will increase the population in the area by 2,100. A significant proportion of potential households will originate from new family formation and in-migration to the County. The continued use of detached single family projects throughout this area will consume land faster than if more dense residential developments were norm.

Land Use: Conversion of this site from agricultural to residential use will be irreversible. Productive agricultural land will be lost. With the development of the project being consistent with the City of Phoenix long-term planning for the area, reversion to farm land at this stage would not be feasible. The portion of the project already under construction cannot be retrieved.

Resource Development: Project development will be a short-term investment of resources such as materials, labor and services necessary to prepare the site and construct the improvements. Long-term commitments would require energy and services necessary for the operation of the project. These investments of resources would be similar to any alternative development of this type within the area.

RECOMMENDED HUD ACTION ON THE PROPOSAL

The proposed action which HUD will undertake upon the closing of the comment period and the evaluation of any comments received on this Final EIS will be to issue commitments to insure mortgages made by approved lenders to eligible homebuyers within the Maryvale Terrace 53-A subdivision. This action will rely upon information developed by The environmental assessment process and upon programmatic and underwriting criteria developed for such actions. The adverse environmental impacts identified in this document can either be mitigated or are not of a character which would require rejection or significant modification of the development proposal. Comments received on the Draft EIS did not identify any previously unknown adverse environmental concerns about the development, nor did they provide a sufficient basis for requiring rejection or significant modification of the development proposal.

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

The comments received by this Agency on the Draft Environmental Impact Statement are included in this section together with the appropriate HUD response.

Advisory Council On Historic Preservation

1522 K Street NW.
Washington D.C.
20005

December 28, 1978

Mr. Donald J. Karl
Acting Supervisor
Department of Housing and Urban
Development
244 West Osborn Road
Phoenix, Arizona 85013

Dear Mr. Karl:

This is to acknowledge receipt of the draft environmental statement for the "Maryvale Terrace 53-A", Phoenix, Arizona on October 5, 1978. We regret that we will be unable to review and comment on this document in a timely manner pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969.

Nevertheless, the Department of Housing and Urban Development is reminded that, if the proposed undertaking will affect properties included in or eligible for inclusion in the National Register of Historic Places, it is required by Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f, as amended, 90 Stat. 1320) to afford the Council an opportunity to comment on the undertaking prior to the approval of the expenditure of any Federal funds or prior to the issuance of any license. The "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800.4) detail the steps an agency is to follow in requesting Council comment.

Generally, the Council considers environmental evaluations to be adequate when they contain evidence of compliance with Section 106 of the National Historic Preservation Act, as amended. The environmental documentation must demonstrate that either of the following conditions exists:

1. No properties included in or that may be eligible for inclusion in the National Register of Historic

Page 2

Mr. Donald J. Karl
"Maryvale Terrace 53-A"
December 28, 1978

Places are located within the area of environmental impact, and the undertaking will not affect any such property. In making this determination, the Council requires:

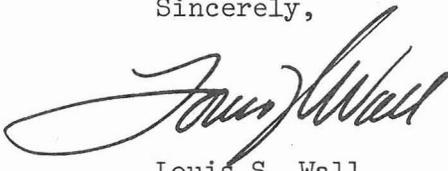
--evidence that the agency has consulted the latest edition of the National Register (Federal Register, February 7, 1978, and its monthly supplements);

--evidence of an effort to ensure the identification of properties eligible for inclusion in the National Register, including evidence of contact with the State Historic Preservation Officer, whose comments should be included in the final environmental statement.

2. Properties included in or that may be eligible for inclusion in the National Register are located within the area of environmental impact, and the undertaking will or will not affect any such property. In cases where there will be an effect, the final environmental statement should contain evidence of compliance with Section 106 of the National Historic Preservation Act through the Council's "Procedures for the Protection of Historic and Cultural Properties".

Should you have any questions, please call Michael C. Quinn at (303) 234-4946, an FTS number.

Sincerely,



Louis S. Wall
Assistant Director
Office of Review and Compliance, Denver

RESPONSE TO COMMENTS RAISED BY THE ADVISORY COUNCIL ON
HISTORIC PERSERVATION

This Agency has consulted the latest edition of the National Register of the Historic Sites and Places (February 6, 1979), the State Historic Preservation Officer and has obtained a survey of the site for archaeological materials. No properties have been identified which are on are may be eligible for inclusion on the National Register within the area of impact of the development. The review of the State Historic Preservation Officer on the Archaeological Report is included on page 173 of this document.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

3008 Federal Building, Phoenix, Arizona 85025

October 17, 1978

Mr. Donald J. Karl
Acting Supervisor
Department of Housing and Urban
Development, Service Office
244 West Osborn Road
Phoenix, Arizona 85013

Dear Mr. Karl:

We have reviewed your Draft Environmental Impact Statement on "Maryvale Terrace 53-A" a development in Phcenix, Arizona. Our comments are as follows:

Pages 15-16. The soils information provided is cursory. It does not give the "General Soil Map, Maricopa County, Arizona - 1973," as a reference, even though the soil association of Gilman-Estrella-Avondale was taken from it.

The "Soil Survey of Maricopa County, Arizona, Central Part, September 1977" is a more detailed soil survey and is more appropriate for urban assessment. Maryvale Terrace 53-A subdivision is on map sheet 48. Soil properties and soil interpretations are shown in the tables on pages 72-85. This publicaton should be shown in the bibliography.

We are enclosing copies of both publications which we are confident will aid you in developing a more precise soils section.

If we can be of further assistance, please contact us.

Sincerely,



Thomas G. Rockenbaugh
State Conservationist

Enclosures

cc: Douglas S. Pease, State Soil Scientist, SCS



RESPONSE TO COMMENTS BY THE U. S. SOIL CONSERVATION SERVICE

The Soils Section of the Final EIS has been extensively revised to incorporate the comments of the Soil Conservation Service.



DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2711
LOS ANGELES, CALIFORNIA 90053

SPLED-E

29 November 1978

Mr. Donald J. Karl, Acting Supervisor
Department of Housing and Urban Development
Service Office
244 West Osborn Road
Phoenix, Arizona 85013

Dear Mr. Karl:

This is in response to a letter from your office dated, 18 September 1978 which requested review and comments on the Draft Environmental Impact Statement for Maryvale Terrace 53-A, Phoenix, Arizona.

The proposed plan does not conflict with existing or proposed plans of the Corps of Engineers.

Page 28 of the draft EIS states "the finish floor grades will be set at or above the 100-year frequency runoff." This action meets Federal criteria; therefore, no comment is offered.

Should you have any questions regarding flood protection, etc., please feel free to contact Mr. Andrew Sienkiewich, Flood Plain Management Section, telephone (213) 688-5440. Please refer to Flood Plain Management File No. A-06-270A.

Thank you for the opportunity to review and comment on this report.

Sincerely yours,


NORMAN ARNO
Chief, Engineering Division

RECEIVED
7 NOV 29 1978
U.S. DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT
CORPS OF ENGINEERS

RESPONSE TO COMMENTS RAISED BY THE DEPARTMENT OF THE ARMY,
CORPS OF ENGINEERS

No response to the comments of the Department of Army
Corps of Engineers is required.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX
215 Fremont Street
San Francisco, Ca. 94105

Project #D-HUD-K85019-AZ

Donald J. Karl
Acting Supervisor
Department of Housing and
Urban Development
Service Office
244 West Osborn Road
Phoenix AZ 85013

NOV 7 1980

Dear Mr. Karl:

The Environmental Protection Agency has received and reviewed the draft environmental statement for the MARYVALE TERRACE 53-A.

EPA's comments on the draft environmental statement have been classified as Category ER-2. Definitions of the categories are provided on the enclosure. The classification and the date of EPA's comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and the adequacy of the environmental statement.

EPA appreciates the opportunity to comment on this draft environmental statement and requests three copies of the final environmental statement when available.

If you have any questions regarding our comments, please contact Betty Jankus, EIS Coordinator, at (415)556-6695.

Sincerely,

Sheila M. Prindiville

for Paul De Falco, Jr.
Regional Administrator

Enclosure

Air Quality Comments

1. (DEIS p. 61)
The FEIS should provide ambient air quality data for NO₂ and TSP. The frequency and magnitude of TSP violations should also be included in the FEIS.
2. The FEIS should reference the sources for Tables 8-17 and Figures 7-16. It is not clear if Maryvale Terrace pollution emissions are included in the 8-hr CO contours found in Figure 10-13 (page 68-74).

The methodology used in determining 8-hr CO concentrations at receptor nearest proposed site (Table 12 page 78) should be discussed. Specifically, the FEIS should describe the model used and include the input data required to duplicate the effort if desired.

3. A microscale CO Analysis should be completed for either 83rd Avenue or Camelback Road whichever is most likely to experience the peak 1- and 8-hour congestion. The location of the receptor identified in Table 12 should be specified. The microscale CO analysis should use peak 1- and 8-hour volumes, worst case meteorology (low wind speed, parallel wind direction, stable atmosphere, low level inversion), and receptors located at sites expected to experience maximum pollution concentrations.

Maximum one & eight hour concentrations should be predicted for the estimated time of completion (ETC) with and without the project.

Water Comments

1. (DEIS p. 50)
The Draft EIS indicates that, "water supply sources have sufficient reserve capacity to satisfy demand due to population growth until the City of Phoenix develops additional sources." The Final EIS should quantify project related water consumption in relation to existing water supply sources, and discuss projected impact on water supply, particularly within the context of groundwater depletion. The FEIS should also address the subdivision water demand in relation to trunk line design capacity, and existing uses of that trunk line.
2. The Final EIS should include a contour map indicating drainage patterns. Project related impacts on water quality such as runoff from roads, construction and lawn irrigation, should be discussed within the context of these drainage patterns.
3. The DEIS does not indicate coordination concerning relevant aspects of the Water Quality Management Program (Section 208, Clean Water Act of 1977) with the Maricopa Association of Governments (MAG). The FEIS should address this coordination, since all Federal actions are subject to State and local requirements with respect to the control and abatement of water pollution (Section 313, Clean Water Act of 1977). In particular the FEIS should address the following:
 - a) Consistency with MAG population projections.
 - b) Consistency with MAG land use planning.
 - c) Coordination of flow reduction measures (DEIS page 26) with existing efforts by MAG and the Homebuilders Association.
4. (DEIS pages 51-52)
The Draft EIS indicates that sewage from the proposed subdivision will be treated by the 91st Avenue sewage Treatment Plant. However, this treatment plant has had numerous problems in treating existing sewage flow adequately. As such the Final EIS should address the impact of additional sewage from the proposed subdivision on the treatment plant capability to adequately treat increased sewerage. The FEIS should also discuss projected subdivision flow rates in relation to inter-ceptor capacity, both current and scheduled.

EIS CATEGORY CODES

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objection to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination. -158-

RESPONSE TO COMMENTS RAISED BY THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

Comment No. 1, Air Quality

The nearest Air Quality monitoring station is located at 6000 West Olive Avenue in Glendale, Arizona. This station is approximately four miles northeast of the development. This station does not monitor nitrogen dioxide. In 1977 this station reported the following data for particulates which were collected by a high volume sampler. The annual geometric mean was 112 micrograms per cubic meter, the 24 hour average maximum was 248 micrograms per cubic meter and the 24 hour average second highest reading was 237 micrograms per cubic meter. This data is based on 50 samples. In 1975 and 1976 the annual geometric means were 101 each year. The national primary annual geometric mean standard was exceeded in each of the three years. The national primary short term standard (24 hour) was not exceeded in 1977.

COMMENT NO. 2, AIR QUALITY

Tables 8-17 and Figures 7-16 were taken from the Air Quality Analysis for Maryvale 53-A prepared by the Modeling and Research Section of the Arizona Department of Transportation.

The Maryvale Terrace Pollution Emissions are included in the eight hour Carbon Monoxide Contours in figures 10-13.

The model used for determining the eight hour Carbon Monoxide concentration at a calculated receptor site 1/2 mile north of the development was the APRAC-II model.

COMMENT NO. 3, AIR QUALITY

The microscale Carbon Monoxide analysis for the intersection of 83rd Avenue and Camelback Road for the year 1985 for impacts from motor vehicle operation shows a pollutant level of 11.8 milligrams per cubic meter for the second highest one hour average concentration and a

level of 7 milligrams per cubic meter for the second highest eight hour average concentration for a receptor located 100 feet from the intersection. This receptor location represents a dwelling unit near the intersection. This intersection will carry the greatest volume of traffic of any intersection or link in or adjacent to the development. This analysis is based on a model developed for HUD by SRI International contained in the report Air Quality Considerations in Residential Planning. The above concentrations are predicated on a worse case meteorology and completion of development. Estimates predicated on no development were not prepared.

COMMENT NO. 1, WATER QUALITY

The development will consume approximately 460,000 gallons of water per day (2,100 people X 219 gallons consumed per person per day). This is less than 2 tenths of 1 percent of the existing capacity of the Municipal Water System. Approximately 37% of the existing capacity is obtained from ground water supplies, and it is the intention of the City not to increase the demands on ground water supplies in the future. Any increase in future system capacity will be obtained from the Central Arizona Project. The existing capacity should meet the demands for growth for the next 10 to 15 years. The development will incrementally increase the demands for water, and this water will be provided from filtration plants utilizing surface waters. The existing trunk line in Indian School Road will be extended in the near future to 99th Avenue. Upon completion of the extension, the water system in this portion of Phoenix will have added sufficient capacity for all anticipated growth in the foreseeable future.

COMMENT NO. 2, WATER QUALITY

A contour map on a 8-1/2 by 11 inch format is not available for inclusion in the Final EIS. The site is essentially level; the natural drainage, to the extent a drainage pattern exists, is to the southwest. Storm drainage from the project will collect in the streets and flow to the southwest on the surface streets to the nearest irrigation or drainage canal. This method of

handling storm drainage is an accepted practice in the Phoenix Metropolitan area. The storm water runoff will contain contaminants from roadway surfaces, building roofs, and other impervious surfaces and landscaped areas.

COMMENT NO. 3, WATER QUALITY

The development is consistent with the population and land use planning incorporated in the Draft Final Water Quality Management Program dated December, 1978 prepared by the Maricopa Association of Governments.

The existing program by the Maricopa Association of Governments and the Homebuilders Association to reduce the consumption of water will be investigated and implemented to the extent feasible.

COMMENT NO. 4, WATER QUALITY

The existing capacity of the 91st Avenue Treatment Plant is sufficient to handle estimated daily flows of 210,000 gallons from the development (2,100 residents at 100 gallons per day per resident). This volume would increase the load on the plant less than 3/10 of one percent each day. The existing average flow processed is 83.9 million gallons per day (mgd); the Plant has a design capacity of 95 mgd. In 1983 -84 the City of Phoenix proposes to increase the design capacity of the Plant by 30 mgd to accommodate growth beyond that date in the Plant's service area. The Plant is currently being upgraded to comply with recent USEPA requirements to increase the efficiency of the treatment process and level of treatment for the affluent.

The interceptor sewers serving the development in the adjacent service area for the 91st Avenue Plant are nearing capacity with respect to flow levels and capacity rights for the upstream communities north of Camelback Road. The City of Phoenix has sufficient capacity in these interceptors for the project and other adjacent development in the City of Phoenix. A sewer interceptor expansion program will begin in 1980 and the principal element will be the construction of a new interceptor sewer in 99th Avenue. This facility, when completed, will provide sufficient capacity for transporting waste from planned growth in western Phoenix and the adjacent areas to the ultimate holding capacity of the planning area.



UNITED STATES
DEPARTMENT OF THE INTERIOR

OFFICE OF THE SECRETARY

PACIFIC SOUTHWEST REGION

BOX 36098 • 450 GOLDEN GATE AVENUE

SAN FRANCISCO, CALIFORNIA 94102

(415) 556-8200

ER78/930

November 8, 1978

Mr. Donald J. Karl
Acting Supervisor
Department of Housing and Urban
Development Service Office
244 West Osborn Road
Phoenix, AZ 85013

Dear Mr. Karl:

As requested, the Department of the Interior has reviewed the draft environmental statement for the proposed Maryvale Terrace 53-A subdivision. We offer the following comments for your consideration.

General Comments

The draft environmental statement does not adequately address the secondary growth impacts of the proposed project. Further detailed discussion of cumulative effects upon social and public service delivery is needed. We feel that many of the conclusions in the draft statement cannot be solidly substantiated by the information and analyses provided. We are also concerned that your agency seems to place undue reliance on uncommitted mitigation measures.

Specific Comments

We note that the City of Phoenix requires that all storm water be retained on the site of each development (page 28, paragraph 2), but the statement does not include any provisions for storm-water retention within the project area. Measures to accomplish this should be described in the final statement.

The statement should give the anticipated water demand and the anticipated volume of sewage for the development. Agricultural use of ground water for the whole of Maricopa County is compared with withdrawals for municipal and industrial use (page 25, 27). However, to make the comparison meaningful as far as subsidence or other project effects are concerned, the statement should utilize land-use information for the county to compare agricultural use of ground water per unit area with the use per unit area for industrial and municipal purposes.

The draft statement minimizes the recreation impact section to a general listing of available local and regional facilities and only lightly suggests that the proposed development may have some impact on the existing parks in the area. The draft statement does not address the nature of potential impacts, the degree of effect and local recreational needs generated by the future residents. Also, it does not explore possible mitigative actions.

It is likely that the addition of almost 2,100 new residents to the area would generate a significant demand for close-to-home recreation opportunities. This expectation should be strongly underscored in view of the fact that the area offers no public transportation facilities to the existing district and regional parks. While we realize that your agency's primary goal is to provide decent, moderate income housing for this financially dependent area of Phoenix, it appears that little attention has been paid to providing other public amenities which would enrich the total character of the development. Such a project amounts to the creation of a demand for other public services such as recreation opportunities. These needs should be discussed.

Construction of this housing development without comprehensive planning supported by an adequate assessment of secondary growth impacts could mask high priority public needs and places an excessive burden upon local service agencies to provide for those eventual needs. Although the statement mentions that some park facilities are planned for the square mile tract west of the proposed subdivision, details are lacking. Would these proposed facilities be ready for use by the new residents of Maryvale Terrace 53-A or would there be a period when no facilities are available? Secondly, would these facilities adequately accommodate the additional use by the neighboring residents (those of the proposed development) without creating user dissatisfaction due to overcrowded conditions? Because the potential impacts of the housing subdivision are greater than the draft statement indicates, your agency should more thoroughly discuss the secondary impacts associated with the growth incentive aspects in the final statement.

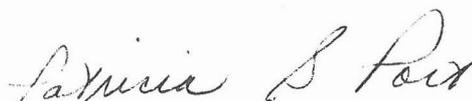
The statement's indication that the development would have a positive impact on the visual character of the area is unjustified. The draft statement overlooks the fact that visual quality is an important aesthetic parameter which cannot be easily quantified since it is not possible to present a standard definition of what is aesthetic. The statement does not provide any information on the specific design features to be used, whether there are any plans for landscaping or recommendations on measures which should be implemented to control and preserve the aesthetic values of the development. Furthermore, there is no discussion of the impacts which would be created (e.g., dust and noise) during the construction stage.

The lack of surface evidence for archaeological sites should not be interpreted to infer that no such sites exist and that, therefore, there would be no impacts. The possibility remains that unknown archaeological sites could be uncovered during the course of initial grading activities. In case of this eventuality, procedures should be established to evaluate the significance of such sites and the proper course of action in which to proceed including determination of appropriate mitigation measures. In order to assure that potential cultural resource impacts are properly addressed and minimized, a copy of the draft statement as well as any reports prepared by Donald Hiser, the City Archaeologist, should be immediately forwarded to the State Office of Historic Preservation for their evaluation.

Finally, we note that the Summary Sheet indicates that the alternatives considered included no action, alternative sites and alternative development on the proposed project site. However, we found no identification of alternative project sites nor discussion of potential impacts intrinsic to those areas. Furthermore, the recreation use alternative (page 142) is not presented in proper perspective and does not contribute to a meaningful assessment of possible alternatives. More importantly, the discussion of alternatives seems to ignore the fact that construction has already commenced for a portion of the development and that full opportunity for any of the alternatives is already foreclosed.

Thank you for the opportunity to comment on this environmental statement. If you have any questions, please contact me directly.

Sincerely yours,



Patricia Sanderson Port
Regional Environmental Officer

cc: Director, OEPR (w/copy incoming)
 Director, Heritage Conservation and Recreation Service
 Director, Fish and Wildlife Service
 Director, National Park Service
 Director, Geological Survey
 Assistant Secretary, Indian Affairs
 Reg. Dir., HCRS
 Reg. Dir., FWS
 Reg. Dir., NPS
 Asst. Dir., GS
 Area Dir., BIA
 State Historic Preservation Officer, AZ

RESPONSE TO COMMENTS RAISED BY THE UNITED STATES
DEPARTMENT OF THE INTERIOR

COMMENT ON STORM DRAINAGE, PARAGRAPH 3

The requirement for on-site retention of storm water is a requirement which may be imposed at the option of the City of Phoenix. Since the City has decided not to require on-site retention, no provision has been made for it. Each parcel will drain to the adjacent street and ultimately to the nearest irrigation or drainage canal. The City of Phoenix has no plans to install storm drains in the vicinity of the development.

COMMENT ON WATER AND SEWER DEMANDS, PARAGRAPH 4

The anticipated water demand for the development is approximately 460,000 gallons per day. The anticipated sewer load is approximately 210,000 gallons per day.

The request for water consumption information on a County wide basis by land use is outside the scope of this Final EIS. County-wide water use analysis is not the subject of this statement, and that discussion should be disregarded.

The water consumption of this development is less than 2/10 of one percent of current peak demand on the Phoenix Municipal Water System. The City does not propose to increase the existing capacity from ground water sources but rather to utilize water from surface sources and the Central Arizona Project. We are not aware of any technique which would enable one to measure the impact of this development on subsidence in the Phoenix area.

COMMENT ON RECREATIONAL FACILITIES, PARAGRAPHS 5, 6, and 7

The development will increase the demand for recreational opportunities and will increase the load on existing recreational facilities. The City of Phoenix has identified a site for a District Park of 160 acres on 83rd Avenue between McDowell and Thomas Roads. This site is located two miles south of the development and would service the development and the adjacent Maryvale District. The acquisition of this site is dependent on:

(a) its inclusion in a proposed bond issue and (b) passage of that bond issue at an election scheduled for May 1979. A Community Park site of 40 acres at the Southeast corner of Camelback Road and 91st Avenue is proposed to serve the four square mile area including Maryvale Terrace. This site is located one mile west of the development. The acquisition of this site is subject to the same constraints as the acquisition of the District Park site. A Neighborhood Park will not be developed to serve the development as the City takes the position that the proposed Community Park will serve the Neighborhood Park needs.

COMMENT ON GROWTH INDUCEMENT, PARAGRAPH 2 and 7

The secondary impacts and growth inducement generated by the development exist but are swamped by the secondary impacts and growth inducement generated by urbanization which is occurring throughout the adjacent areas of Phoenix and the abutting City of Glendale. The addition of 618 households containing approximately 2,100 individuals will increase the demand for good and services and thereby induce the growth of commercial land uses in the vicinity of the development. This Final EIS has attempted to identify the impacts on public services in the appropriate sections of this document. While comprehensive planning has been incomplete in the past, the metropolitan planning agencies and the City are taking steps to address areawide issues through the Water Quality Management Plan, the Non-attainment Area Plan and the Draft Maryvale District Plan.

COMMENT ON AESTHETICS, PARAGRAPH 8

The development will visually be similar to other residential developments recently completed or underway in the immediate area. The landscaping plan will be dependent upon the decisions of the individual home purchasers; there are no uniform landscaping requirements or plans. The judgment about the quality of the aesthetic character of the development is subjective and debatable.

Dust impacts created during construction will be mitigated by dust control requirements imposed by the Maricopa County Air Pollution Control District under the provisions of Arizona Revised Statutes 36-779.01.

Construction noise impacts will be mitigated by operating hour restrictions imposed by the City of Phoenix under the provisions of Section 23-14 Paragraph H of the Phoenix City code. From May through September activities are permitted from 6 a.m. to 7 p.m.; from October through April activities are permitted from 7 a.m. to 7 p.m.

COMMENT ON ARCHAEOLOGICAL SITES, PARAGRAPH 9

The site has been completely rough graded and no archaeological materials have been identified or recovered. A copy of the Draft EIS and the report on the site prepared by the City Archaeologist have been forwarded to the State Office of the Historic Preservation for evaluation. That Agency's reply is on page 173 of this document.

COMMENT ON ALTERNATIVES, PARAGRAPH 10

The opportunity for realistic consideration or implementation of alternatives has been foreclosed by the continuing development of Maryvale Terrace. At this writing 289 dwelling units are completed and 85 units are under construction. Thus 374 units of a total of 618 units are in place or under construction.

At the inception of the development, the only viable alternative open to HUD was the decision to issue or not issue mortgage insurance commitments in the proposed development. A discussion of alternative sites is academic since the developer making a proposal to HUD generally does not have alternative sites available. HUD does not have the means to direct a developer to develop an alternative site. HUD's alternative is to insure or not insure mortgages in the proposed development. If HUD participates in the proposed development, there is limited control over alternative development on the site, but the magnitude of the alternatives (fewer dwelling units or other land uses to supplement the primary residential use) are dependent on market and financial feasibility.

NOV 1 1978

Date:

In Reply
Refer to:

262

VETERANS ADMINISTRATION
DEPARTMENT OF VETERANS BENEFITS
WASHINGTON, D.C. 20420



Mr. Donald J. Karl
Acting Supervisor
Department of Housing & Urban
Development
244 West Osborn Road
Phoenix, AZ 85013

SUBJ: Draft Environmental Impact Statement for Maryvale Terrace 53-A,
Phoenix, Arizona

This is in reply to your request to review the Draft Environmental Impact
Statement for Maryvale Terrace 53-A, Phoenix, Arizona.

After study and review of the draft and the site of the proposed develop-
ment, we find minimal adverse impact on the general area.

We appreciate the opportunity to review and comment on the draft statement.

R. C. COON
Director
Loan Guaranty Service

DEPARTMENT OF HOUSING
& URBAN DEVELOPMENT
RECEIVED
NOV 6 4 50
PHOENIX, ARIZONA

RESPONSE TO COMMENTS RAISED BY THE VETERAN ADMINISTRATION

No response is required to the comments of the Veteran Administration.



ARIZONA STATE PARKS

1688 WEST ADAMS STREET
PHOENIX, ARIZONA 85007
TELEPHONE 602-274-4174

255

November 30, 1978

Don J. Karl
Acting Supervisor
Department of Housing &
Urban Development
Development Service Office
244 West Osborn Road
Phoenix, AZ 85013

RE: Maryvale Terrace 53-A
Draft EIS
HUD-FHA

BRUCE BABBITT
GOVERNOR

STATE PARKS
BOARD MEMBERS

RICKI RARICK
CHAIRMAN
TUCSON

JOSEPHINE BAILEY
VICE CHAIRMAN
TUMACACORI

CABOT SEDGWICK
SECRETARY
NOGALES

ANDREW L. BETTWY
PHOENIX

A.C. WILLIAMS
PRESCOTT

SAM RAMIREZ
PHOENIX

DUANE MILLER
SEDONA

MICHAEL A. RAMNES
DIRECTOR

Roland Sharer
DEPUTY DIRECTOR

Dear Mr. Karl:

I have reviewed the Historic & Archaeologic Features Section of the Draft Environmental Impact Statement for the Maryvale Terrace 53-A proposed subdivision.

Prior to the preparation of the Draft EIS, our office requested, by letter dated 12/30/77, that the project area be surveyed by a professional archaeologist to locate and evaluate any existing cultural resources.

The Draft EIS has indicated that a cultural resource survey has been completed by the City of Phoenix Archaeologist with negative findings. However, as of this date, our office has not received a copy of the report from which you have based your conclusions.

A copy of the survey report should be submitted to me for review in order to afford this office the opportunity to comment accurately on the conclusions reached in the Draft EIS.

Thank you for your continued cooperation.

Sincerely,

Dorothy H. Hall
State Historic Preservation Officer
Heritage Conservation Section

DHH:JW:sw

-170-

TO: Don J. Karl, Acting Supervisor, Department of Housing & Urban Development,
Development Service Office, 244, West Osborn Road, Phoenix, AZ 85013

FROM: Dorothy H. Hall, State Historic Preservation Officer and Chief, Heritage
Conservation Section, Arizona State Parks
1688 West Adams
Phoenix, Arizona 85007
Telephone: (602) 271-4174

PROJECT: Maryvale-Terrace 53-D
Phoenix, Arizona
HUD-FHA

I have reviewed this project and offer the following comments:

This project will have:

- An apparent positive effect on cultural resources.
- No apparent effect on cultural resources.
- No apparent adverse effect on cultural resources. However,
 - The State Historic Preservation Officer and/or the State Archaeologist (Arizona State Museum) should be notified if cultural resources are discovered during construction.
 - An archaeologist should monitor the project during construction.
 - Existing buildings/structures on the site should be recorded through photographs and/or drawings.
 - A cultural resources survey is requested.
- A potential adverse effect on cultural resources. Therefore,
 - A cultural resources survey is requested because of known sites and/or properties in the area.
 - An archaeologist should monitor the project during construction.
 - The impact on existing buildings/structures() should be evaluated.
(a) On the site (b) To be vacated if this project is undertaken.
- An adverse effect on cultural resources included on/or eligible for inclusion on the National Register of Historic Places. Please seek Advisory Council on Historic Preservation comments and prepare a preliminary case report.
- The effect on cultural resources cannot be determined. Please submit information requested in the enclosed comments.
- Additional comments are enclosed.

Dorothy H. Hall
State Historic Preservation Officer

12-5-78
Date

ADDITIONAL COMMENTS

RE: Maryvale-Terrace 53-D
HUD-FHA

I cannot make final comment on this project, until I have reviewed the archaeological survey report prepared by the City of Phoenix archaeologist.

(Reference Draft EIS for Maryvale Terrace 53_A which indicated that a survey has been completed.)

TO: Don J. Karl, Acting Supervisor, Department of Housing & Urban Development,
P.O. Box 13468, Phoenix, AZ 85002
ATTENTION: Iola Lane

FROM: Dorothy H. Hall, State Historic Preservation Officer and Chief, Heritage
Conservation Section, Arizona State Parks
1688 West Adams
Phoenix, Arizona 85007
Telephone: (602) 271-4174

PROJECT: Maryvale Terrace 53-A
Phoenix
HUD-FHA

I have reviewed this project and offer the following comments:

This project will have:

- An apparent positive effect on cultural resources.
- No apparent effect on cultural resources.
- No apparent adverse effect on cultural resources.* However,
 - The State Historic Preservation Officer and/or the State Archaeologist (Arizona State Museum) should be notified if cultural resources are discovered during construction.
 - An archaeologist should monitor the project during construction.
 - Existing buildings/structures on the site should be recorded through photographs and/or drawings.
 - A cultural resources survey is requested.
- A potential adverse effect on cultural resources. Therefore,
 - A cultural resources survey is requested because of known sites and/or properties in the area.
 - An archaeologist should monitor the project during construction.
 - The impact on existing buildings/structures() should be evaluated.
(a) On the site (b) To be vacated if this project is undertaken.
- An adverse effect on cultural resources included on/or eligible for inclusion on the National Register of Historic Places. Please seek Advisory Council on Historic Preservation comments and prepare a preliminary case report.
- The effect on cultural resources cannot be determined. Please submit information requested in the enclosed comments.
- Additional comments are enclosed.

Dorothy H. Hall

State Historic Preservation Officer

2-26-79
Date

*as per survey report dated 7/27/77 by Don Hiser, City of Phoenix Archaeologist
-173- 111

RESPONSE TO COMMENTS RAISED BY THE ARIZONA STATE PARKS
DEPARTMENT

A copy of the requested cultural research survey has been sent to the State Historic Preservation Officer. That Agency's response has reproduced on page 173 of this document.

811 W. 17th Place
Tempe, AZ 85281
October 13, 1978

Phoenix Insuring Office
U.S. Department of Housing & Urban Development
244 West Osborn Road
Phoenix, AZ 85013

Gentlepersons:

Phoenix is many things: a town without a land use plan, a town without a transportation plan, a town without a water supply plan, a town without a water conservation plan, a town without an energy conservation plan--a town that is an adjunct to a nuclear generating facility...

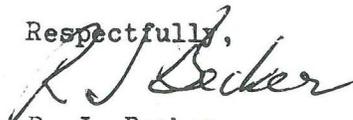
So, it may seem trivial to try to do a meaningful environmental impact assessment for a mere 141 acres of new houses.

Yet, I do not find the "Draft Environmental Statement" on the "John F. Long Homes, Inc. 5035 West Camelback Road Phoenix, Arizona 85063 June 1978" statement, HUD-P109-EIS-78-3D, prepared by your office, to be an accurate reflection of environmental impacts consequent to that Maryvale Terrace 53-A project.

The statement on p. 55 is a clear example of the typical message of the document: "No impact from the disposal of solid waste generated in the development is anticipated as the capacity of the facilities for disposal of solid wastes is adequate. Additional suitable sites are available in or near the subject area."

One added house has many significant environmental impacts. Certainly, 141 acres of added houses MUST be documented as having significant environmental impacts.

Respectfully,


R. J. Becker

RECEIVED
H. DEVELL

RESPONSE TO COMMENTS RAISED BY R. J. BECKER

The comments of R. J. Becker are too generalized to permit a specific response. The Environmental Impact Statement has attempted to identify the environmental impacts associated with the development.