Environmental Impact Report

Rancho Coachella Vineyards

Specific Plan

City of Coachella

A Master Planned

Affordable Housing Community

by the Lusardi Companies

THE KEITH COMPANIES

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SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE AFTER MITIGATION

IMPACTS

LAND USE

The project requires a zone change from Agricultural Transition (A-T), Residential Estate (RE), and Residential Single-Family (RS) to Specific Plan (SP) designation.

The project will significantly increase human and economic activity in an area predominantly rural and agricultural in character. Potential conflicts with nearby surrounding agricultural uses will increase with occasional trespass on these lands, escalation in land values, and pressure for their conversion to developed uses.

TRANSPORTATION AND CIRCULATION

The project will generate 37,830 external daily vehicle trips, 3,290 of which will occur during the evening peak hour.

LIGHT AND GLARE

Street and traffic lighting will become a general source of night lighting in the immediate project area.

Limited but general background sky lighting will occur with commercial uses along Fillmore Street resulting in a significant new source of night lighting.

Glare impacts are primarily related to parking lot lighting, illuminated signs, and reflective surfaces on buildings and vehicles, which may be visible from one or more locations.

The project cumulatively increases the amount of light and glare in a rural area and contributes to general night sky illumination which may be visible from distant recreational areas.

GEOLOGY AND SOILS

The on-site soils are anticipated to be alkaline and high in salt concentrations. These conditions can limit abilities to re-establish landscaping in the site.

The project site is subject to significant ground shaking hazards from seismic events associated with either the San Andreas or San Jacinto fault systems.

The project will result in short-term exposure of underlying soils to increased erosion during grading and construction phases.

The project is located within an area of potential liquefaction hazard. Preliminary studies indicate that liquefaction of the loose to medium dense granular soils below the shallow water table is possible in all or portions of the site during a strong earthquake. Liquefaction of soils at the site may cause adverse amounts of ground settlement and the formation of sand boils.

DRAINAGE/FLOODING

Increases in sedimentation potential, storm runoff volumes, and pollutants within the site and through the downstream drainage systems will occur due to construction of buildings, roads, and other impervious surfaces.

Construction of impermeable roads, driveways, and buildings on natural permeable surfaces will reduce the infiltration of rainfall into the ground and increase surface runoff.

PLANT LIFE

Introduced landscape elements within the project (i.e., grasses, shrubs) could invade perimeter agricultural areas unless controlled. The project will involve significant landscaping and park development. High salt and alkali conditions exist on-site. Most of the plant species to be introduced are generally drought tolerant and capable of tolerating higher ground salt levels.

NOISE

Short-term temporary impacts are associated with construction and grading activities for site development. Long-term impacts will primarily include noise from increased vehicular traffic generated by the project.

AIR QUALITY

Short-term impacts will result from construction and grading activities, but are anticipated to be minor. Long-term air contaminant emissions (on-site and off-site) will occur from both mobile and stationary sources. Buildout of the project will cumulatively add to local and regional vehicle emissions.

SOCIOECONOMIC

The project would contribute 1,085 units and substantial construction and employment opportunities by the year 2000.

PUBLIC SERVICES AND UTILITIES

The project will create a significant demand on present facilities for personnel and equipment. Additional facilities will be required within the project.

Police Protection

The project will generate 3 to 5 new positions and an office in the proposed fire department on-site.

Educational Facilities

The project will generate approximately 1,317 to 2,634 students. This will create a demand for additional educational facilities.

Energy

The project will generate an estimated 1,237,365 therms/year and approximately 17,263,435 kwh per year.

Parks and Recreation

The project will create a demand for park and recreation facilities. This need is offset by the inclusion of two park sites within the project.

Pest Control

The landscaping at the proposed project will require monitoring by district personnel to detect the presence of insects. This will involve trapping and visual inspections.

Water

The ultimate water demands are expected to be approximately 761 acre-feet per year.

Sewer

The ultimate sewage flows are estimated to be approximately 191 acre-feet per year.

Solid Waste

At buildout, the project is estimated to generate approximately 35,595 pounds of solid waste daily or 5,800 tons annually.

MITIGATION MEASURES

LAND USE

1. The Specific Plan shall include appropriate edge treatments to separate and buffer proposed residential uses from agricultural lands to the north and east. Such treatments may include some combination of walls, landscaped berms or setbacks.

2. Consideration will be given within the Specific Plan to development of a limited greenbelt/buffer between the commercial/municipal areas along Fillmore Street and the adjacent residential uses. A neighborhood trail could be integrated with such a concept.

3. The Specific Plan shall include appropriate edge treatments to separate and buffer proposed land uses from manufacturing uses to the west. Such treatments will include some combination of walls, landscaped berms, and/or setbacks.

TRANSPORTATION AND CIRCULATION

1. Amend the City of Coachella General Plan Circulation Element to accommodate the following changes:

   - Designate Fillmore Street as a Secondary Arterials form 52nd Avenue to 56th Avenue.

   - Design 62nd Avenue as a Primary Arterial from the Route 86 Freeway Extension to Pierce Street.

2. Adequate phasing for construction of arterial improvement should be provided as required by development.

3. Upgrade 56th Avenue to a Primary Arterial (100 foot right-of-way) from State Route 111 to Fillmore Street.

4. Upgrade Fillmore Street to a Secondary Arterial (100 foot right-of-way) from 52nd Avenue to 56th Avenue.

5. Maintain a high level of service along arterials by restricting parking and controlling roadway access.

6. For existing plus project traffic conditions, traffic signals should be installed at the intersections of:

   Fillmore Street/54th Avenue
   Fillmore Street/56th Avenue

7. Improve all internal and adjacent project streets shown on Exhibit 14 to appropriate roadway and adjacent standards as indicated, and install traffic signals at project roadways when warranted.

8. Landscape plantings and signs **will** be limited in height within the vicinity of project roadways to assure good visibility.

LIGHT AND GLARE

1. Light fixtures on private facilities and in public right-of-way shall direct light downward to minimize night sky lighting.

2. Roofs shall be constructed of low-reflective material, and mechanical equipment shall be screened architecturally.

3. Low-pressure sodium lamps and lampshields shall be used in street and parking lot lighting to respect the "night sky" requirements of local observatories. Consideration shall be given to controlling private lighting through the use of CC&Rs and shielding of light to direct illumination downward.

GEOLOGY AND SOILS

1. The site **will** be stripped of any trash, debris, vegetation, roots, undocumented fill soils and soft or loose soils up to the required depths. Soils containing a moderate to high concentration of roots or more than one percent by weight of organics may be used in planter areas, but **will** not be used for fill beneath building or paved areas. After clearing, the soils **will** be excavated to finish grade elevations.

2. Construction **will** be observed by the geotechnical engineer at the following stages:

   - Upon completion of clearing and during excavation of building and pavement areas.

   - During all stages of grading and earthwork operations including scarification, recompaction, and while utility trench backfilling.

   - When any unusual soil conditions are encountered during construction.

3. Seismic design **will** be in accordance with the provisions of the current Uniform Building Code and the seismic design parameters of the Structural Engineers Association of California.

4. A mat foundation of compacted material below structures shall be used to increase the confining pressures and shear strength of the soils.

5. Flexible utility connections may be used to allow for settlements and differential movements between soils and structures.

6. Septic tanks or other buried structures may be constructed by concrete and/or provided with supplemental anchorages to reduce the tendency for buoyant rise of tanks in the event the surrounding soil liquefies in areas where the ground water is near the surface.

7. Site-specific geotechnical investigations **will** be performed to determine specific recommendations for mitigating geotechnical concerns and foundation design.

8. Field review during site grading **will** be performed to evaluate the exposed soil conditions and to confirm the assumptions made in formulating the design recommendations.

9. Final soil engineering reports **will** be prepared upon completion of construction, summarizing the compliance with recommendations of the report and geotechnical observations during grading work.

DRAINAGE/FLOODING

1. A master storm water drainage plan consistent with Coachella Valley Water District policies shall be prepared prior to approval of the Final **Tract Map.**

2. Curbs and gutters shall be installed for all residential and commercial tracts.

3. At locations where concentrated flows are released to the native soil, energy dissipating structures on rip-rap shall be constructed to prevent erosion.

4. The developer shall reach an agreement with the City for the provision of a feasible method for controlling and releasing on-site storm water flows. Alternatives may include on-site retention basins or storm drain system.

PLANT LIFE

1. Any project interior slope in excess of **three feet and with a slope grade of 3:1 or greater** in height will require a landscape and irrigation plan prior to obtaining any building permit. All landscaping and irrigation within the commercial area as shown on City approved Plot Plans or Conditional Use Permits shall be installed prior to the issuance of occupancy permits by the City for any commercial building.

2. All manufactured slopes throughout the project that may erode or that are **three feet in height or have a 3:1 slope gradient or greater,** will be landscaped with ground cover at the conclusion of grading to prevent erosion while providing interior visual relief. This landscaping will be phased in conjunction with the phasing of the grading operations.

3. The front yards of all single-family residences on all lots **will** include landscaping and irrigation as part of the unit package.

4. The project shall maximize use of desert drought and salt tolerant landscape varieties consistent with approved Specific Plan plant materials.

5. Landscape and plans required within the project area shall also include any proposed soil amendments and soil conditioning measures designed to ensure long-term landscape health and maintenance.

6. To the extent feasible, the Specific Plan **will** incorporate the Cal Poly Guidelines for Ecosystematic Design (as described on pages 79-82 of Cal Poly's Landscape Design Guidelines).

NOISE

1. The project shall incorporate design measures to assure that the interior noise standard of 45 CNEL will be met. Such measures will include any or all of the following: extra-strength windows, wall and ceiling insulation and orientation, insulation of vents.

2. If it is necessary that windows be closed in order to achieve the required interior level, ventilation/cooling shall be provided to ensure a habitable environment.

3. The project shall comply with applicable provisions of the City's noise element.

4. Any mechanical equipment for the project shall be sited and shielded to reduce the amount of attendance noise generation.

5. Any exterior mechanical equipment shall be reviewed for noise performance and compliance with the City's noise element by the building and safety department during the project building plan check stage.

6. Construction activities (i.e., clearing and grading) shall be limited to normal working hours consistent with applicable City of Coachella requirements.

AIR QUALITY

1. The impact of construction-generated dust shall be reduced to the extent feasible by periodically sprinkling with water, and by paving areas proposed for parking as soon as possible.

2. Vehicular emissions shall be reduced through legislative exhaust emission controls.

3. All phases of development shall comply fully with the Rules and Regulations mandated by SCAQMD Pollution Control District.

4. The project shall incorporate energy-conserving structure, heating/cooling systems, and street lights to the maximum extent feasible.

5. The project shall be designed to provide sidewalks to reduce reliance on internal automobile trips and related emissions.

6. Transit accommodations such as shelter, benches, turnouts, etc., shall be integrated in subsequent detailed plans.

Blowsand mitigation measures and development controls shall be required for all development within designated blowsand areas, with stringent dust control standards maintained as a condition of construction.

7. Landscaping and ground cover shall be planted in accordance with the City's dust control standards.

8. Windbreaks, windows, and fencing shall be provided in accordance with the City's dust control standards.

SOCIOECONOMIC

1. Housing shall be provided in accordance with the City of Coachella General Plan goals and policies.

PUBLIC SERVICES AND UTILITIES

Fire Protection

1. The water system for the project area shall be designed to provide sufficient fire flow capacity and pressure.

2. The applicant shall reach an agreement with the City to determine a pro rata share contribution toward the provision of fire protection facilities to serve the site. Such contributions may take the form of dedication of land, provision of fire protection facilities or equipment, or payment of fees.

Police Protection

3. Consideration will be given by the City to reservation of space within the municipally designated areas of the project for the purposes of a police substation to serve the project and surrounding areas.

Educational Facilities

4. The applicant shall reach an agreement with the Coachella Valley Unified School for the provision of educational facilities to serve the project. Credit against school fees will be considered for any dedication of school sites within the project area.

   Ten acres per K-6 site, 20 acres per 7-9 site and 40 acres per 9-12 site.

5. The applicant shall pay a developer fee per residential square foot and per commercial square foot.

Parks and Recreation

6. Ongoing park maintenance shall be the responsibility of the Coachella Valley Park District.

7. The applicant shall reach an agreement with the City for provision of parks, park maintenance, and design to serve the project. Credit against park fees for dedication of park sites in the project area will be in accordance with a separate development agreement executed by the City and the developer.

8. All plant materials used in the project shall be bought in the Coachella Valley. If any plants are brought in from outside the valley, the Agricultural Commissioner's Office requires that they be notified and that the plants are inspected before they are planted.

9. Since this project is closer to the commercial citrus in the valley than most residential areas, the applicant shall use clean nursery stock in landscaping.

10. The developer shall implement a maintenance program involving vegetation management.

11. The developer shall provide accessibility for mosquito control personnel and equipment to the site for both inspection and treatment.

12. Specific development plans shall incorporate vector prevention guidelines, standards, and checklists developed by the California State Department of Health Services and Environmental Management Branch.

Waste and Wastewater

13. All water features shall be subject to a mosquito abatement program under the jurisdiction of the Riverside County Health Department.

14. Standard construction practices shall be utilized to minimize soil loss.

15. Drip-irrigation systems shall be utilized where practicable.

16. Landscape maintenance contracts that contain economic disincentives for wasteful irrigation practices shall be utilized.

17. The development and operation of wastewater treatment facilities for the project shall take place under state-certified personnel employed by the City of Coachella and shall comply with guidelines and standards established by the Regional Water Quality Control Board.

18. Water conservation measures shall be implemented in accordance with the State Department of Water Resources for new development to ensure water-efficient plumbing fixtures.

19. Low water-using plants shall be used in landscaping wherever feasible.

20. Plants of similar water uses shall be grouped to reduce over-irrigation of low-water using plants.

21. Information shall be provided to occupants regarding benefits of low-water-using landscaping and sources of additional assistance.

22. Mulch shall be used extensively in all landscaped areas. Mulch applied on top of soil will improve the water-holding capacity of the soil by reducing evaporation and soil compaction.

23. Efficient irrigation systems shall be installed that minimize run-off and evaporation and maximize the water that will reach the plant roots. Drip irrigation, soil moisture sensors and automatic irrigation systems are a few methods of increasing irrigation efficiency.

24. Pervious paving material shall be utilized whenever feasible to reduce surface water-runoff and to aid in groundwater recharge.

25. Slopes shall be graded so that run-off or surface water is minimized.

26. The feasibility of using reclaimed wastewater, stored rainwater or gray water for irrigation shall be investigated.

27. The applicant shall reach an agreement with the City to determine the reimbursement plan to the applicant for oversizing costs associated with sewer system.

<u>Solid Waste</u>

28. The developer shall provide sufficient access to accommodate the maneuvers of the waste disposal company's trucks.

29. Provisions for trash enclosures for all proposed uses shall be made in conformance with adopted City Standards.

30. Provisions for source separation of recyclable materials, especially paper, shall be made.

31. The developer shall provide conveniently located trash compactors to serve the refuse collection and disposal needs of the project.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

LAND USE

Implementation of mitigation measures will reduce most project-related impacts and cumulative land use impacts to a level of insignificance. However, the project may create potential conflicts with nearby surrounding agricultural uses as human activity will increase occasional trespass on these lands. Project development will incur escalation in land values and pressure for surrounding agricultural lands conversion to developed uses.

TRANSPORTATION AND CIRCULATION

Implementation of mitigation measures will reduce most project-specific and cumulative traffic impacts to a level of insignificance. However, the generation of 37,830 daily vehicle trips and 3,290 peak hour trips is considered an unavoidable adverse impact of the project.

LIGHT AND GLARE

Implementation of mitigation measures will mitigate project-specific and cumulative light and glare impacts to a level of insignificance.

GEOLOGY AND SOILS

Potential adverse geology and soils impacts affecting the site are mitigatable by proper design and grading operations. However, short-term exposure of underlying soils to increased erosion during grading and construction phases and exposure to seismic hazards due to potential surface rupture of active faults on the property are considered unavoidable adverse impacts of the project.

DRAINAGE/FLOODING

Increases in sedimentation potential, storm runoff volumes and pollutants within the site and through the downstream drainage systems, and modifications to existing drainage features and flow patterns can be mitigated to insignificant levels.

PLANT LIFE

Implementation of mitigation measures will mitigate plant life impacts to a level of insignificance.

NOISE

Implementation of mitigation measures will reduce noise impacts to a level of insignificance.

AIR QUALITY

Implementation of mitigation measures will reduce short-term air quality impacts to a level of insignificance. However, long-term stationary and mobile source air emission increases are considered cumulatively significant adverse impacts of the project.

SOCIOECONOMIC CHARACTERISTICS

The project will result in significant beneficial employment and housing opportunity impacts.

PUBLIC SERVICES AND UTILITIES

Implementation of mitigation measures will partially reduce impacts to public services and utilities. However, increased demands on fire, police protection, schools, libraries, health services, solid waste disposal and telephone services; increased consumption of water and energy supplies; increased wastewater generation/treatment demands; and increased consumption of fossil fuels are considered unavoidable adverse impacts of the project.

1.0 INTRODUCTION

1.1 PURPOSE OF THE EIR

The purpose of this Environmental Impact Report (EIR) is to review the existing conditions, to analyze the potential environmental impacts, and to suggest feasible mitigation measures for the Specific Plan 88-2 of a 260 acre parcel in the City of Coachella.

In conformance with the California Environmental Quality Act of 1970 (CEQA) (Public Resources Code 21000 et. seq.) and the State CEQA Guidelines (California Administrative Code, 15000 et. seq.), as amended, this EIR assesses individual and collective impacts related to the City of Coachella approval of the Specific Plan zone change as follows.

1.2 COMPLIANCE WITH CEQA

This EIR analyzes the environmental effects of the project to the degree of specificity appropriate to the proposed Specific Plan 88-2 as stated in Section 15146 of the State CEQA Guidelines. The analysis considers the series of actions that may occur over the project's lifetime to determine the immediate and long-range impacts associated with its implementation.

The EIR process requires the preparation of an objective, full disclosure document to inform agency decision makers and the general public of the direct and indirect environmental effects of the proposed actions, provide mitigation measures to reduce or eliminate potential environmental effects of the proposed actions and to identify and evaluate reasonable alternatives to the proposed project. Impacts are not always mitigatable to a level not considered significant and, in those cases, are considered unavoidable adverse impacts. In accordance with Section 15093(b) of the State CEQA Guidelines, if a public agency approves a project that has significant impacts that are not substantially mitigated (i.e., unavoidable adverse impacts), the agency shall state in writing the specific reasons for approving the project, as a "statement of overriding considerations" based on the final EIR and any other public information.

An effort was made during the preparation of the draft EIR to contact affected agencies, organizations and persons who may have an interest in this project. Information, data and observations resulting from these contacts are included. Agencies or interested persons not contacted, or who did not respond to a request for comment about the project during preparation of the draft EIR, will have an opportunity to comment during the review period of the draft EIR.

1.3 SCOPE OF THE EIR

An Initial Study and Notice of Preparation were distributed by the City of Coachella on May 10, 1988 (see Appendix A). The Initial Study consists of a project description, check list and discussion of anticipated significant environmental impacts of the project. The Initial Study identified areas that require substantial analysis due to potential significant physical effects the project may have on the environment. The Initial Study identified the following environmental elements as being significantly impacted by the proposed project, and therefore require evaluation in the EIR per Section 15063 (c) of the State CEQA guidelines.

- Land Use
- Traffic and Circulation
- Light and Glare
- Geology/Soils/Seismic
- Hydrology/Flood/Water Resources
- Biology
- Noise
- Air Quality
- Socioeconomic (Housing, Population, Employment)
- Public Services and Utilities

This EIR has been prepared to address potential impacts to those areas in the Initial Study identified as requiring further analysis.

1.4 USE OF THE EIR

This EIR is part of the project review process for the approval of the proposed project in the City of Coachella. It is the intent of this EIR to enable the City of Coachella and other responsible agencies and interested parties to evaluate the environmental impacts associated with the proposed project.

The EIR also suggests measures to mitigate potential significant impacts of the project (refer to each section for relevant mitigation measures). In addition, the EIR analyzes project consistency with relevant planning tools (City General Plan, Zoning and Local Ordinances) within each Environmental Setting and Impact Section where appropriate.

1.5 EIR PARTICIPANTS

The analysis in the EIR has been prepared in conformance with CEQA and the State CEQA Guidelines (as amended). The City of Coachella is the Lead Agency for the EIR. Environmental consultation for the EIR has been provided by the Keith Companies. The Keith Companies also provided the water

/sewer/drainage analysis. Kunzman Associates has prepared a traffic analysis that has been incorporated into the traffic and circulation evaluations in the EIR. The firm of Leighton and Associates has prepared the geology analysis that has been critiqued, reviewed and incorporated into the EIR.

Key contact persons are as follows:

Lead Agency	Mr. Dan Fissori Director of Comm. Development Planning Department City of Coachella 1515 Sixth Street Coachella, CA 92236 (619) 398-3102
Environmental Consultant	Ms. Wendy Matsuda The Keith Companies 200 Baker Street Costa Mesa, CA 92626 (714) 641-9269
Project Applicant	Rancho Coachella Properties, Inc. P.O. Box 6936 Coachella, CA 92236 (619) 398-3616

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The proposed project is located in the southeastern section of the Coachella Valley (see Regional Location Map, Exhibit 1). The project is bounded by Avenue 54 to the north, Fillmore Street to the west, Airport Boulevard to the south, and extends three fourths of a mile east from Fillmore Street. The southeast boundary is comprised of a zig-zag line alternating between north-south and east-west (see Local Vicinity Map, Exhibit 2). Regional access to the site is provided by Interstate 10 and State Highway 111, connections to Palm Springs, and State Highway 86, allowing connections to Indio and El Centro. Access to resort communities in Palm Springs and vicinity, as well as the Los Angeles Metropolitan area is provided by Interstate 10 and State Highway 111. Scheduled airline service is provided at the Palm Springs Airport, and Imperial County Airport, while a private flight airport is located in Thermal. On a local scale, the project site is approximately 3.5 miles from the heart of the City of Coachella. Major access points to the property will be provided via Avenue 56 and Fillmore Street.

2.2 PROJECT CHARACTERISTICS

The proposed 260.0 acre development concept includes 1,085 dwelling units (i.e. single-family and multi-family), commercial, and municipal uses. An illustration of the design concept is provided in Exhibit 3. This Specific Plan land use development Plan shows the proposed breakdown of land use areas for the site. A detailed listing of land uses according to planning area is provided in Table 1. A corresponding summary of land uses is provided in Table 2. Project characteristics are discussed further in the Land Use section of this document.

2.3 PROJECT PHASING

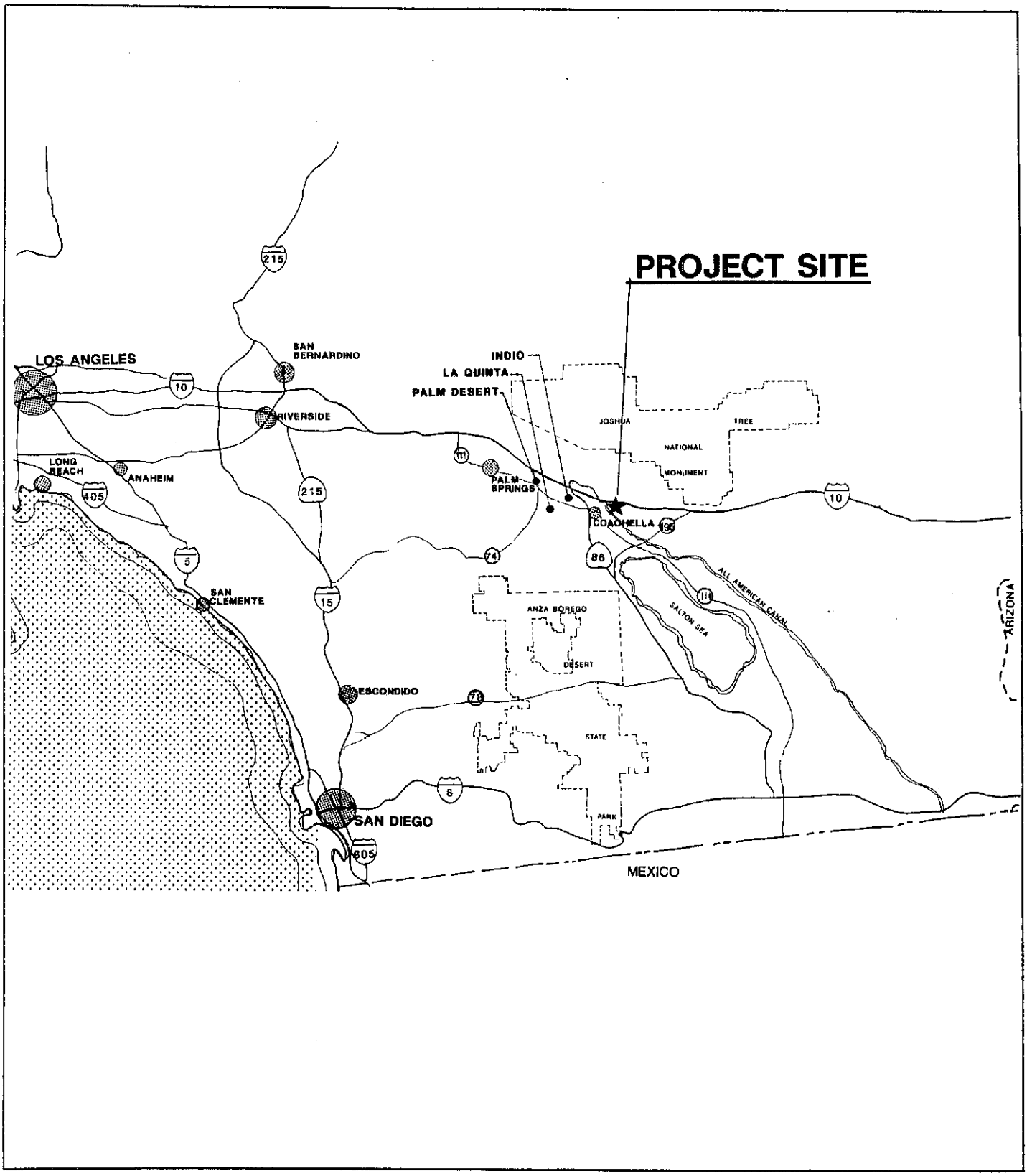
The project is planned to be phased over a period of approximately seven to ten years.

2.4 PROJECT OBJECTIVES

A Statement of Objectives is required by Section 15124 of the California Environmental Quality Act. Project objectives for the City of Coachella and the project applicant are provided below.

City of Coachella

- To provide a quality mixed-use development encompassing a variety of living, shopping and recreational opportunities.



REGIONAL VICINITY

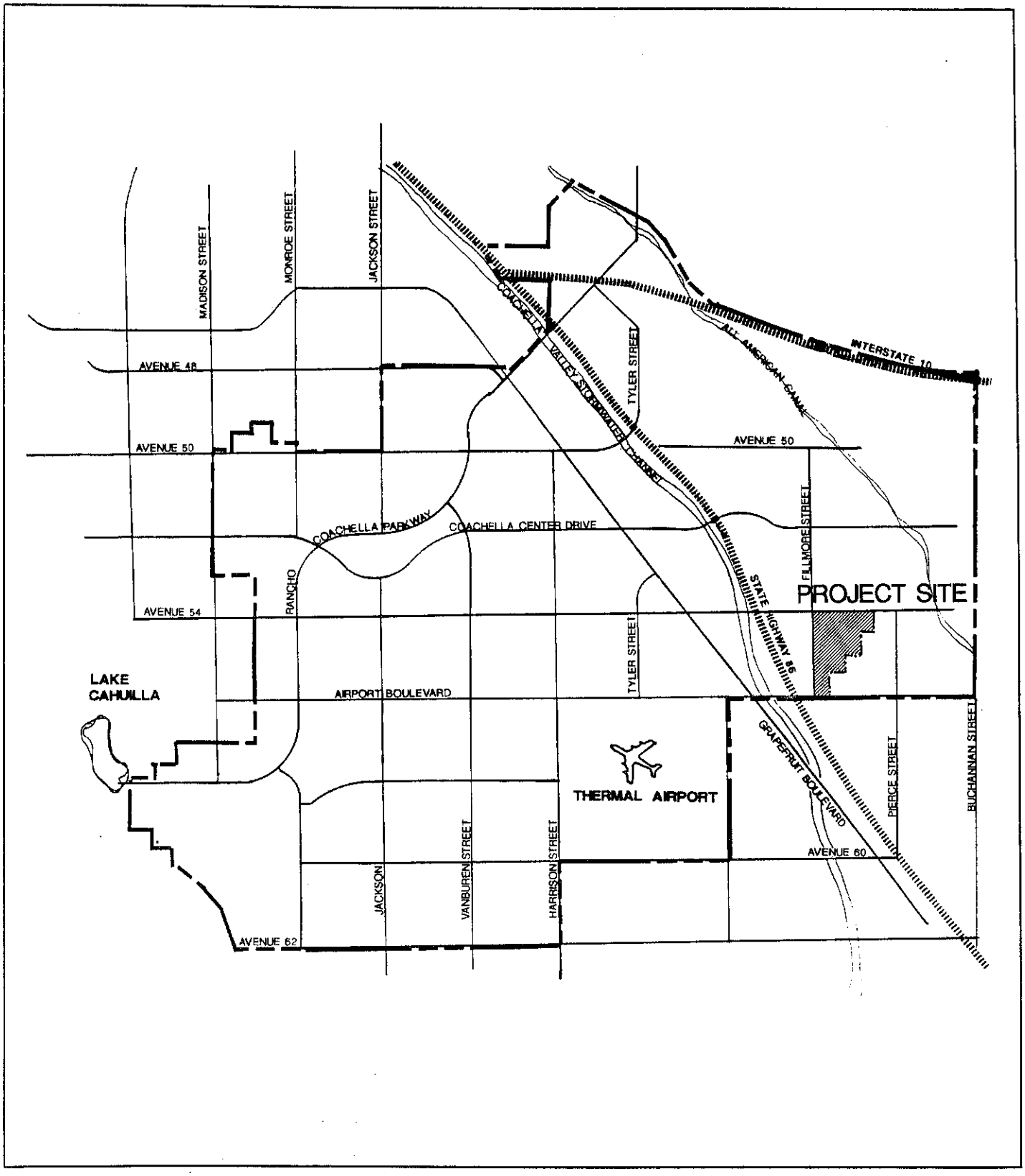
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 1

THE KEITH COMPANIES



LOCAL VICINITY

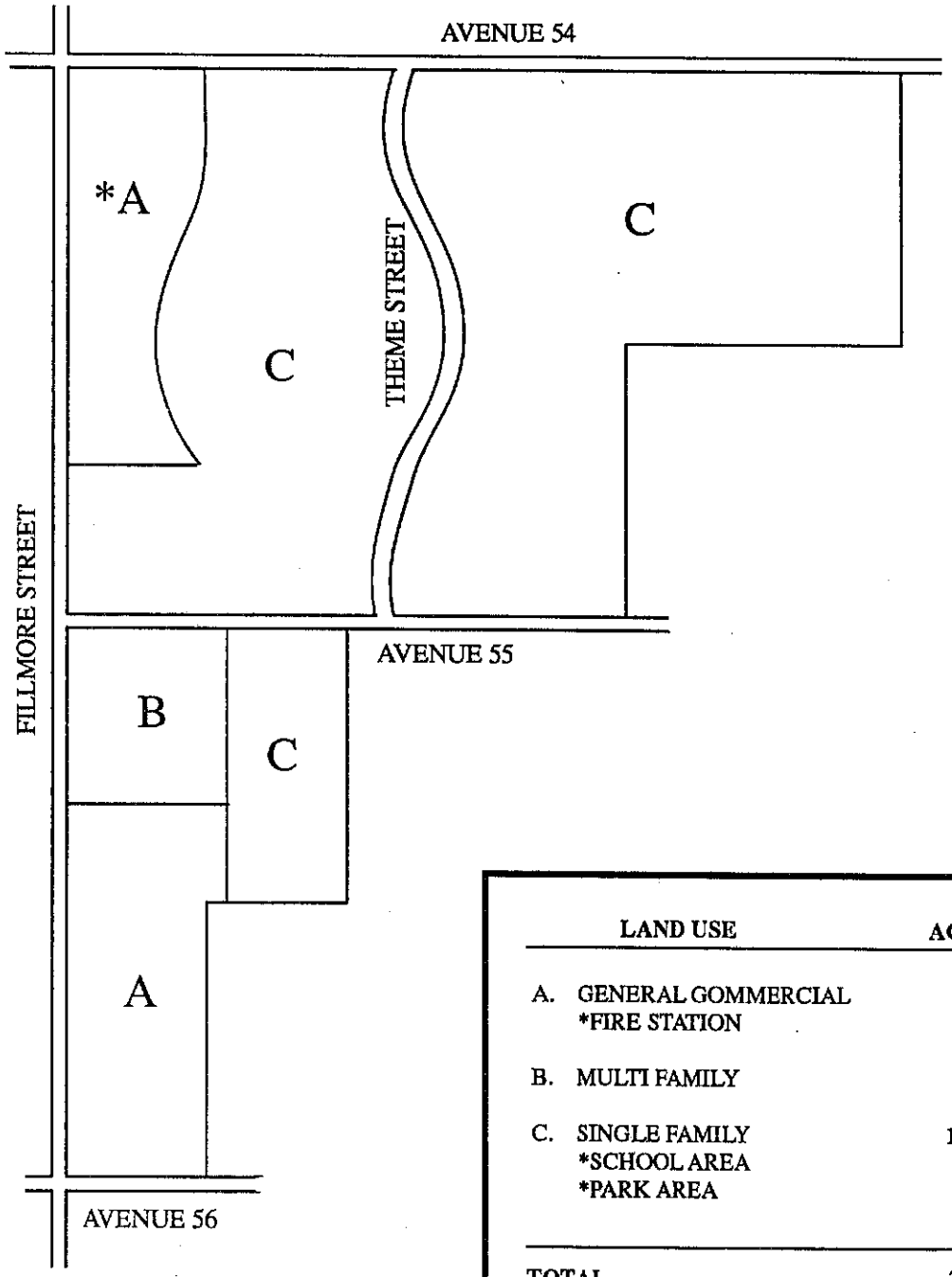
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 2

THE KEITH COMPANIES



LAND USE	ACRES	UNITS	DENSITY
A. GENERAL GOMMERCIAL	46	0	0
*FIRE STATION	3	0	0
B. MULTI FAMILY	18	270	15.0
C. SINGLE FAMILY	171	815	4.7
*SCHOOL AREA	9	0	0
*PARK AREA	13	0	0
TOTAL	**260**	**1,085**	**4.2**

SOURCE: THE LUSARDI COMPANIES

SPECIFIC PLAN LAND USE DEVELOPMENT PLAN

RANCHO COACHELLA VINEYARDS
ENVIRONMENTAL IMPACT REPORT
CITY OF COACHELLA

THE KEITH COMPANIES

EXHIBIT 3

TABLE 2

SUMMARY OF LAND USES

PLANNING AREA	TYPE OF DEVELOPMENT	% OF TOTAL ACRES	ACREAGE
A	GENERAL COMMERCIAL	46.0 AC	18%
	*FIRE STATION	3.0 AC	1%
B	MULTI-FAMILY RESIDENTIAL	18.0 AC	1%
C	SINGLE-FAMILY RESIDENTIAL	171.0 AC	65%
	*SCHOOL AREA	9.0 AC	4%
	*PARK AREA	13.0 AC	5%

SOURCE: THE KEITH COMPANIES

- To provide a range of housing types and products which are affordable to persons of varying income levels.

- To assure a development which provides for services facilities and utilities to meet project-generated needs.

- To assure a fiscally-sound development which will contribute to the City's revenue base.

2.5 DISCRETIONARY ACTIONS

The City of Coachella employs a General Plan, a zoning ordinance and a specific plan as the basic land use policy and implementation tools pursuant to the provisions of the State of California Government Code. Discretionary actions required for the implementation of the proposed project are as follows:

1. Certification of an Environmental Impact Report.

The project requires acceptance of an environmental document as having been prepared in compliance with the California Environmental Quality Act (CEQA), the State CEQA Guidelines, and certification of the data was considered in the final decisions on the project.

2. Specific Plan

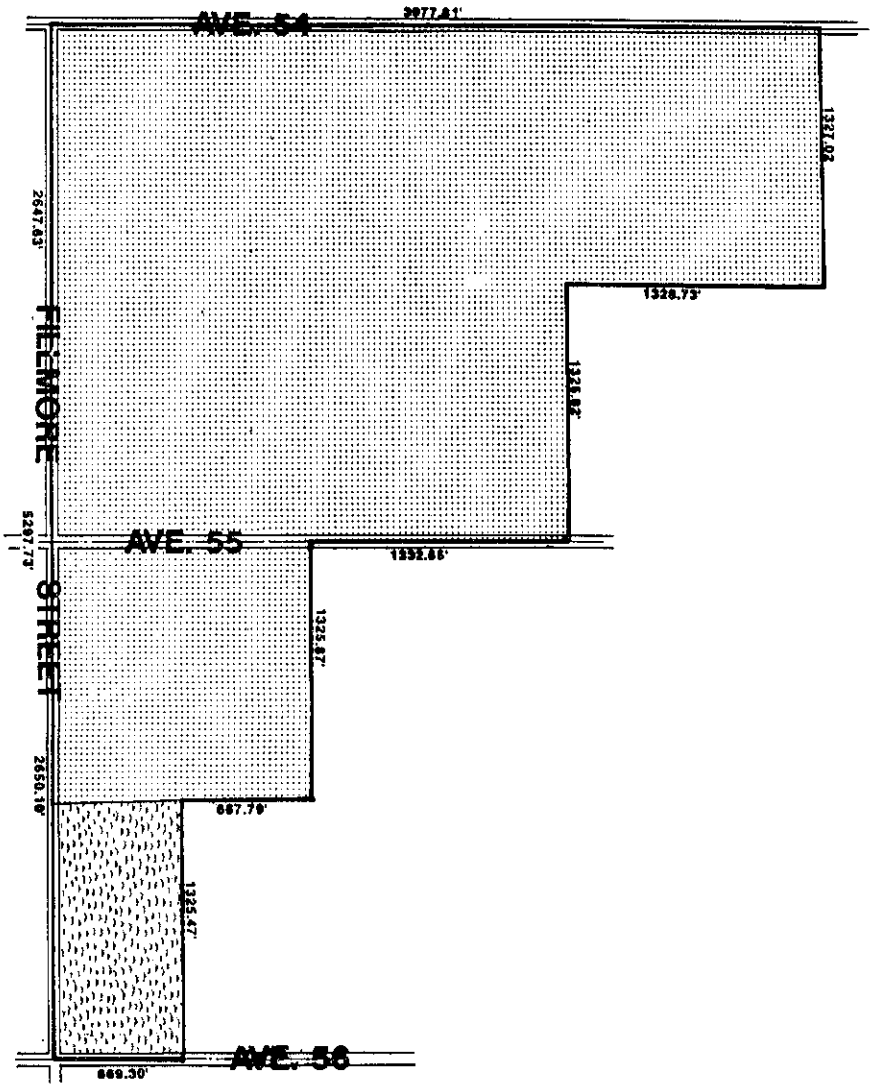
The project requires approval of a final specific plan. The final specific plan, as approved by the Planning Commission and City Council, shall be considered an official zoning document for the project area with a specific plan (SP) zoning designation placed on the official zoning map.

3. General Plan Amendment.

The project previously received a change in the General Plan land use designation from General Industrial and Agriculture to Specific Plan in 1988. Refer to Exhibit 4 for General Plan designations before Planning Commission Approvals.

4. Zone Change.

The project requires a change in the City of Coachella's zoning designation on the site from Agricultural Transition (AT), Residential Estate (RE), and Residential Single Family (RS) to the proposed Specific Plan zones. The Specific Plan proposes the following zones for the site: Municipal, Multi-Family Residential, Single Family Residential, and Commercial.



EXISTING GENERAL INDUSTRIAL DESIGNATION BEFORE PLANNING COMMISSION APPROVAL

EXISTING AGRICULTURE DESIGNATION BEFORE PLANNING COMMISSION APPROVAL

PLANNING COMMISSION APPROVED GENERAL PLAN AMENDMENT.

GENERAL PLAN DESIGNATION IS "SPECIFIC PLAN DESIGNATION".

SCALE: 1"=1000'

SOURCE: THE KEITH COMPANIES

GENERAL PLAN DESIGNATION

RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

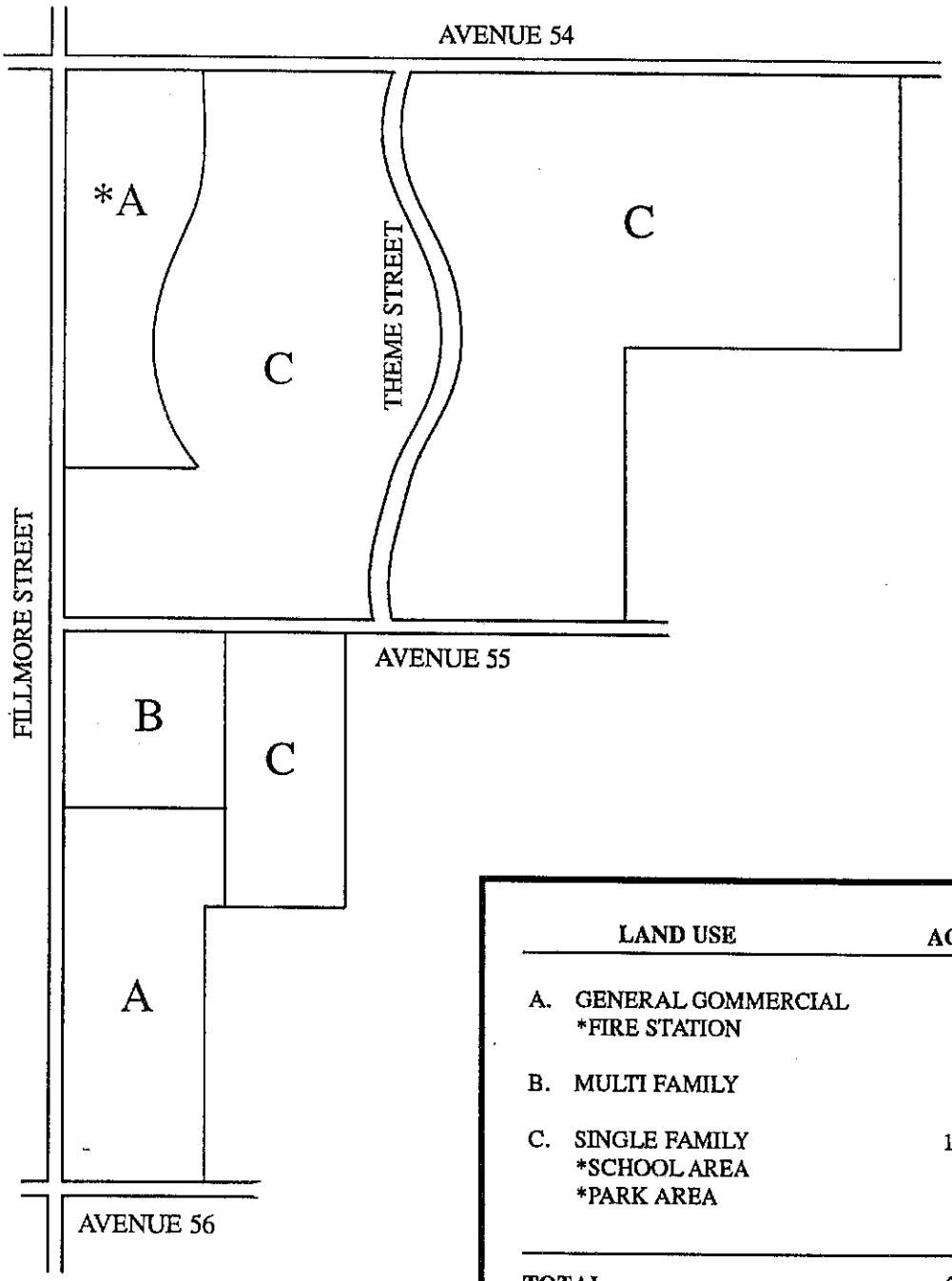
CITY OF COACHELLA

EXHIBIT 4

THE KEITH COMPANIES

200 Baker Street, Costa Mesa, CA 92626 (714) 540-0800

These zones are illustrated on Exhibit 5. A designation of (SP) is placed on the City's official zoning map upon approval, by ordinance, of specific plan zoning for parcel(s) of land.



LAND USE	ACRES	UNITS	DENSITY
A. GENERAL GOMMERCIAL	46	0	0
*FIRE STATION	3	0	0
B. MULTI FAMILY	18	270	15.0
C. SINGLE FAMILY	171	815	4.7
*SCHOOL AREA	9	0	0
*PARK AREA	13	0	0
TOTAL	**260**	**1,085**	**4.2**

SOURCE: THE LUSARDI COMPANIES

PROPOSED ZONING

RANCHO COACHELLA VINEYARDS
ENVIRONMENTAL IMPACT REPORT
CITY OF COACHELLA

THE KEITH COMPANIES

EXHIBIT 5

3.0 ENVIRONMENTAL SETTING, SIGNIFICANT ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE PROPOSED PROJECT

This section of the Environmental Impact Report (EIR) has been organized to describe the existing environmental (pre-project) impacts of the proposed project on the environment and any identifiable adverse impacts. Some of the information presented has been obtained from previous area-wide research, EIR's and a variety of studies prepared within the general project area. This information has been expanded and updated as necessary to conform with the California Environmental Quality Act (CEQA) and City of Coachella Requirements.

3.1 LAND USE

3.1.1 Existing Conditions

On-site

The 260 acre project site is largely vacant, under-utilized agricultural land. Little or no natural vegetation occurs on the site. Although the site has previously been cultivated in vineyards and various row crops, the site 30 to 40 acres north of 55th Street is in an area that apparently has not been farmed for several years. Several older residential structures associated with prior farming activities remain on the site along Fillmore Street.

Surrounding Areas

Lands surrounding the site to the north, east, south and west are either actively cultivated or fallow open space. Lands west of Fillmore within the flood plain of the Coachella Valley Stormwater Channel are considered marginal or unproductive for agricultural. Lands to the east and northeast outside the city limits are actively cultivated in a variety of crops and orchards. Small enclaves of residences and structures associated with farming activities are found in several locations immediately east of the project boundaries.

Planning Context

General Plan. The site was redesignated from General Industrial to Specific Plan in May 1988, anticipating a range of residential uses with public facilities and supporting commercial uses. Lands west of Fillmore Street are designated General Industrial. Proposed land uses, densities and development standards will be governed by the maps and text of the Specific Plan document.

Zoning. Portions of the site north of Avenue 55 are zoned Agricultural-Transitional (A-T). South of Avenue 55, the site is zoned Residential Estate (R-E) and Residential Single-Family (R-S). Areas west of the Fillmore Street project boundary are zoned Heavy Manufacturing (M-H), with the exception of the northwest Fillmore Street and Avenue 56 corner parcel, zoned Commercial Neighborhood (CN).

The adjacent areas within Riverside County's jurisdiction include land to the north and south of the proposed Specific Plan. This land is designated "Agriculture" on the Eastern Coachella Valley Community Plan, which limits the parcel size to a minimum of 10 acres. A 20-acre parcel, located south of Airport Boulevard in Section 23 is designated as "Residential 3B," requiring a minimum lot size of 2-1/2 acres. The zoning of the unincorporated County land includes A-1-20 (Light Agriculture with a 20-acre minimum lot size), A-2-20 (Heavy Agriculture with a minimum 20-acre lot size), and R-A-20 (Residential Agricultural with a 20-acre minimum parcel size).

Other Plans. The project is included within an expansive "East Valley Community Plan" area proposed by the City of Coachella for further study. The limits of this area have yet to be precisely defined, but may include some 15+ square miles previously considered as agricultural transition lands or non-specific in their General Plan and zoning designation status.

3.1.2 Impacts

The project site is largely vacant and unproductive for agricultural use. Significant portions of the site's soils are subject to high alkaline and salt conditions. Additional areas are subject to inundation during major storm events. The loss of open space and any remaining on-site agricultural potential are considered neither locally or regionally significant effects of this project. Similarly, the displacement of the few remaining structures is not considered significant.

The Specific Plan defines a mix of residential, commercial and public uses as a relatively self-contained development or "node" at the southeasterly limits of the City. Commercial and municipal uses planned along Fillmore Street provide a limited buffer or transition between the planned manufacturing and industrial park to the west and the residential uses within the project. The project reflects an appropriate internal transition in residential densities from the multi-family and smaller lot single family areas near the Fillmore carrier to the medium lot single family areas adjacent to the more productive agricultural lands to the east.

The project will significantly increase human and economic activity in an area predominantly rural and agricultural in character. Potential conflicts with nearby surrounding agricultural uses will increase with occasional trespass on these lands. Project development will incur escalation in land values and pressure for surrounding agricultural lands conversion to developed uses. Land use effects can be minimized through appropriate measures. Such conflicts are most likely to occur along the proposed project's eastern boundary. These can be reduced with buffering setbacks, walls and/or density transition incorporated within the Specific Plan, but cannot be eliminated altogether.

Conflicts with agricultural uses are therefore considered cumulatively significant for the proposed project in conjunction with other approved, proposed and pending developments in Coachella's East Valley area.

The Specific Plan provides significant new residential and commercial opportunities in close proximity to the emerging manufacturing areas to the west. This balancing of residential, shopping and employment opportunities within the eastern sector of the Coachella community will minimize vehicular trips and is considered a beneficial impact of the project.

Commercial Uses. Approximately 46 acres of such uses are planned within the neighborhood, general- and tourist- commercial categories. This commercial allocation significantly exceeds the neighborhood convenience goods and personal service requirements of the project itself. The project will function as a major commercial node serving commercial demands generated within the East Valley.

A broad range of potential uses are permitted within the CN, CC and CT zones. Some commercial uses which support the manufacturing/industrial park to the west, the highway commercial opportunities generated along Fillmore Street and the extension of Highway 86 can be anticipated; the project can also be anticipated to meet a portion of the community-scale commercial demand generated within the emerging East Valley. With a potential commercial service area radius of approximately two+ miles[1], the project is not likely to significantly compete with some existing uses or future commercial opportunities along Grapefruit Boulevard and the city's downtown redevelopment area

1 Based on Community Commercial Centers in excess of 20-40 acres; from De Chiara and Koppelman, Urban Planning and Design Criteria, 2nd Edition (1975).

some 3 to 3-1/2 miles to the northwest. However, this competitive impact may be cumulatively significant in conjunction with all zoned, proposed and pending commercial development in the East Valley.

The Rancho Coachella Specific Plan has been included within the proposed East Valley Community Plan process. The project is therefore compatible with the City's plans for the Community Plan area.

3.1.3 Mitigation Measures

1. The Specific Plan shall include appropriate edge treatments to separate and buffer proposed residential uses from agricultural lands to the north and east. Such treatments may include some combination of walls, landscaped berms or setbacks.

2. Consideration **will** be given within the Specific Plan to development of a limited greenbelt/buffer between the commercial/municipal areas along Fillmore Street and the adjacent residential uses. A neighborhood trail could be integrated with such a concept.

3. The Specific Plan shall include appropriate edge treatments to separate and buffer proposed land uses from manufacturing uses to the west. Such treatments **will** include some combination of walls, landscaped berms, and/or setbacks.

3.2 TRANSPORTATION AND CIRCULATION

This section summarizes the existing traffic conditions, project traffic impacts, and the proposed mitigation measures. A detailed traffic and circulation study for the project was completed by Kunzman Associates and is included in Appendix B.

3.2.1 Existing Traffic Conditions

The project site is vacant at present, and does not generate traffic. The proposed project will have access to 54th Avenue, 55th Avenue, and Fillmore Street. Arterial roadways in the vicinity of the site are at present only partially improved and, the arterial system is incomplete at present. Existing intersections in the vicinity of the site are currently operating well within acceptable service levels.

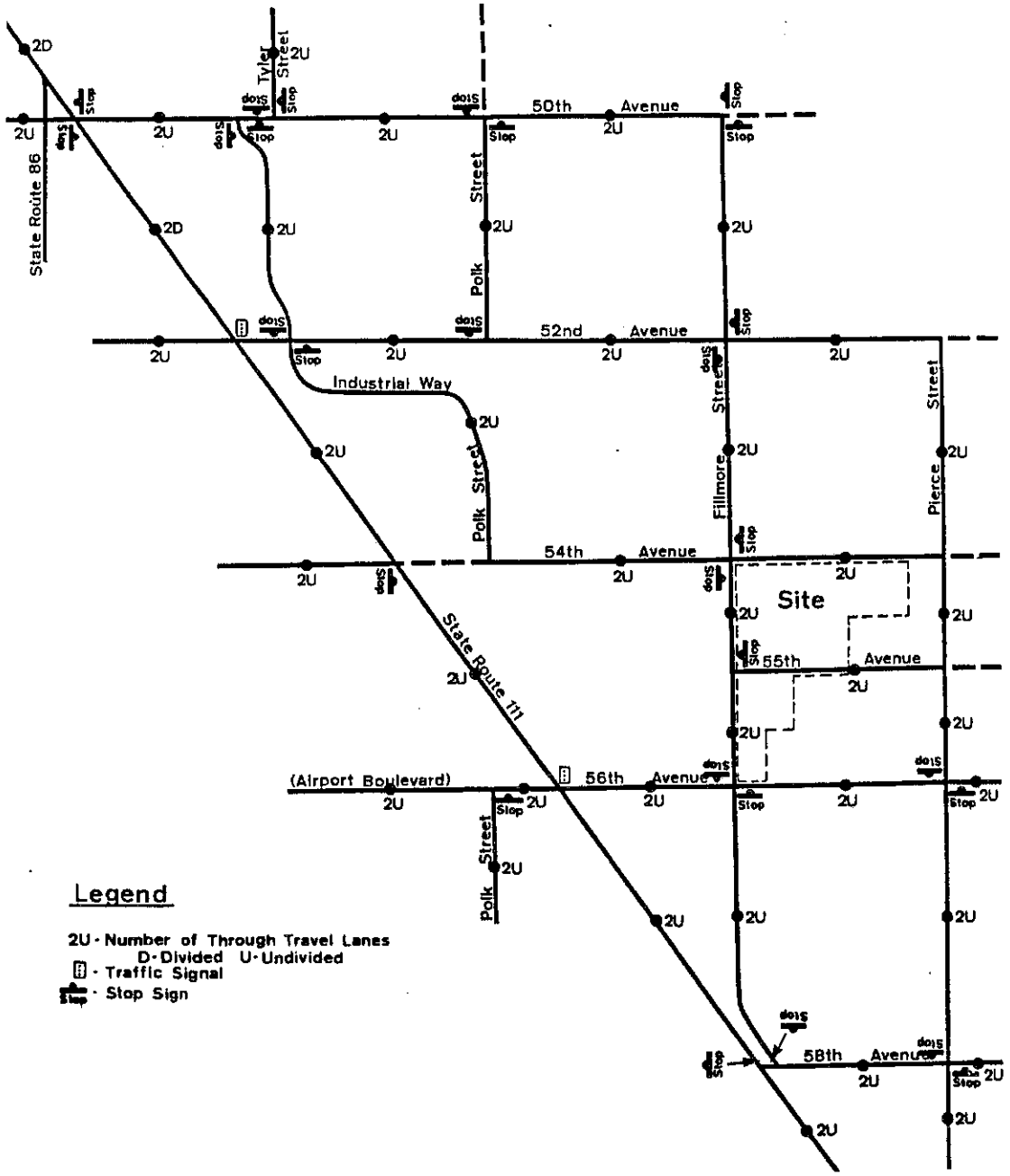
Substantial additional development in the vicinity of the project is currently planned or in progress. Existing circulation features and traffic volumes are depicted in Exhibits 6, 7 and 8. Existing intersection capacity utilization and lane geometrics are identified in Appendix B.

3.2.2 Traffic Impacts

Proposed land uses for the site include residential, commercial, and recreational uses. The project will generate 37,830 external daily vehicle trips, 3,290 of which will occur during the evening peak hour. The impact analysis was based on previous 1200-1300 dwelling units so that the resulting average daily trips and impacts are slightly overestimated. Project traffic generation rates and external trips generated are shown in Tables 3 and 4. After project completion, intersections in the vicinity of the site will operate at a Level of Service D or better in the evening peak hour, with recommended improvements. Existing plus project intersection capacity utilization and lane geometrics without improvements are shown in Table 5.

Roadway links in the vicinity of the site will operate at a Level of Service D or better for future traffic conditions with recommended improvements and the new State Route 86 Freeway extension. Construction of the proposed circulation network will adequately service future traffic volumes. For future traffic conditions with area-wide growth, traffic signals will be warranted at the intersections of:

State Route 111/50th Avenue
State Route 111/54th Avenue
Polk Street/50th Avenue
Polk Street/52nd Avenue
Fillmore Street/50th Avenue



SOURCE: KUNZMAN ASSOCIATES

EXISTING THROUGH LANES & INTERSECTION CONTROLS

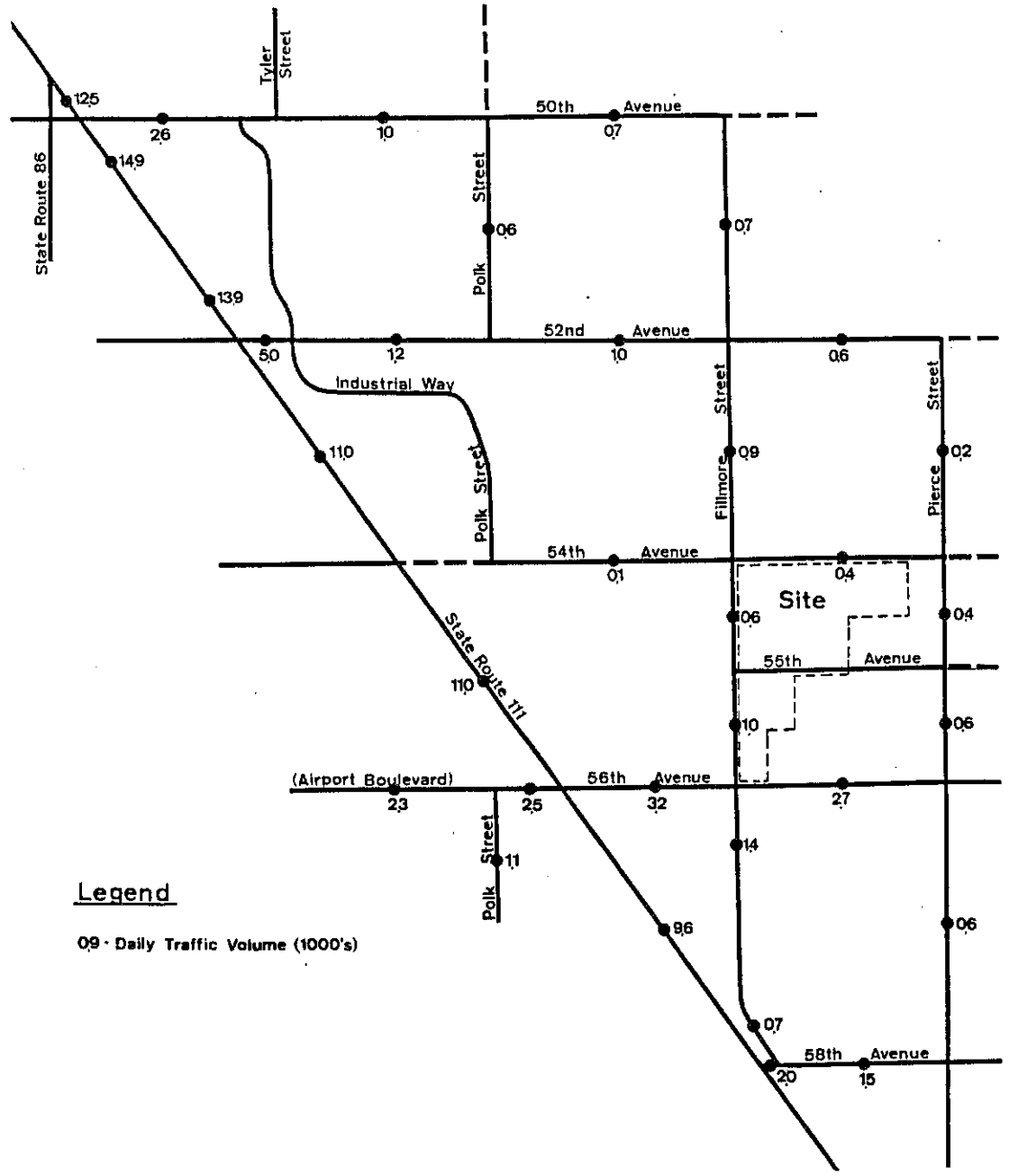
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 6

THE KEITH COMPANIES



SOURCE: KUNZMAN ASSOCIATES

EXISTING DAILY TRAFFIC VOLUMES

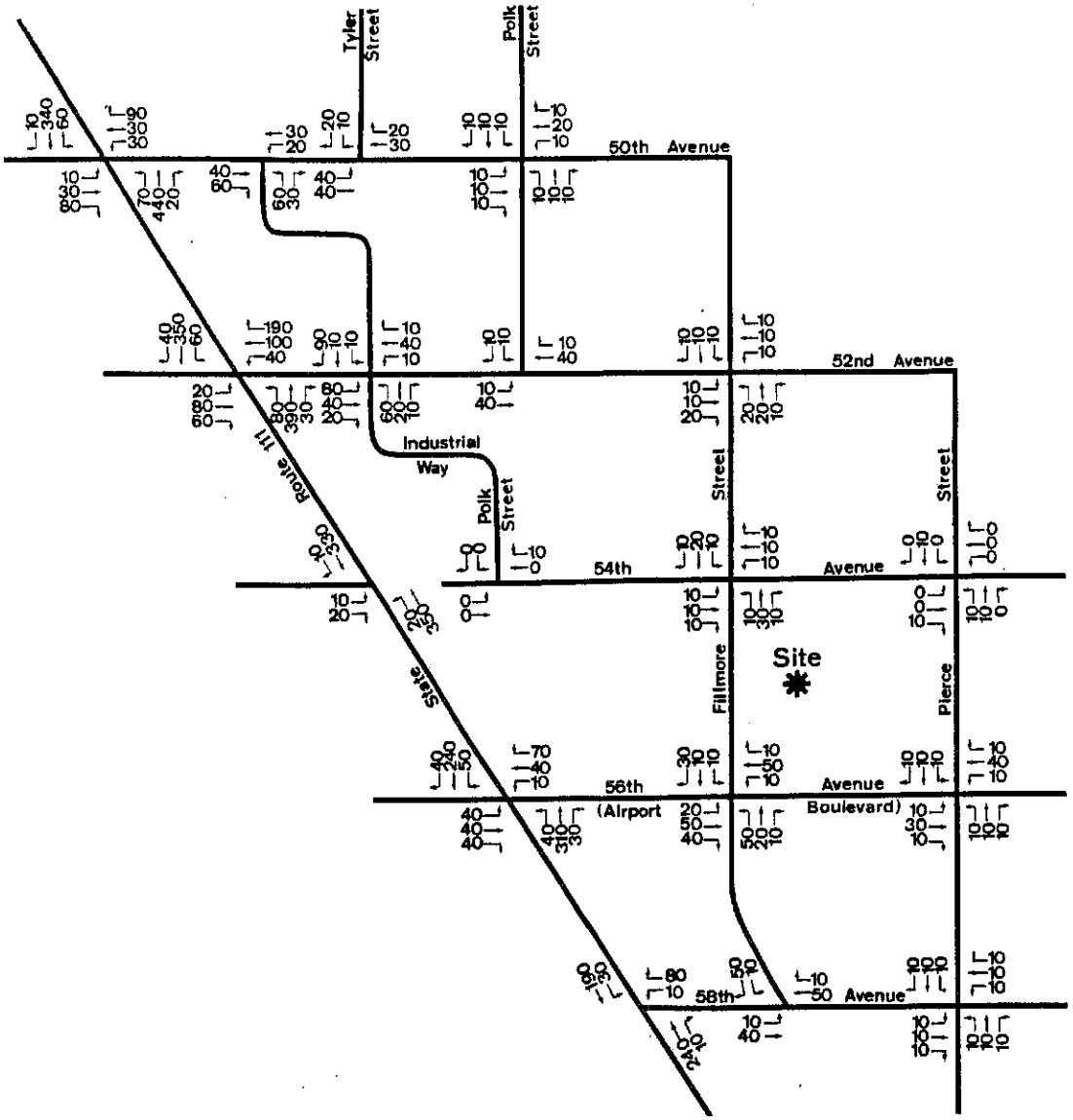
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 7

THE KEITH COMPANIES



SOURCE: KUNZMAN ASSOCIATES

EVENING PEAK HOUR TURNING MOVEMENT VOLUMES

RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 8

THE KEITH COMPANIES

Fillmore Street/52nd Avenue
Fillmore Street/54th Avenue
Fillmore Street/56th Avenue
Pierce Street/52nd Avenue

The proposed project will generate approximately 272,400 vehicle miles of travel daily, once occupied. Project daily traffic volumes, existing plus project daily volumes and future daily volumes are depicted in Exhibits 9, 10 and 11. Future daily volume to capacity ratios are shown in Exhibit 12. The proposed internal circulation plan for the project is provided in Exhibit 13a and Exhibit 13b.

3.2.3 Mitigation Measures

As development occurs, the measures listed below are recommended to mitigate the impact of the project on traffic circulation. The implementation of each measure shall be determined as future entitlements are granted for development in and around the project area.

1. Amend the City of Coachella General Plan Circulation Element to accommodate the following changes:

   - o Designate Fillmore Street as a Secondary Arterial from 52nd Avenue to 56th Avenue.

   - o Designate 52nd Avenue as a Primary Arterial from the Route 86 Freeway Extension to Pierce Street.

2. Adequate phasing for construction of arterial improvements should be provided as required by development.

3. Upgrade 56th Avenue to a Primary Arterial (100 foot right-of-way) from State Route 111 to Fillmore Street.

4. Upgrade Fillmore Street to a Secondary Arterial (100 foot right-of-way) from 52nd Avenue to 56th Avenue.

5. Maintain a high level of service along arterials by restricting parking and controlling roadway access.

6. For existing plus project traffic conditions, traffic signals should be installed at the intersections of:

   Fillmore Street/54th Avenue
   Fillmore Street/56th Avenue

Table 3

TRAFFIC GENERATION RATES

Land Use	Units*	Morning Peak Hour		Evening Peak Hour		Daily
		In	Out	In	Out	
Single Family	DU	0.20	0.55	0.64	0.37	10.06
Apartments	DU	0.11	0.41	0.41	0.22	6.60
General Commercial	TSF	0.92	0.40	2.11	2.38	58.93
Shopping Center	TSF	1.22	0.53	3.05	3.18	74.31
Recreational/ Institutional	AC	1.22	1.21	1.68	1.69	6.00
Tourist Commercial	TSF	0.73	0.49	1.83	1.83	40.68

*DU = dwelling unit
TSF = thousand square feet
AC = acre

Source: Institute of Transportation Engineers, Trip Generation, Fourth Edition, 1987, Land Use Categories 210, 221, 814, and 820.

Table 5

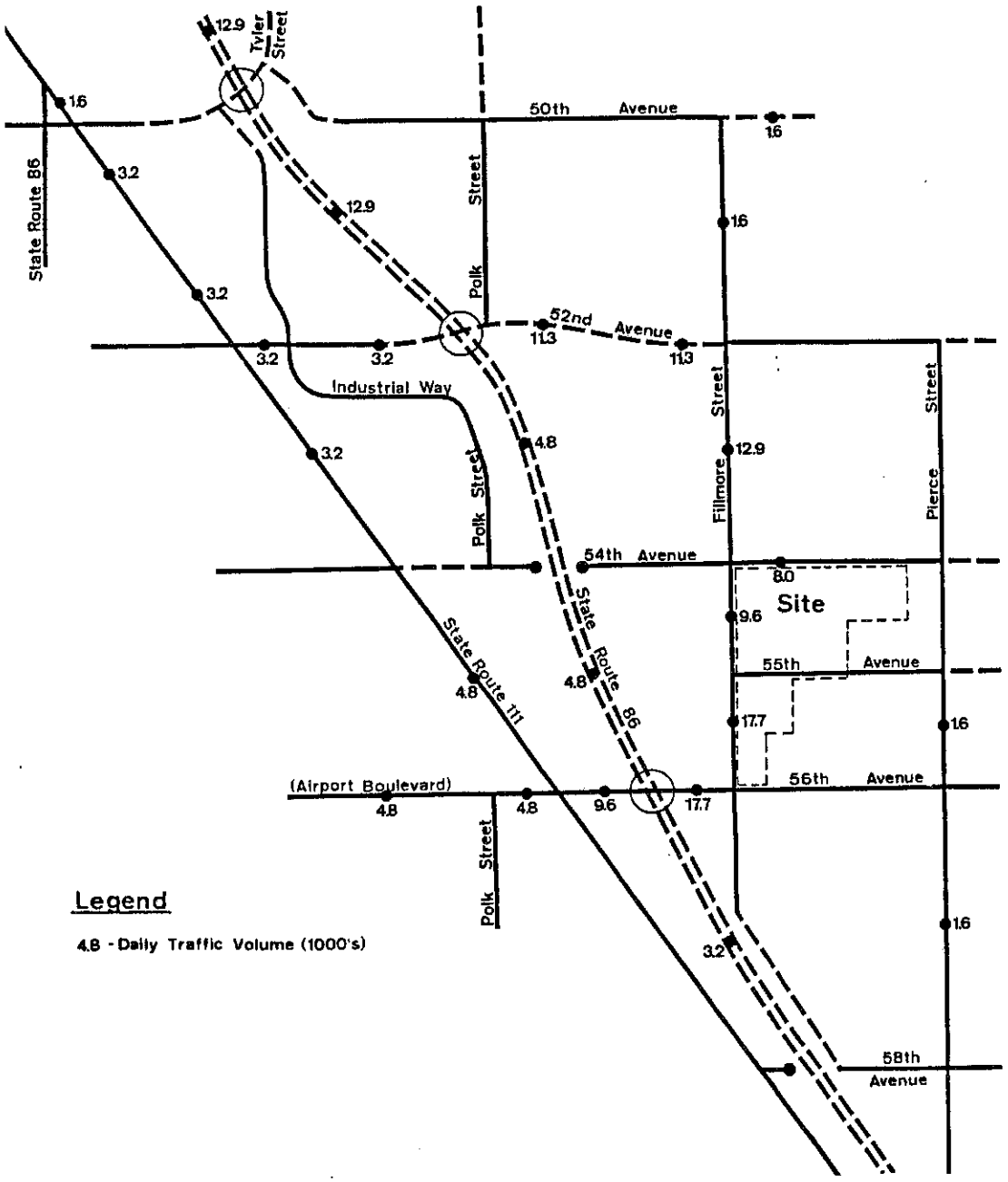
EXISTING PLUS PROJECT INTERSECTION CAPACITY UTILIZATION AND LANE GEOMETRICS, WITHOUT IMPROVEMENTS

Intersection	Intersection Approach Lanes (1)												Evening Peak Hour ICU (2)
	Northbound			Southbound			Eastbound			Westbound			
	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	PM
State Route 111 (NS) at													
50th Avenue (EW)	1	0	1	1	0	1	1	0	0	1	0	0	57
52nd Avenue (EW)	2	0	1	1	0	1	2	1	1	2	0	1	53
54th Avenue (EW)	1	0	1	1	0	0	1	0	0	0	0	0	41
56th Avenue - Airport Boulevard (EW)	1	1	1	1	1	1	1	0	0	1	0	0	79
58th Avenue (EW)	1	0	0	1	0	1	0	0	0	1	0	0	23
Tyler Street (NS) at													
50th Avenue-West (EW)	0	1	1	0	0	0	1	0	0	1	0	0	27
50th Avenue-East (EW)	1	0	0	1	0	0	0	0	0	1	0	0	21
52nd Avenue (EW)	1	0	0	1	0	0	2	0	1	2	0	1	32
Polk Street (NS) at													
50th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
52nd Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	51
54th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	14
Fillmore Street (NS) at													
52nd Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	110
54th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	95
56th Avenue - Airport Boulevard (EW)	1	0	0	1	0	0	1	0	0	1	0	0	157
58th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	14
Pierce Street (NS) at													
54th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	21
56th Avenue - Airport Boulevard (EW)	1	0	0	1	0	0	1	0	0	1	0	0	31
58th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	31

(1) When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

(2) Intersection Capacity Utilization (ICU)

T = Through
Rt = Right
Lt = Left



SOURCE: KUNZMAN ASSOCIATES

PROJECT DAILY TRAFFIC VOLUMES

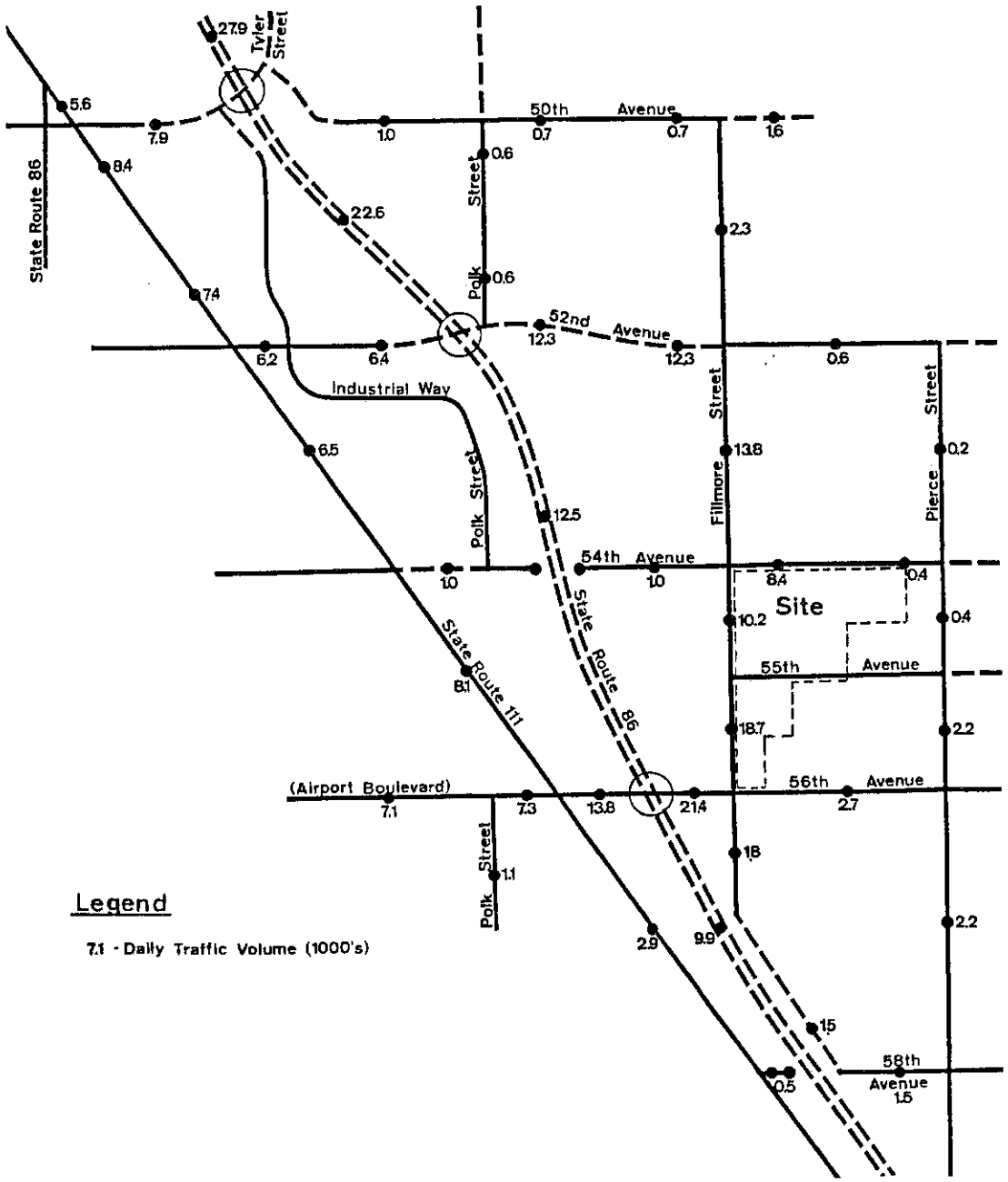
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 9

THE KEITH COMPANIES



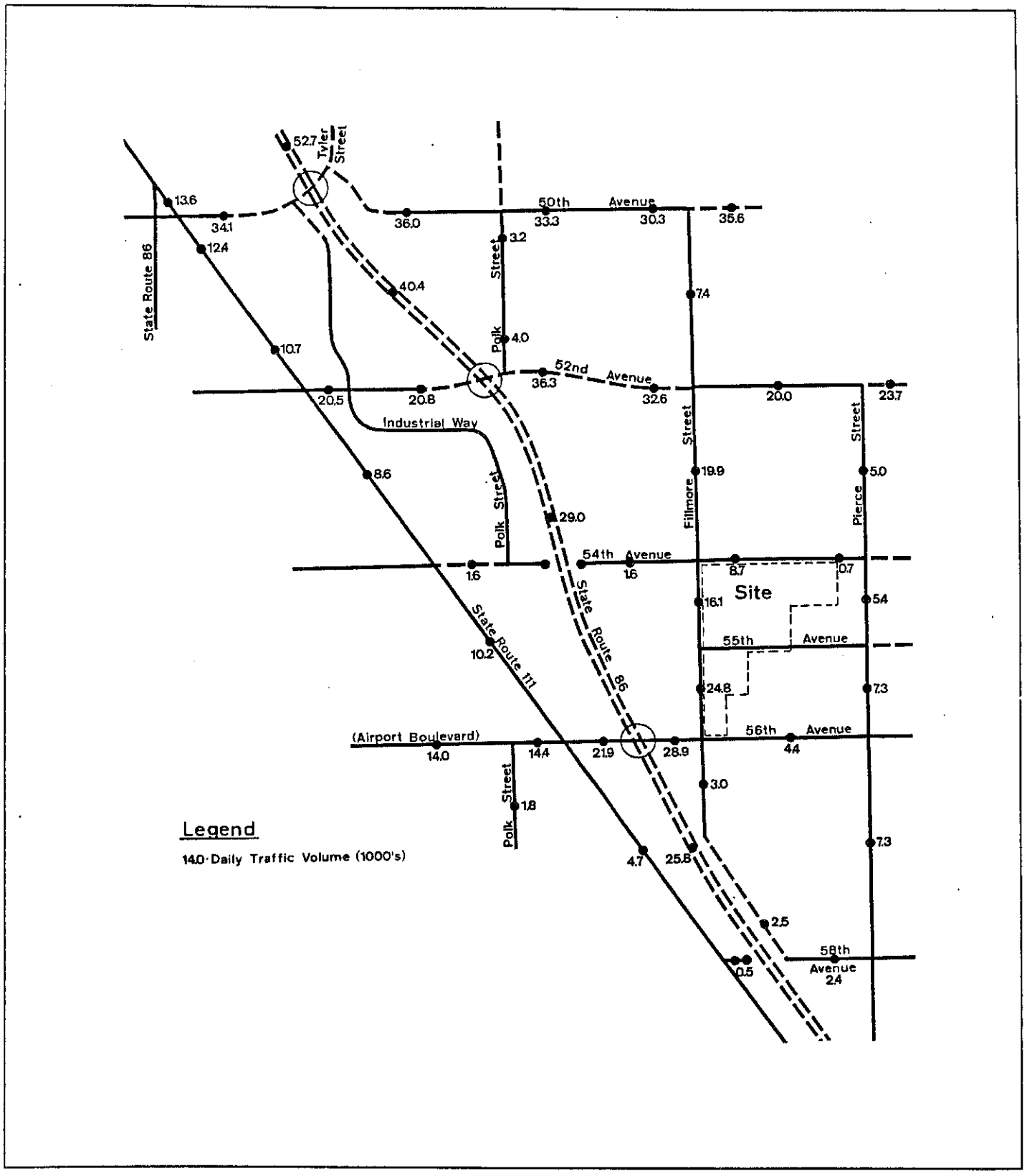
SOURCE: KUNZMAN ASSOCIATES

EXISTING PLUS PROJECT DAILY TRAFFIC VOLUMES

RANCHO COACHELLA VINEYARDS
ENVIRONMENTAL IMPACT REPORT
CITY OF COACHELLA

EXHIBIT 10

THE KEITH COMPANIES



SOURCE: KUNZMAN ASSOCIATES

FUTURE DAILY TRAFFIC VOLUMES

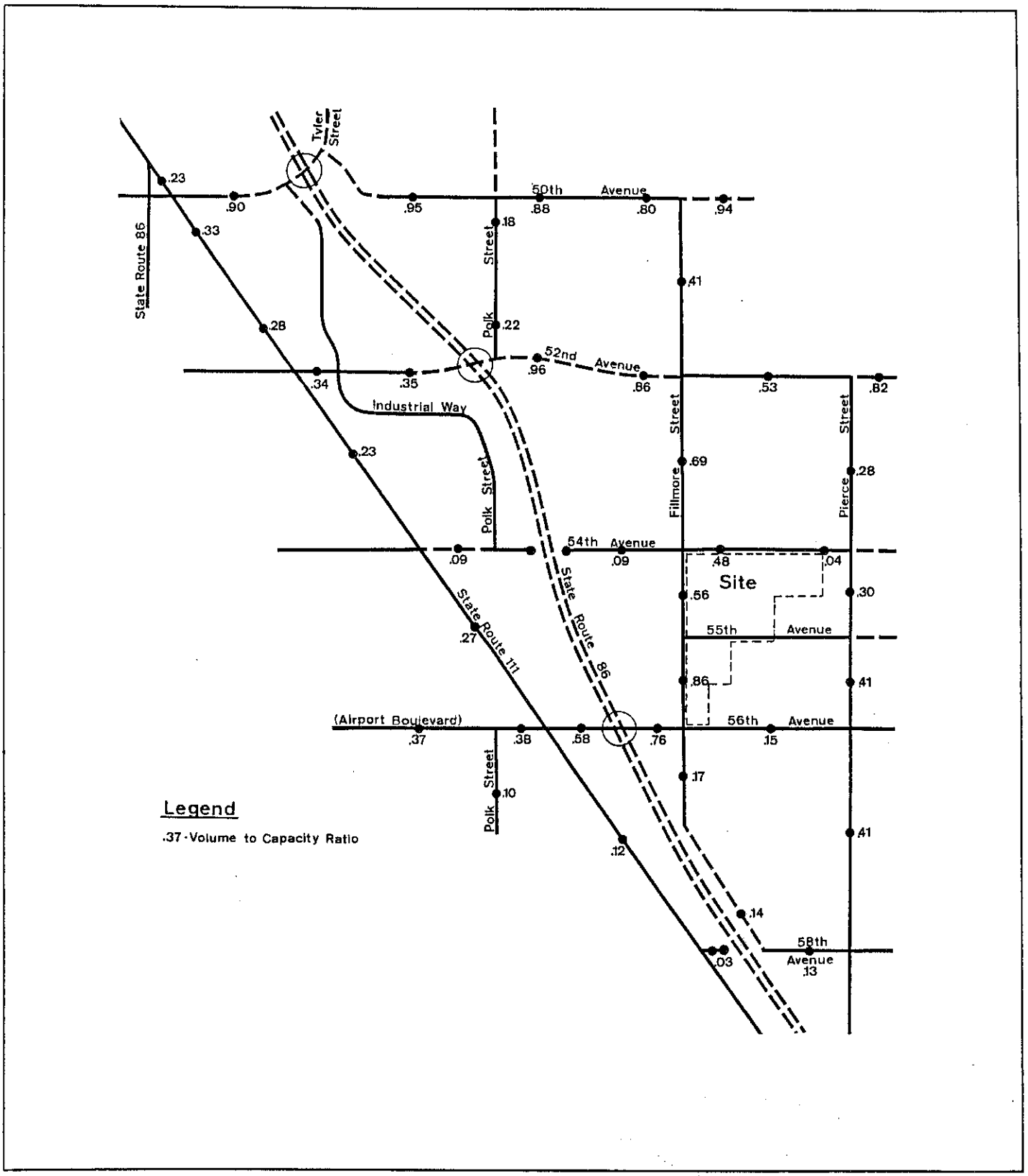
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 11

THE KEITH COMPANIES



SOURCE: KUNZMAN ASSOCIATES

FUTURE DAILY VOLUME TO CAPACITY RATIOS

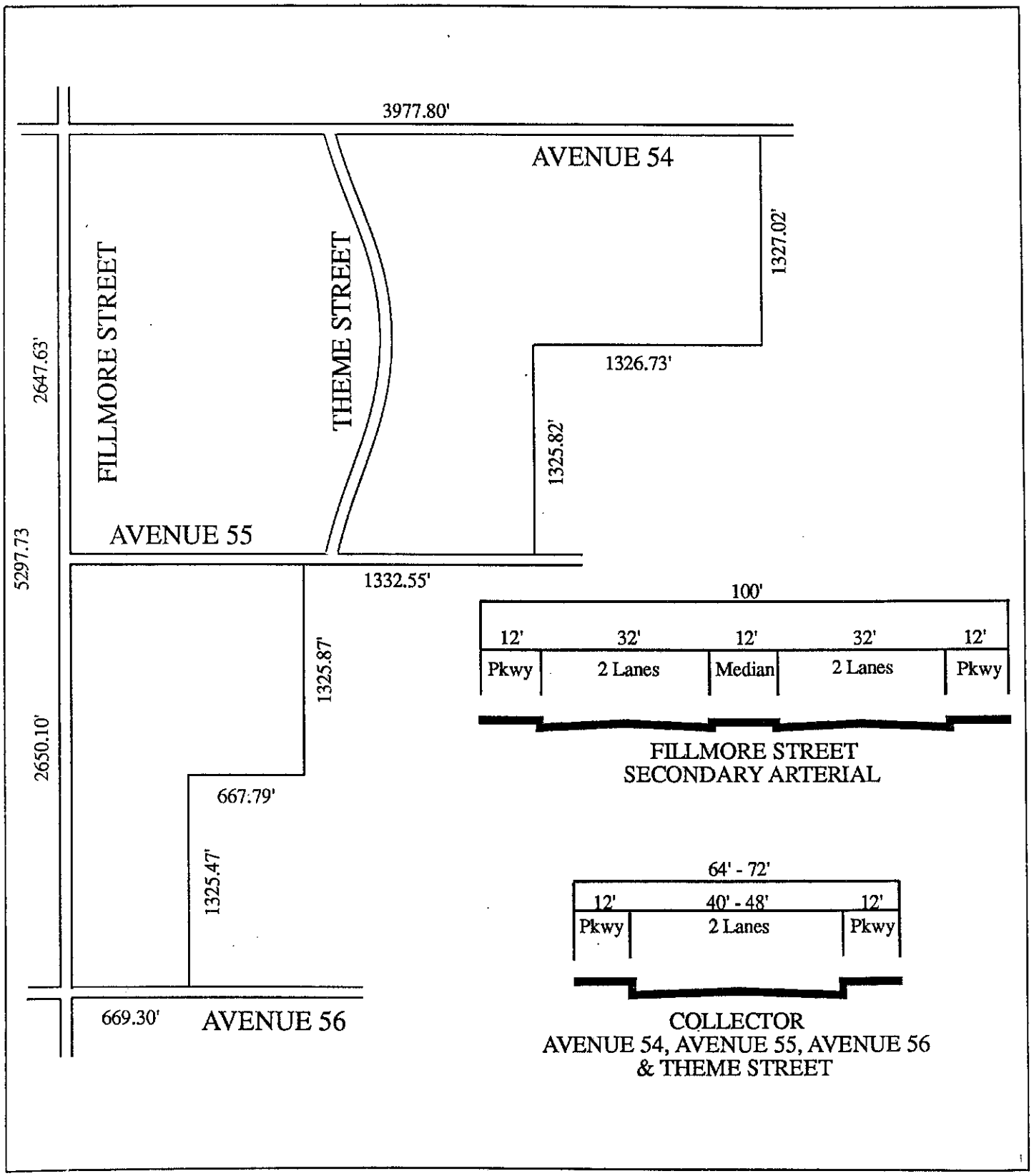
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 12

THE KEITH COMPANIES



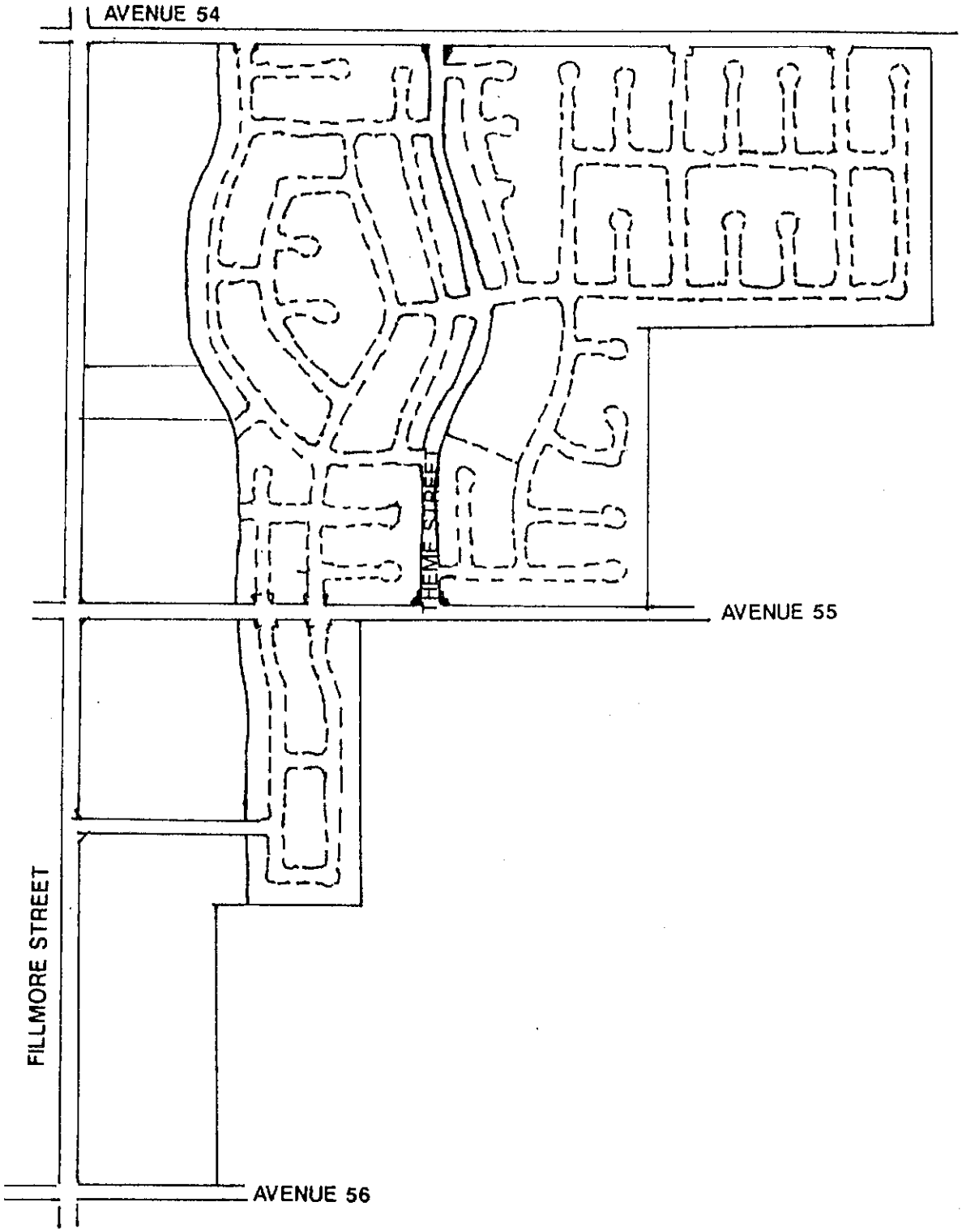
SOURCE: THE LUSARDI COMPANIES

PROPOSED CIRCULATION PLAN

RANCHO COACHELLA VINEYARDS
ENVIRONMENTAL IMPACT REPORT
CITY OF COACHELLA

THE KEITH COMPANIES

EXHIBIT 13A



PROPOSED INTERNAL CIRCULATION PLAN

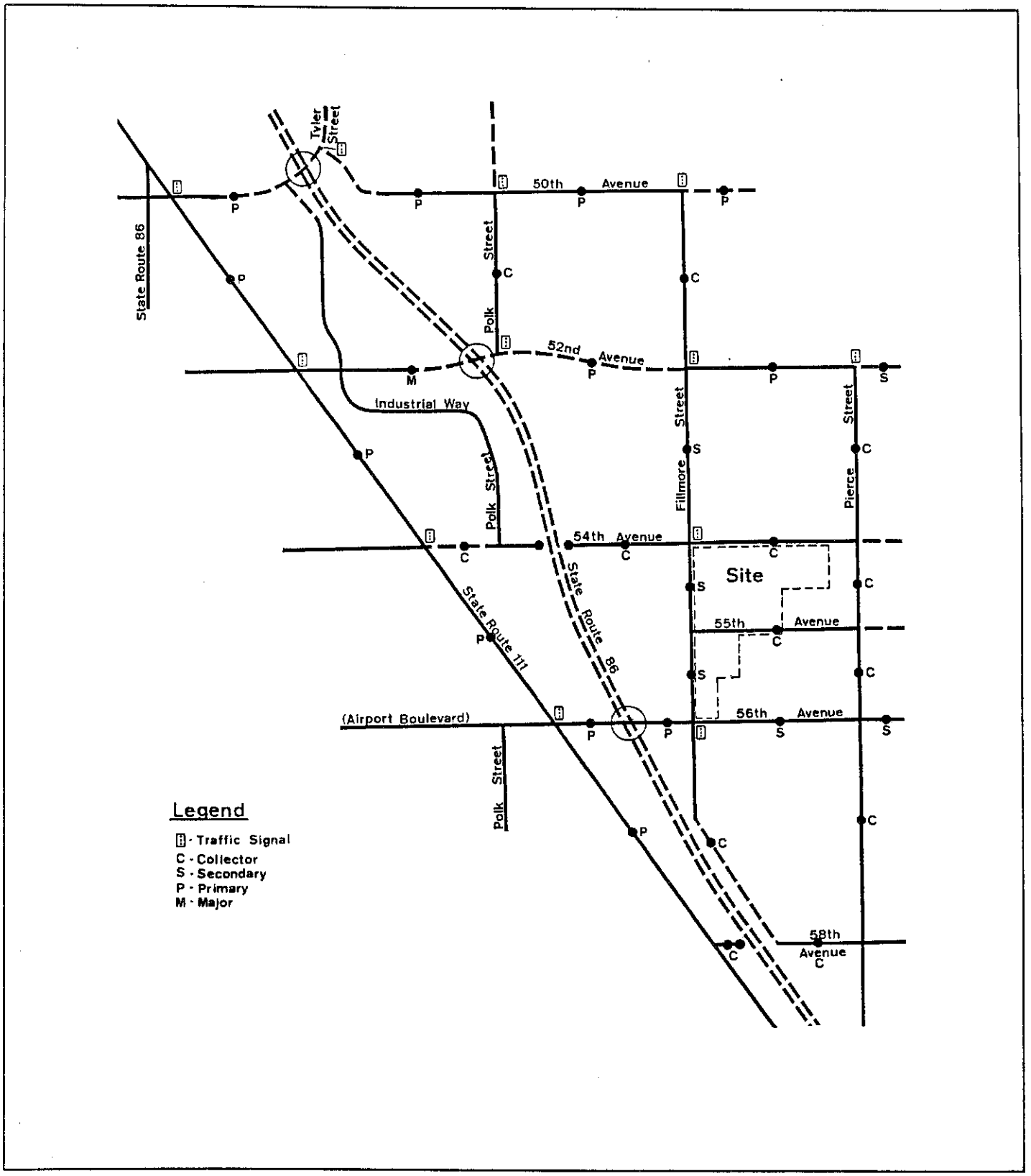
RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 13B

THE KEITH COMPANIES



SOURCE: KUNZMAN ASSOCIATES

CIRCULATION RECOMMENDATIONS

RANCHO COACHELLA VINEYARDS
ENVIRONMENTAL IMPACT REPORT
CITY OF COACHELLA

EXHIBIT 14

THE KEITH COMPANIES

3.3 LIGHT AND GLARE

3.3.1 Existing Conditions

The project site is vacant with the exception of several isolated residences near the intersections of existing rural roads (e.g. 55th Street and Fillmore, north of 56th Street). There are no significant sources of light and glare in the project vicinity. The nearest existing significant lighting sources occur along Grapefruit Boulevard (Highway 111) one-half to one mile to the west.

3.3.2 IMPACTS

The proposed project will result in single- and multi-family residential development, commercial uses, and various municipal/public facilities.

The project is expected to result in the following general light and glare impacts.

- Street and traffic lighting will become a general source of night lighting in the immediate project area.

- Limited but general background sky lighting will occur; this lighting will not be distinguishable from other night sky illumination within Coachella when viewed from more distance vantage points and other communities.

- Commercial uses along Fillmore Street will result in a significant new source of night lighting.

Commercial uses include 46 acres of general commercial (CG), tourist commercial (CT) and neighborhood commercial (CN). Among the potential uses identified in the Specific Plan are offices, financial institutions with drive-thru, auto dealerships, restaurants/fast-food outlets, markets and other uses. Without proper design mitigation, such uses have the potential of creating a significant source of light and glare for single family and multi-family areas directly adjacent to these commercial uses.

Glare impacts are primarily related to parking lot lighting, illuminated signs, and reflective surfaces on buildings and vehicles, which may be visible from one or more locations.

The project cumulatively increases the amount of light and glare in a rural area and contributes to general night sky illumination which may be visible from distant recreational areas.

Mitigation measures are recommended to minimize the duration and intensity of light and glare impacts. The proposed project will not create significant adverse impacts to landform and visual resources provided that the landscape and architectural design standards outlined in the Specific Plan and the mitigation listed below are implemented.

No significant wildlife activity occurs in the project vicinity and project lighting is not considered a significant effect on wildlife.

3.3.3 Mitigation Measures

1. Light fixtures on private facilities and in public right-of-way shall direct light downward to minimize night sky lighting.

2. Roofs shall be constructed of low-reflective material, and mechanical equipment shall be screened architecturally.

3. Low-pressure sodium lamps and lampshields shall be used in street and parking lot lighting to respect the "night sky" requirements of local observatories. Consideration shall be given to controlling private lighting through the use of CC&Rs and shielding of light to direct illumination downward.

3.4 GEOLOGY AND SOILS

The following information is derived from review of the City's General Plan, information from existing EIR's on nearby projects, and a detailed geotechnical study of the proposed development site.

A site specific geotechnical investigation for the project site is provided in Appendix C of this document.

3.4.1 Existing Conditions

This area is in the lower portion of Coachella Valley, at an elevation of approximately 80 to 130 feet below sea level. The valley is structurally a down-dropped block, controlled by the active San Andreas Fault Zone approximately 1.2 miles to the northeast of the site at its nearest approach. The San Jacinto Fault zone is located about 18 miles southwest of the site at its nearest approach. Both the San Andreas and San Jacinto Faults trend northwest-southeast near the site area. No known faulting is present within the site and the Alquist Priolo Special Studies Zone for fault hazards does not encroach on the site. The Coachella Valley is underlain by many thousands of feet of sediments which have accumulated as the valley lowered over a period of millions of years. As recently as approximately 1600 years ago, the lower portion of the valley was covered by a huge inland lake known as Lake Cahuilla.

Subsurface Investigation

The subsurface soils at the site were examined by means of 9 borings drilled to a depth of 30-40 feet and 13 backhoe trenches excavated to depths of 11-13 feet. Representative samples of the soils were collected for further classification and testing.

Earth Materials

The earth materials encountered on-site consist of lacustrine (lake deposits from ancient Lake Cahuilla) soils, mainly sandy silts, silty clays and silty fine sands. The soils were generally found to be in a loose or soft to medium dense condition.

The on-site soils appear to be generally low in expansion potential. Several feet of silty sand fill soil was encountered beneath the existing ground surface.

Ground Water

The estimated depth to ground water is 6 to 15 feet below the ground surface. Ground water levels in the site area may be expected to vary from this in response to nearby irrigation practices, as well as seasonal hydrologic parameters.

Site Seismicity

The site is located in an active seismic region. Refer to Exhibit 15. The nearest active or potentially active fault to the site is the San Andreas Fault zone, which approaches within about 1.2 miles of the site to the northeast. The San Andreas Fault zone in the southern regions of California is believed to be capable of generating an earthquake of up to magnitude 8.3 somewhere along its trace during the next 100 years. This does not necessarily imply that an event of this magnitude would occur at a location on the fault nearest to the site.

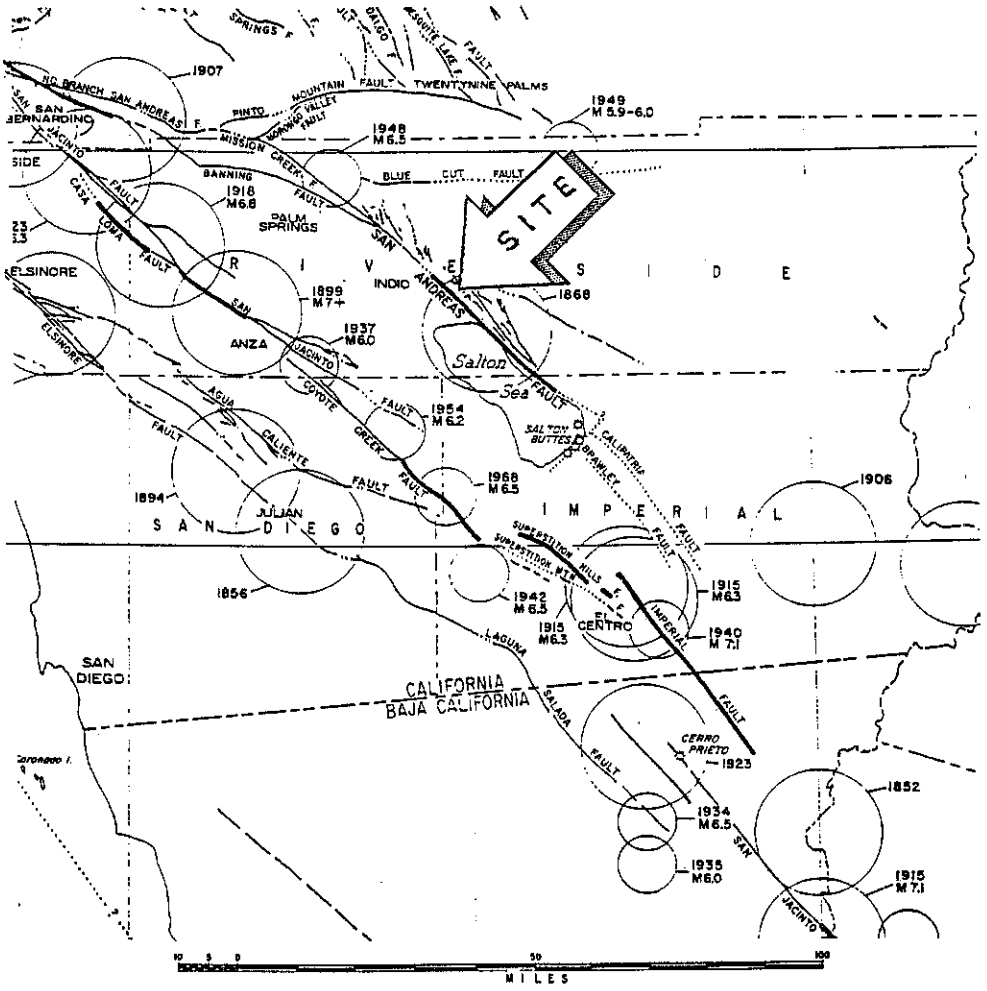
The next closest active fault is the San Jacinto, about 18 miles to the southwest of the site. It is considered to be more active than the San Andreas, however, it has less of a potential (M 7.5) for the same period of time. Considering fault-site distance and respective magnitudes, the San Andreas system would more likely have a more significant impact on the site if the M. 8.3 did happen to occur near the site.

Liquefaction

Liquefaction, a phenomenon involving total or substantial loss of shear strength in saturated soil, is caused by the build-up of excess hydrostatic pressure in saturated cohesionless soils as a result of cyclic stresses generated by ground motions. The Riverside County Seismicity and Safety Element (1976) indicates that the site is within an area of potential liquefaction. Liquefaction is generally limited to depths of less than about 30 feet. Below this depth, the confining pressures are sufficient to resist liquefaction. Investigations confirm that the site is underlain by loose to medium dense, granular soils below the shallow water table and some of the subsurface strata may be potentially liquefiable under certain conditions. Without proper engineering design mitigation, liquefaction hazards such as formation of sand boils, and adverse amounts of settlement could occur.

3.4.2 Impacts

The project site is subject to significant ground shaking hazards from seismic events associated with either the San Andreas or San Jacinto fault systems. A peak rock acceleration of 0.68g could be anticipated for the subject site, and considering the thick



MAJOR EARTHQUAKES AND RECENTLY ACTIVE FAULTS
IN THE SOUTHERN CALIFORNIA REGION

EXPLANATION

ACTIVE FAULTS

TOTAL LENGTH OF FAULT ZONE THAT BREAKS HOLOCEN DEPOSITS OR THAT HAS HAD SEISMIC FAULT ACTIVITY.

FAULT SEGMENT WITH SURFACE RUPTURE DURING AN HISTORIC EARTHQUAKE, OR WITH ESERMIC FAULT CREEP.

EARTHQUAKE LOCATIONS

1899 M7.4 — APPROXIMATE EPICENTRAL AREA OF EARTHQUAKES THAT OCCURED 1769-1933.

1952 M 7.3 — EARTHQUAKE EPICENTERS SINCE 1933.

SOURCE: ZEISER GEOTECHNICAL, INC.

REGIONAL SEISMICITY MAP

RANCHO COACHELLA VINEYARDS
ENVIRONMENTAL IMPACT REPORT
CITY OF COACHELLA

EXHIBIT 15

THE KEITH COMPANIES

deposits of sediments underlying the site, a maximum surface acceleration of 0.44g could be expected. Repeatable high ground accelerations may be expected to be 65 percent of peak accelerations.

The project is located within an area of potential liquefaction hazard. Preliminary site investigations indicate that this hazard is significant for the proposed development and that special site preparation and foundation design measures will be required to reduce this impact to acceptable levels.

Preliminary studies indicate that liquefaction of the loose to medium dense granular soils below the shallow water table is possible in all or portions of the site during a strong earthquake (i.e., magnitude of about 6 or greater). Liquefaction of soils at the site may cause adverse amounts of ground settlement and the formation of sand boils.

The project site has been used historically for agricultural purposes, possibly including use of pesticide or herbicide applications. Concentrations of these materials may have accumulated in upper soil layers requiring special treatment prior to development. Similarly on-site soils are anticipated to be alkaline and high in salt concentrations. These conditions can limit abilities to re-establish landscaping in the site pursuant to Specific Plan objectives.

The site may be subject to differential settlement or subsidence as a result of soil and seismic conditions, or continued future drawdowns in the groundwater aquifer within the Coachella Valley. It should be noted, however, that many of these same soils, seismic and hydrogeologic conditions are found throughout the City of Coachella and other areas within the Coachella Valley.

Appropriate mitigation measures for these conditions are identified below.

3.4.3 Mitigation Measures

1. The site will be stripped of any trash, debris, vegetation, roots, undocumented fill soils and soft or loose soils up to the required depths. Soils containing a moderate to high concentration of roots or more than one percent by weight of organics may be used in planter areas, but will not be used for fill beneath building or paved areas. After clearing, the soils will be excavated to finish grade elevations.

2. Additional excavation may be required in any areas to support structures or pavements where soft or loose soils, or undocumented fills are encountered. The exposed excavations **will** be further scarified, moisture conditioned to optimum moisture and recompacted.

3. Building areas developed in cut areas **will** be similarly overexcavated below final pad grade.

4. All grading **will** be performed in accordance with General Earthwork and Grading Specifications (Appendix C).

5. The on-site soils, free of organic material, are suitable for use as compacted fill. Imported fill **will** conform to the specifications in the Geotechnical Report.

6. Adverse amounts of settlement may occur if the soils below the foundations become wetted after construction. It is therefore important to minimize the infiltration of water into the foundation soils. Positive drainage **will** be provided to direct surface water away from structures and slabs.

7. No water **will** be allowed to pond adjacent to the buildings. Positive drainage may be accomplished by providing drainage away from the buildings at a gradient of at least 2 percent for a distance of at least 5 feet away from the building, and further maintained by a swale or drainage path at a gradient of at least 1 percent. Where necessary, drainage paths may be shortened by use of area drains and collector pipes.

8. Planting areas at grade **will** be provided with adequate positive drainage directed away from the buildings.

9. Some routine site maintenance **will** be expected to be required at intervals during the life of the structures. This may include maintaining grades to drain away from the structures, restoring soil removed from foundation area by animal activity, wind or water erosion, etc.

10. Further testing of the soils actually exposed in the subgrades and footing excavations **will** be conducted to better evaluate the corrosivity potential at the site and need for further corrosion protection.

11. Seismic design **will** be in accordance with the provisions of the current Uniform Building Code and the seismic design parameters of the Structural Engineers Association of California.

12. The on-site soils are subject to caving. Particular attention **will** be given to the possibility of caving along trench excavations. Laying back or shorting of deep utility excavations **will**, therefore, be a consideration. Dewatering may be required for excavations deeper than about 7 feet below the existing grades.

13. Construction **will** be observed by the geotechnical engineer at the following stages:

    - o Upon completion of clearing and during excavation of building and pavement areas.
    - o During all stages of grading and earthwork operations including scarification, recompaction, and while utility trench backfilling.
    - o When any unusual soil conditions are encountered during construction.

14. Seismic design **will** be in accordance with the provisions of the current Uniform Building Code and the seismic design parameters of the Structural Engineers Association of California.

15. A mat foundation of compacted material below structures shall be used to increase the confining pressures and shear strength of the soils.

16. Flexible utility connections may be used to allow for settlements and differential movements between soils and structures.

17. Septic tanks or other buried structures may be constructed by concrete and/or provided with supplemental anchorages to reduce the tendency for buoyant rise of tanks in the event the surrounding soil liquefies in areas where the ground water is near the surface.

18. Site-specific geotechnical investigations **will** be performed to determine specific recommendations for mitigating geotechnical concerns and foundation design.

19. Field review during site grading **will** be performed to evaluate the exposed soil conditions and to confirm the assumptions made in formulating the design recommendations.

20. Final soil engineering reports **will** be prepared upon completion of construction, summarizing the compliance with recommendations of the report and geotechnical observations during grading work.

3.5 DRAINAGE/FLOODING

3.5.1 Existing Conditions

The site lies within the 600-mile Whitewater River Basin just west of the Whitewater River and Coachella Valley Stormwater Channel and east of the All American Canal.

According to the Coachella General Plan, the 100-year flood is contained within the improved Whitewater River Channel. Earthen levees and channel improvements of various types have increased flow capacity to approximately 75,000 cubic feet per second, which equals the anticipated flow for the Standard Project Flood (Corps of Engineers) and exceeds the estimated 100-year flows of 55,000 cubic feet per second (CFS) along the middle reaches of the river (Eastern Coachella Valley Plan EIR No. 189, County of Riverside).

The site drainage is under the jurisdiction of the Coachella Valley Water District (CVWD). The District has constructed irrigation and drain lines within its district which include the project area.

3.5.2 Impacts

The proposed project will create short-term impacts during grading and construction phases. Increases in sedimentation potential, storm run-off volumes and pollutants within the site and through the downstream drainage systems will occur due to construction of buildings, roads and other impervious surfaces. These impacts can be partially mitigated, but are considered unavoidable adverse impacts of the project.

Long-term impacts are associated with changes in ground cover and increased human activity which cause exposure to flood hazard. Construction of impermeable roads, driveways, and buildings on natural permeable surfaces will reduce the infiltration of rainfall into the ground and increase surface runoff. These impacts can be mitigated by drainage improvements.

Storm water will travel southeasterly across the site in the form of sheet flow. Large amounts of storm water will be absorbed into the unimproved areas of the residential lots, into the parkways, and within the open spaces. The increased flows from the development can be carried through the proposed street sections.

The Specific Plan identifies on-site retention basins in the two park sites to handle on-site storm drain flows. Typically, a retention area is used to hold collected water during heavy rain periods. This type of basin allows the water to percolate back into the earth, thereby replenishing the groundwater.

The Rancho Coachella Vineyards Specific Plan proposes to convey the storm waters through the project in accordance with generally accepted engineering practices. Where natural drainage patterns are maintained, adequate protection of the site will be provided or the structures will be set back a safe distance from the drainage patterns.

3.5.3 Mitigation Measures

1. A master storm water drainage plan consistent with Coachella Valley Water District policies shall be prepared prior to approval of the Final Tract Map.

2. Curbs and gutters shall be installed for all residential and commercial tracts.

3. At locations where concentrated flows are released to the native soil, energy dissipating structures or rip-rap shall be constructed to prevent erosion.

4. The developer shall reach an agreement with the City for the provision of a feasible method for controlling and releasing on-site storm water flows. Alternatives may include on-site retention basins or storm drain system.

3.6 PLANT LIFE

3.6.1 Existing Conditions

The project site is largely fallow and under-utilized agricultural land. Some natural vegetation has been re-established on approximately 30 to 40 acres north of 55th Street in an area that apparently has not been farmed for several years. This area is highly disturbed and, as with the balance of the project site and surrounding areas, has little or no biological or habitat value.

Significant amounts of ground salt and alkali are present in the soils, thereby severely limiting the range and type of vegetation and crops which can be sustained on the site.

3.6.2 Impacts

Loss of remaining existing disturbed vegetation on-site does not represent a significant impact of the proposed project. Introduced landscape elements within the project (e.g. grasses, shrubs) could invade perimeter agricultural areas unless controlled. This is not considered a significant effect, however.

Project development will involve significant landscaping and park development. The Avenue 54 and Fillmore Street frontages will include a combination of ornamental and desert transitional landscape material. Primary plant material typical of the ornamental zone will include, but is not limited to:

Trees:
- Palms
- Jacaranda
- Eucalyptus Rudis "Desert Gum"
- Oleander
- Jagerstremia indica "Crape Myrtle"
- Lombardy Poplar

Vines:
- Bougainvillea
- Grape Varieties

This ornamental area will have a limited area of turf, and plant material will be selected based on its drought tolerance.

The desert transitional landscape will use plant material more associated with desert landscapes. In addition to the plants enumerated above, Acacia, Geyera (Australian Willow), and

Mesquite would be typical of this zone. Groundcover would be river rock or drought tolerant plant material. Fountain grass, Ocotillo, and Acacia Redolens would be typical of the shrub plant material.

Most of these species are generally drought tolerant and capable of tolerating higher ground salt levels. Nevertheless, additional measures may be necessary to eliminate or reduce salt and alkali conditions in order to facilitate long-term landscape health and maintenance.

3.6.3 Mitigation Measures

1. Any project interior slope in excess of three feet in height and with a slope gradient of 3:1 or greater, will require a landscape and irrigation plan prior to obtaining any building permit. All landscaping and irrigation within the commercial area as shown on City approved Plot Plans or Conditional Use Permits shall be installed prior to the issuance of occupancy permits by the City for any commercial building.

2. All manufactured slopes throughout the project that may erode or that are three feet in height or greater, or have a slope gradient of 3:1, will be landscaped with ground cover at the conclusion of grading to prevent erosion while providing interior visual relief. This landscaping will be phased in conjunction with the phasing of the grading operations.

3. The front yards of all single-family residences on all lots will include landscaping and irrigation as part of the unit package.

4. The project shall maximize use of desert drought and salt tolerant landscape varieties consistent with approved Specific Plan plant materials.

5. Landscape and irrigation plans required within the project area shall also include any proposed soil amendments and soil conditioning measures designed to ensure long-term landscape health and maintenance.

6. To the extent feasible, the Specific Plan should incorporate the Cal Poly Guidelines for Ecosystematic Design (as described on pages 79-82 of Cal Poly's Landscape Design Guidelines).

3.7 NOISE

3.7.1 Existing Conditions

The major source of noise contributing to ambient noise on the site will be State Route 86 (SR-86), and future traffic on Fillmore Street and Avenue 56 adjacent to the site. A significant amount of traffic traveling to and from the project is expected to utilize the interchanges that will be located on the new freeway (Route 86) at 52nd Avenue and 56th Avenue.

Traffic noise levels are estimated using the Federal Highway Administration model. The model considers traffic volume (average number of vehicle per day), vehicle mix (percentage cars, trucks, heavy trucks), vehicle speed, and roadway geometry to compute the Community Noise Equivalency Level (CNEL).

The project site is within the primary influence area of the Thermal Airport to the southwest.

NOISE MEASUREMENT

The unit used for measuring noise is the decibel (dB or dBA). The noise rating used for measuring ambient community noise levels is the CNEL. This system takes average sound levels at an observation point and adds a weighting penalty to those sounds which occur during evening and night hours. The penalty is added to account for the fact that noise at night is more annoying than during the day. A penalty of 5 dBA is added between 7 P.M. and 10 P.M. and a 10 dBA penalty is added between 10 P.M. and 7 P.M. CNEL noise levels are often reported, for example, as "65 dB CNEL" or just "65 CNEL."

NOISE ELEMENT

Sensitive noise receptors such as residential areas, churches, and hospitals require lower noise levels. In the City of Coachella's Noise Element, maximum interior noise levels are recommended for sleeping corridors in residential projects. The maximum interior noise levels for sleeping corridors are not to exceed 45 dB CNEL or LDN.

3.7.2 Impacts

Potential noise impacts upon the project site and vicinity will be both short-term and long-term in nature. Short-term temporary impacts are associated with construction and grading activities for site development. Long-term impacts will primarily include noise from increased vehicular traffic generated by the project.

Short-term construction noise is generated by heavy equipment such as trucks, earth movers, concrete mixers, etc. Construction noise from the latter phases of development could potentially impact the previous phases that had been occupied.

Potential long-term acoustic impacts stem from increased numbers of both noise sources and noise receptors. Buildout of the project site will add residents who will perceive noise at the site the primary source of noise will continue to be associated with motor vehicle usage.

At the nearest point, the proposed Highway 86 extension will be 1000 feet from the project boundary at Avenue 56 and Fillmore (northeast corner) and commercial uses are proposed at this location. Given the distance from the project site and the type of land use proposed, the Highway 86 extension is not expected to create a significant adverse impact on noise levels at the project site.

Residential land uses are proposed along Avenue 54 and Avenue 55. According to the 1987 Coachella General Plan update, traffic volumes, along Avenue 54 and Avenue 56 are projected to be low (i.e., under 9,000 ADT). Noise levels on-site of about 65 CNEL can be expected approximately 57 feet from the centerline of Avenue 54 and 56.

Noise standards may also be exceeded for those homes directly adjacent to the major interior collector roads and along Avenue 54 and Avenue 56. Walls and/or setbacks will be required in these locations. Commercial and municipal uses are planned along Fillmore Street. The only noise sensitive receptor anticipated in this frontage will be a future school located within the 19 acre municipal parcel north of 55th Street.

According to the Coachella General Plan, the 60 dB CNEL contour defines the Noise Referral Zone. This is the noise level for which noise considerations should be included when making land use policy decisions. The 65 dB CNEL contour describes the area for which new noise sensitive developments will be permitted only if appropriate mitigation measures are implemented.

The proposed project will create a significant increase in existing ambient noise levels. However, project development is not anticipated to result in any unavoidable adverse noise effects. Noise impacts can be mitigated to a level of insignificance with implementation of mitigation measures in this section.

The units that are exposed to CNEL levels greater than 65 dB are subject to mitigation measure #1 to attenuate the interior noise level to 45 dB.

3.7.3 Mitigation Measures

1. The project shall incorporate design measures to assure that the interior noise standard of 45 CNEL will be met. Such measures will include any or all of the following: extra-strength windows, wall and ceiling insulation and orientation, insulation of vents.

2. If it is necessary that windows be closed in order to achieve the required interior level, ventilation/cooling shall be provided to ensure a habitable environment.

3. The project shall comply with applicable provisions of the City's noise element.

4. Any mechanical equipment for the project shall be sited and shielded to reduce the amount of attendance noise generation.

5. Any exterior mechanical equipment shall be reviewed for noise performance and compliance with the City's noise element by the building and safety department during the project building plan check stage.

6. Construction activities (i.e., clearing and grading) shall be limited to normal working hours consistent with applicable City of Coachella requirements.

3.8 AIR QUALITY

3.8.1 EXISTING CONDITIONS

AIR QUALITY MANAGEMENT

Regionally, the proposed project is located in the Southeast Desert Air Basin (SEDAB) and lies within the jurisdiction of the South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB). The SCAQMD sets and enforces regulations for stationary air pollutant sources in the basin. The CARB is charged with controlling motor vehicle emissions.

Air quality at any particular site depends on both regional ambient or surrounding air quality and local air pollutant sources. Regional air quality results from the release of pollutants throughout the air basin. The Environmental Protection Agency has designated the southeast desert air basin as a non-attainment area in terms of oxidant (ozone). Though the total suspended particulates (TSP) exceed both state and federal air quality standards, the air basin is exempt due to its rural-agricultural setting. All other air pollutants (CO, NO_2, and SO_2) do not exceed state or federal standards. The climate of the project area is typically characterized by high temperatures, low annual rainfall, and low humidity. Prevailing northwesterly winds funnel from the Los Angeles area into the Coachella Valley often transportation oxidants, sulfates and nitrates into the airshed of the project area. In addition, particulate standards are also often exceeded because of wind-transported desert soils.

The monitoring station nearest to the project site is located in the City of Indio. Although data from this station does not necessarily reflect conditions existing at the project site, the information provided in Table 14 does give a general indication of ambient air quality in the Coachella Valley area as well as in the entire Southeast Desert Air Basin (SEDAB).

Review of the data for the Indio station indicates that the only pollutants for which Federal and/or State air quality standards have been exceeded are ozone and suspended particulates. The following analysis of ozone and particulates in the SEDAB is taken from the SEDAB Air Quality Management Plan.

The federal and state standards for ozone were exceeded more frequently in the Coachella Valley than at any other location in the SEDAB. The Coachella Valley, which is closest to the SCAB, experiences the greatest number of violations because ozone concentrations are highest closest to the SCAB and decrease steadily as the air moves east. The state and federal standards were violated often in Indio.

3.8.2 IMPACTS

Short-term temporary impacts to air quality as well as long-term impacts that endure for the life of the project will occur when the project is developed. Short-term impacts will result from construction and grading activities, but are anticipated to be minor. Grading and construction requires the use of heavy diesel-powered machinery and trucks which add to local air contaminant emissions. In addition, uncovering and disruption of topsoil, due to excavation, movement of machinery over unpaved surfaces, and other construction activities lead to release of fugitive dust. Although these machines and fugitive dust emissions cannot be estimated accurately, these impacts are not anticipated to be a nuisance because there are no business, residential or shopping areas within close proximity to the site. The application of water twice daily is expected to reduce total fugitive dust by fifty percent.[1]

Based upon field measurements of suspended dust emissions from development projects, an approximate emissions factor for construction operations is 1.2 tons of fugitive dust per acre of soil disturbed per month of activity.[1] Applying the above generation factor to the 259 acres to be graded at the project site, over a two-month grading cycle, and a 7-year total project buildout, results in an average daily estimate of 14.2 tons of particulate emissions released, or a total emission release of 622 tons. The above estimate represents a reasonable annualized estimate of the particulate emissions generated. However, it should be noted that these emissions will not be averaged out over 365 days per day. Typically, the grading for one or two phases of development will occur and then no grading will occur for several months until the next development phase is initiated.

It should be noted that the impact due to grading is very localized. Additionally, this material is inert silicates, rather than the complex organic particulates released from combustion sources which are more harmful to health. Dust generated by such activities usually become more of a local nuisance than a serious health problem. In some cases, grading may be near existing development. Care should be taken to minimize the generation of dust. Common practice for minimizing dust generation is watering prior to and during grading. The application of water in this manner can reduce dust emissions by about 50 percent.

1 United States Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, Third Edition (Including Supplements I-II), August 1977. Sections 11.214

Long-term air contaminant emissions (on-site and off-site) will occur from both mobile and stationary emissions sources. Since there are no known major stationary emitters nor natural gas availability in the vicinity, most stationary emissions in the area will continue to occur from fossil fuel combustion to generate electricity at power plants located outside the project vicinity. However, stationary source air pollutant emission generated by the project with the exception of NO_x will be small in comparison to project-generated mobile source emissions (i.e., vehicular pollutants released by increased traffic to and from the site). The most notable pollutants directly emitted from motor vehicles are carbon monoxide (CO), oxides of nitrogen (NO_x), hydrocarbons (HC), and particulates. Air quality standards for CO are exceeded more frequently along roadways than the other pollutant standards.

Buildout of the project will generate 272,000 miles of vehicle travel per day which will cumulatively add to local and regional vehicular emissions. Estimated daily vehicular emission rates resulting from buildout of the proposed project are shown in Table 7. Unless vehicular emission control strategies (e.g., periodic inspection and maintenance program) are implemented in the SEDAB, the level of emissions associated with buildout of the project will represent cumulatively significant and non-mitigatable impacts upon air quality. The increase in emissions will incrementally degrade local air quality. It should be noted that the future decreases in individual vehicle emissions are expected to result from improvements in emission control technology. Such improvements will only prevent worse degradation than might otherwise occur with buildout of the proposed project.

The project design, including balance of residential, commercial, and employment generating uses serves to reduce the number of external origin or destination trips which might otherwise occur, thereby reducing somewhat the vehicle miles traveled (VMT) and air quality impacts.

3.8.3 MITIGATION MEASURES

1. The impact of construction-generated dust shall be reduced to the extent feasible by periodically sprinkling with water, and by paving areas proposed for parking as soon as possible.

2. Vehicular emissions shall be reduced through legislative exhaust emission controls.

3. All phases of development shall comply fully with the Rules and Regulations mandated by SCAQMD Pollution Control District.

4. The project shall incorporate energy-conserving structures, heating/cooling systems, and street lights to the maximum extent feasible.

5. The project shall be designed to provide sidewalks to reduce reliance on internal automobile trips and related emissions.

6. Transit accommodations such as shelters, benches, turnouts, etc., shall be integrated in subsequent detailed plans.

7. Blowsand mitigation measures and development controls shall be required for all development within designated blowsand areas, with stringent dust control standards maintained as a condition of construction.

8. Windbreaks, windows, and fencing shall be provided in accordance with the City's dust control standards.

TABLE 6

AMBIENT AIR QUALITY[1]

NUMBER OF DAYS STATE/FEDERAL STANDARD EXCEEDED; [MAXIMUM CONCENTRATION][2]

POLLUTANT		INDIO	BASINWIDE
Ozone	1983	80/33 [.18]	141/104 [.26]
	1984	69/19 [.19]	159/92 [.25]
	1985	67/16 [.20]	159/111 [.29]
	1986[4]		
Particulates[3]	1983	.29/.02 [305]	.74/.09 [368]
	1984	.49/.02 [188]	.84/.31 [412]
	1985	67/16 [.20]	159/111 [496]
	1986	55.2/11 [242]	

Source: South Coast Air Quality Management District Air Quality Handbook

1 Air Resources Board, California Air Quality Data, 1983-1985, Vols. XV-XVII.

2 Particulates indicated in ug/m^3. All other concentration indicated in ppm.

3 Expressed as percentage of samples taken.

4 Ozone monitoring terminated March 31, 1986.

TABLE 7

PROJECT-GENERATED TOTAL EMISSIONS (LBS/DAY)

POLLUTANT	STATIONARY SOURCES[1]	MOBILE SOURCES[2]	TOTAL EMISSIONS
Carbon Monoxide	162	2,304	2,466
Sulfur Oxides	NEGL	216	216
Hydrocarbons	----	192	192
Nitrogen Oxides	708	630	1,338
ROG	42.7	117	160
PARTICULATES	1.22		1.22
TIRE WEAR		130	130
EXHAUST		91.1	91.1

1 Derived using SCAQMD's Air Quality Handbook. Calculations provided in Appendix D.

2 Based on estimated moving exhaust rates for the year 2000, calculated at 35 mph.

3.9 SOCIOECONOMIC

3.9.1 Existing Conditions

Population

The City of Coachella, along with much of Riverside County, experienced tremendous population growth during the 1970's and is continuing its growth during the 1980's. According to Southern California Association of Government (SCAG) , Riverside County had the highest annual average growth of any County in Southern California during the 1970's. County-wide population increased 39% from 459,000 in 1970 to 757,500 in 1984 (SCAG, 1985). This trend is expected to continue increasing Riverside County's population to 1,969,276 by the year 2010. This high growth is attributed largely to migration from Los Angeles and Orange County.

The Rancho California Vineyards development is located within Regional Statistical Area (RSA) 53. This area is generally referred to as the Indio area and includes the Cities of Coachella, La Quinta, and Indio as well as the unincorporated communities of Thermal, Mecca, and Oasis. The 1984 population for this area was 57,131 and is expected to increase to 152,655 by the year 2010, an increase of 167 percent (SCAG) . It is important to note that all growth projections include an adjustment to include both permanent and seasonal populations to adequately plan for infrastructure and other public services.

The City of Coachella has an existing population of 13,404 in 1986 based on the U.S. Census. The City's projected growth rate is 2.3 percent per year, considerably lower than the Riverside County average of 4.5 percent per year. According to CVAG-87, the City is projected to have a population of 15,345 persons by 1990.

Housing

The number of housing units within the region is expected to rise dramatically. In 1970 there were approximately 173,600 units in Riverside County, (SCAG) . In 1984, there were 326,000 units in the County, an increase of 47 percent over a 14-year period. By the year 2010, 892,278 units are expected in the County (SCAG). This trend is expected to apply to RSA 53 as well. The number of units in the RSA 53 was 18.707 in 1984 and is expected to increase to 56,127 by the year 2010, a 200 percent increase (SCAG).

According to the City of Coachella, the number of residential units is 3,098, averaging 4.16 persons each, with 871 families having five or more persons in a household. This figure represents 37.9% of the housing stock.

Single-family units are the dominant housing type. They account for 1,695 units. Multi-family dwelling units account for 454 units and mobile homes account for 143 units.

The SCAG RHAM model identified 57 housing units vacant in 1983. Of this total 6.43% or 7 were for sale and 5.15% or 50 units were for rent. The overall 1983 market vacancy rate was 2.22 percent.

The 1980 census indicated that approximately 61.5 percent were owner occupied and 38.5 percent were renter occupied. Average monthly housing costs in the City are: $230 for the median mortgage payment and $198 for the median gross rent (1980 Census).

Employment

Employment rates within the County do not follow the same trends as do housing and population. The number of employed persons in 1984 was 247,000; this figure is expected to increase 89 percent to 466,201 in 2010. The largest employment sectors prior to 1984 were government (19 percent) retail trade (18 percent), and services (16 percent). Future employment growth is expected to be concentrated in the western portions of the County, particularly along the I-15 corridors (SCAG, 82) .

RSA 53, which includes the project site, is located in the eastern part of Riverside County, away from the major employment centers. While employment rates in the western portion of the County are expected to increase as high as 500 percent by the year 2010, these growth rates do not apply to the eastern portion of the County. The number of employed persons is expected to increase 79 percent from 1984 to 2010, from 16,562 to 29,571. SCAG 82 predicts that as Riverside County matures, the large labor force and large amounts of land would attract a high level of employment growth; establishing a trend to employment growth following population growth.

The County of Riverside, which has been divided into different subregions by the SCAG 82 report, is described as a job-risk housing deficient area by this report. The report does not describe the eastern part of the County. This exclusion may be due to the large seasonal population within the region. The report does outline employment-to-population ratios for each of the regional statistical areas within the Southern California area. These ratios suggest that the eastern half of the County could be classified as job deficient/housing _____. This conclusion can be derived by looking at the low employment-to-population ratios for the eastern half of the County, which are very low when compared to those of western Riverside County and regions such as Los Angeles, and comparing them to the high growth rates expected for population and housing in the eastern half of the County.

RSA 53 has a projected employment-to-population ratio of 0.28, while areas such as Lake Elsinore, Hemet, and Banning have ratios of 0.57, 0.52 and 0.51 respectively. RSA 53 expects a 167 percent increase in population and a 200 percent increase in housing by the year 2010, when the project is completed. Balanced subregions are defined by SCAG, 82 as those regions having an employment-to-population ratio of 0.38 to 0.55.

3.9.2 Impacts

Population

The proposed project involves a General Plan Amendment, zone change and approval of the Specific Plan to allow for the construction of residential and commercial land uses. The residential units incorporate a mix of single-family and multi-family units.

According to the SCAG-82, RSA 53 has an average 2.69 persons per dwelling unit. Averaging SCAG's factor with the City's factor of 4.16, a generation factor of 3.43 persons per dwelling unit is produced. Utilizing this factor, the proposed planned community will generate approximately 3,716 people. According to CVAG-87, the projected population for the City of Coachella in the year 2010, is approximately 43,200 persons. The proposed project would represent approximately 13 percent of Coachella's net population increase from 1988 to the year 2010.

Housing

Housing forecasts for RSA 53 indicate that there will be an increase in dwelling units from 18,707 to 56,420 from the year 1984 to 2010, resulting in a net increase of 37,420 units (Baseline 1987). This project would contribute 1,317 units by the year 2010. The project addition represents 2 percent of all the projected additional units for RSA 53 in the year 2010.

Employment

The proposed neighborhood commercial, municipal, general commercial, and tourist commercial land uses will provide a substantial employment base that will impact the subject property significantly.

Short-term project construction employment will have a significant temporary, but positive effect on the employment base of the City of Coachella.

The proposed project could generate a significant number of permanent jobs through the development of various commercial and public service/municipal uses on this site.

3.9.3 Mitigation Measures

1. Housing shall be provided in accordance with the City of Coachella General Plan goals and policies.

No additional mitigation measures are required.

3.10 PUBLIC SERVICES AND UTILITIES

3.10.1 EXISTING CONDITIONS

The project will be served by several agencies. These agencies were contacted for information regarding current service levels and anticipated constraints on providing service to the proposed project. Appendix A of this document contains correspondence from applicable agencies.

FIRE PROTECTION

The City of Coachella Fire Department provides fire protection services for the entire area within the city limits of the City of Coachella. The Headquarters Station for the Fire Department is located at Sixth and Palm Streets. There are no current public safety facilities within the boundaries as shown.

The nature of the facility is to provide public safety which consists of fire protection, emergency medical service, public service and other related services by the Bureau of Fire Prevention. The Bureau is staffed by one Fire Marshal and suppression emergency medical service is provided on a three platoon shift which consists of three paid fire fighters on a 24 hour duty schedule.

According to the County of Riverside Composite Environmental Hazards Map, the project site is not in a fire hazard area.

POLICE PROTECTION

The City of Coachella Police Department conducts all law enforcement services for the City of Coachella. The main police station is in the City Hall located at 1515 6th Street. The Police Department currently employs 36 personnel, including 26 sworn and 10 non-sworn personnel.

The current police officer to citizen ratio is 1 to 1.5 officers per every 1,000 citizens. The Police Department intends to maintain that ratio. Response time to the site is predicted to be 5 minutes from the main station after access is provided.

EDUCATIONAL FACILITIES

The Coachella Valley Unified School District provides Kindergarten through Twelfth Grade education in the City of Coachella. The District operates two elementary schools, one junior high school, and one high school. Schools that would be serving the site include:

Palm View Elementary School - K-5
Valley View Elementary School - K-5
Bobby Duke Junior High School - 6-8
Coachella Valley High School -9-12

Current enrollment for the Coachella Valley School District is presently at 8100 and already exceeds capacity. Projected enrollment for the '88-'89 school year is 8700 students. Overcrowded conditions are expected to worsen over the next several years.

The Riverside County Superintendent of Schools is a county-wide service operated from a main headquarters office in Riverside. The service provides staff development, fiscal support, and operational classes. The operational classes consist of regional occupation programs, pregnant minors programs, headstart state preschool, operated through delegate agencies, and special education programs.

The Coachella Valley Community College District services the entire Coachella Valley. The main campus is located at Palm Desert. Certificate programs in hospitality trades, management business, data processing, and other technical certificate programs, as well as associate degrees and transfer credits to four year institutions are offered.

The proposed project is within the service area of the district. However, no facilities are located in the project vicinity.

The campus in Palm Desert is rapidly reaching its capacity and will require expansion unless a satellite campus can be generated.

LIBRARIES AND HOSPITALS

A library is located in the City of Coachella at 7th Street and Orchard. This library branch will be serving the project site.

A clinic is located in the City of Coachella on 6th Street, 3 blocks from the City Hall towards Highway 86 and will provide service to the project site.

The closest hospital to the proposed project is John F. Kennedy Hospital in Indio.

ENERGY

The project site is within the service area of the Southern California Gas Company. The Southern California Gas Company currently provides gas services to the City of Coachella.

The Imperial Irrigation District provides electricity service to the City of Coachella and would provide service to the project site.

PARKS AND RECREATION

The proposed project is located in a predominantly agricultural area. There are no existing recreational facilities on the project site. Recreational facilities in the area include Lake Cahuilla Park, located 7 miles southwest of the project site, and Fish Traps Park, located 9 miles south of the project.

In assessing current and future needs for regional park facilities (Lake Cahuilla Park), the Riverside County Parks Department utilizes the standard of one developed acre per thousand population and twenty-five acres natural park acreage per thousand population. Regional parks are those areas which offer recreation opportunities that attract visitors from beyond the immediate vicinity.

PEST CONTROL

The Riverside County Citrus Pest Control District No. 2 services all of the Coachella Valley. The district is located at 86-150 Avenue 54 in Coachella and is outside the project boundary.

The shop area is generally used as a storage yard and a facility to organize work crews and check the results of a trapping program, repair and maintenance of equipment. Pesticides and equipment are stored along with pickups and sprayers in the yard. There are also two small offices and a mobile home at this location.

The district deals with the public out in the field or at their residences almost exclusively. The district employs 9 people who work at this location.

The Coachella Valley Mosquito Abatement District is responsible for providing the health and safety of Coachella Valley residents against mosquitoes and eye gnats. The district's control program's are aimed at keeping these insects within tolerable limits through preventative measures where possible.

WATER

The two primary sources of water supply for the project are the All American Canal and groundwater.

The All American Canal runs along the western boundary of the project and is owned and operated by the CVWD. Discussions with the CVWD have indicated that the project lies outside the District's service area and would not be eligible to receive

water from the canal for irrigation uses (the water in the canal is untreated and not suitable for domestic consumption). However, negotiation with the district to extend their service area to include the project may be possible. The current water capacity is 2 MGD, according to Ray Berdusco, the Public Works Supervisor of the Southern California Gas Company.

SEWER

Sewer service will be provided by the City because of the relative proximity of existing City facilities. Existing facilities in proximity to the project site are shown on the attached Exhibit 17, of the city sewer system and include an eighteen inch line in Enterprise Way (parallel and adjacent to the Coachella Valley Storm Channel) northerly of Avenue 54, a fifteen inch line in the Avenue 54 right-of-way and an eight inch force main located in Enterprise Way from Airport Boulevard (Avenue 56) northerly to Avenue 54 to the existing wastewater treatment plant. A pump station is also located at Enterprise Way and Avenue 56 (Airport Boulevard).

Current sewage treatment facilities of the City include newly completed oxidation ponds with a capacity of 0.9 million gallons per day (MGD) and activated sludge tanks with a capacity of 1.5 MGD. Work is currently underway to expand the capacity of the activated sludge tanks to 2.2 MGD. The City's current capacity of 2.4 MGD more than adequately meets the current demand of 1.6 MGD. A barometer of the current availability of capacity is the observation by City staff that the existing pump station is active less than half of the time due to low demand.

SOLID WASTE

Solid waste services in the City of Coachella are provided by Western Waste, a private hauling service, under contract to the City.

The landfill facility servicing the Northeastern Coachella Valley is the Coachella Sanitary Landfill, located approximately 4 miles northwest of the site on Landfill Road at the Dillon Road intersection. The 640-acre facility received an average of 195,850 tons of solid waste (537 tons per day) during 1988. The remaining capacity at the landfill is approximately 12 million tons, with an estimated closure between 2020 and 2023. The primary sources of solid waste for the landfill are nearby residential, commercial, and industrial uses.

3.10.2 IMPACTS

FIRE PROTECTION

The proposed development will place new demands on fire protection facilities in an area which is not well served by existing facilities. New personnel and equipment will be needed to serve the project and future development in the East Valley area. There will be an impact for service not only for the fire protection that will be required, but for emergency medical service as well.

Fire protection needs will begin during the construction phase and continue after the project is built-out. New public safety facilities and fire equipment will be needed. An unimproved fire station site shown as Planning Area B-2 on the Land Use Development Plan (Exhibit 3) is proposed for dedication for the protection of the community. Located on Fillmore Street between Avenue 54 and 55, the station site is centrally located and has excellent access to the east side of the City. The project should be properly planned and equipped in accordance with the City of Coachella Fire Department recommendations so that there are no disruption of fire protection services.

POLICE PROTECTION

The proposed project will significantly impact existing police services in the City of Coachella. The police department is currently planning an office in the proposed fire department substation at the project site. Utilizing the current police officer to citizen ratio, the proposed project will create a demand for 3 to 5 police officers. The Department does not foresee any problems in providing adequate service to the project area.

EDUCATIONAL FACILITIES

The proposed development will generate approximately 1,317 to 2,634 children, based on a worst-case scenario estimated by the Coachella Valley Unified School District. This estimate is based on a generation factor of 1-2 students per dwelling unit. The district expects a significant impact from this project, especially with buildout of the proposed 1,317 residential units.

The district would need to build additional schools to service this project area, preferably dedicated sites within the project area. The district recommends a minimum of 3-4 schools per square mile of residential land uses. Because of developer fees being collected, the district does not project any real hardships on the district other than the normal delays of construction of new school sites.

A school site is proposed for dedication, within Planning Area C (a Residential Zone Area), as shown on the Land Use Development Plan, (Exhibit 3). Ultimate development of a school at this location through combination of land dedication and payment of school fees will reduce schools impacts to insignificant levels.

As homes are built, the developer fees will enable the district to lease relocatable structures to house children on a temporary basis.

The district would also be interested in forming a Mello Roos District within the project area to build necessary public facilities including schools.

Developer fees are currently in effect pursuant to state law at $1.53 per residential square foot and $.25 per commercial square foot. The district is in the LeRoy Greene Lease Purchase Program, and the district will become eligible to build additional schools, providing the money is available.

The Coachella Unified School District will break ground in October, 1988 for a new elementary school located northeast of the Van Buren/50th Avenue intersection. This school is expected to be ready for occupancy in September, 1989; and will absorb children from the proposed project for grades K-5. Additionally, a new junior high school is planned for a site at Avenue 51 and Jackson Street to handle expected residential growth. This school will handle grades 7 through 9, relieving the pressure on the high school.

The Riverside County Superintendent of Schools is currently operating above capacity for special education programs. They are currently looking into additional funding from the state for their needs. The proposed project will increase the demand on the Superintendent of Schools' facilities. However, they do not believe this will be a significant impact and will be able to provide the county with adequate service.

The Coachella Valley Community College District anticipates the proposed project will create a significant impact upon their ability to provide services. The district expects an increased service demand requiring new facilities at the existing campus or a new satellite campus in the vicinity of the City of Coachella.

Regarding short-term impacts, the Coachella Valley Community College District anticipates the new students generated as a result of this project will be housed in temporary or rented quarters until permanent facilities can be built.

LIBRARIES AND HOSPITALS

No significant impacts to these facilities are anticipated.

ENERGY

The Southern California Gas Company expects to provide gas service to the project area without any adverse impacts to the level of service presently being provided to its customers. The development areas can be serviced by the Southern California Gas Company with no anticipated problems. The ability to provide gas services in the future is based upon conditions of energy supply and policies set forth by the California Public Utilities Commission. Changes in service will be in accordance with such conditions. Total system demand is expected to continue to increase annually.

The Southern California Gas Company has a gas main in 54th Avenue located 2,198' east of Polk Avenue. Distribution lines could be extended from these mains to serve the proposed development without any significant impact on the environment. The service would be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made. Based on Southern California Gas Company consumption rates, the proposed project will generate an estimated 1,237,365 therms/year.

The Imperial Irrigation District, Power Division will provide electrical service to the project site. Based on generation factors[1], the proposed project will utilize approximately 17,263,435 KWH per year.

PARKS AND RECREATION

The Riverside County Parks Department believes the proposed project will have a significant impact on their facilities. Currently, the Lake Cahuilla Park is operating at capacity.

Since the project will be equipped with recreational facilities on two park sites, no significant adverse impacts to parks and recreation are anticipated.

The developer is donating park land to the City in lieu of paying park fees. Public parks, proposed to be dedicated to the City, are located adjacent to the school site, and along the Theme Street in Planning Areas B-1 and B-3. The developer will work with the City on possible designs for the neighborhood park. The

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1 Source: Common Forecasting Methodology VI, Demand Forecast, SCE, submitted to the California Energy Commission, August 1985, Forms E-3, or E-3.2C and E-4.1. Forecast year is 1990.

park site adjacent to the school site should be designed in conjunction with the development of the elementary school. Possible improvements for municipal parks could include picnic areas and multi-purpose sports fields.

PEST CONTROL

The landscaping at the proposed project will require monitoring by district personnel to detect the presence of insects. This will involve trapping and visual inspections.

It is possible in the planning or developmental phase to make provisions to prevent or mitigate mosquito problems through a mosquito management plan.

WATER

Water will be provided to the project site through an extension of existing twelve inch water lines within the right-of-way of Avenue 54 at Polk Street. As shown on the attached Exhibit 16 of the City water system, the twelve inch water line along Avenue 54 would be extended eastward part way through the project site to connect with the north-south connector. Additional twelve inch lines would be installed within the right-of-way of Fillmore Street, Avenue 55 and the proposed theme street which traverses through the center of the project site.

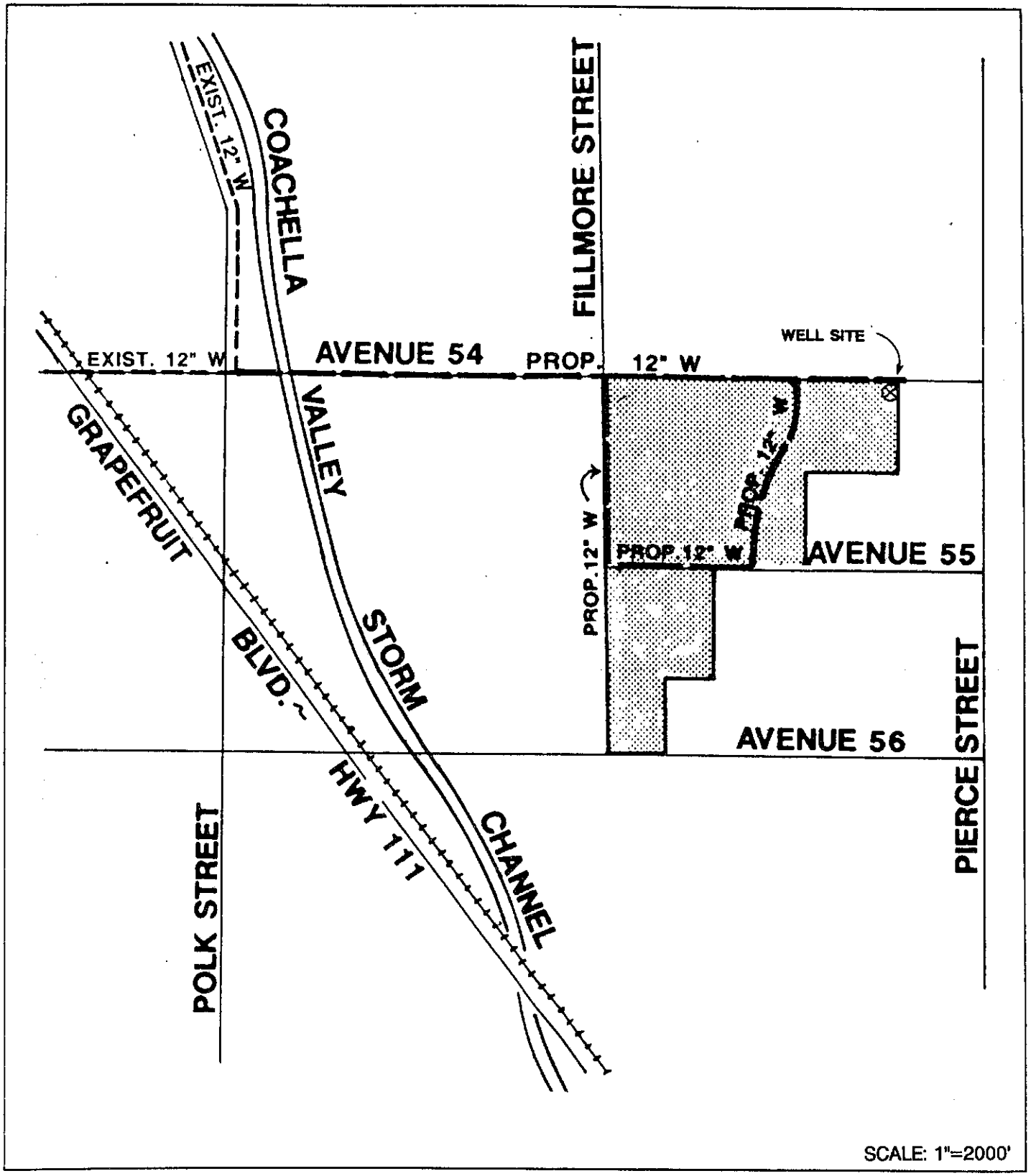
City staff has indicated that a well will be required in the vicinity of Avenue 54 and the eastern project boundary. This well will be on-site and will serve the function of providing a back-up water supply in the event that existing supplies to the project site are cut off by seismic or other activities occurring along the railroad tracks and/or the Coachella Valley storm drain channel. City officials have indicated that water supplies will be adequate to serve the proposed project although figures on the volume of the City's water supply are not currently available. Current demand for City water is 3.6 million gallons per day.

The ultimate water demands are estimated to be approximately 761 acre-feet per year (af/yr.) on an average annual basis and are summarized in Table 8.

SEWER

The ultimate sewage flows are estimated to be approximately 191 acre-feet per year and are summarized in Table 9.

Sewer service would be provided to the project site by merging with the existing system at the closest available location, which is the pump station at Avenue 56 and Orange Way. Refer to Exhibit 17. In order to achieve this, the required facilities would include a pump station east of the storm channel on the



SOURCE: THE KEITH COMPANIES

PROPOSED WATER SYSTEM

RANCHO COACHELLA VINEYARDS

ENVIRONMENTAL IMPACT REPORT

CITY OF COACHELLA

EXHIBIT 16

THE KEITH COMPANIES

TABLE 8

ESTIMATED ULTIMATE WATER DEMANDS

LAND USE	FACTOR	AREA OR POPULATION	WATER USE AVERAGE ANNUAL (AFY)
Residential	150 GPCD	3,540 Persons	595
Commercial	2000 GPAD	58 Persons	130
Municipal	1000 GPAD	18.8 Persons	21

Source: TKC

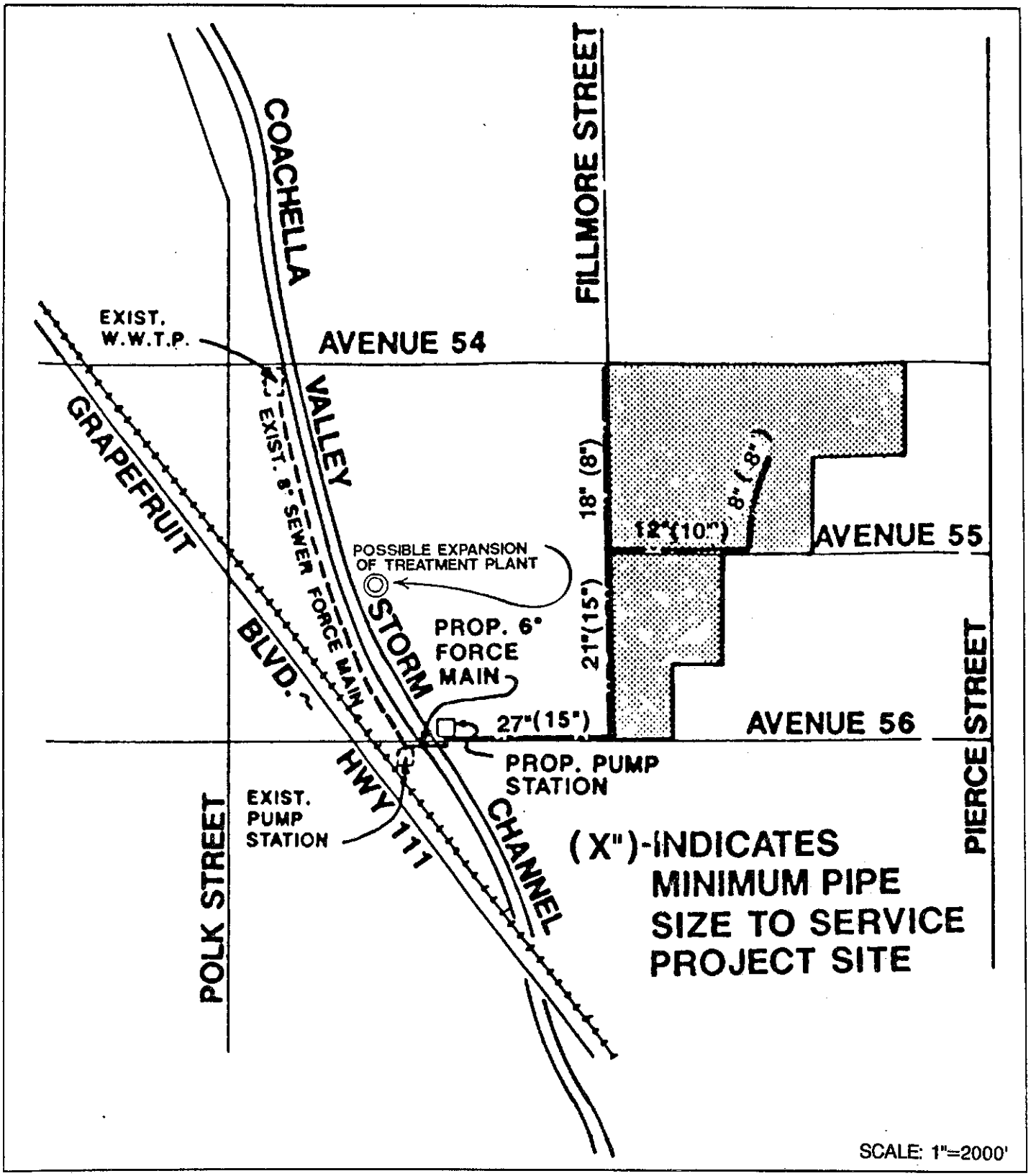
Key: GPCD = Gallons Per Capita Daily
GPAD = Gallons Per Acre Daily
AFY = Acre Feet Per Year

TABLE 9

ESTIMATED ULTIMATE SEWAGE GENERATION

LAND USE	GENERATION RATE	AREA OR POPULATION	AVERAGE SEWAGE FLOW (AFY)
Residential	100 GPCD	3,540 Persons	40
Commercial	2000 GPAD	58 Persons	130
Municipal	1000 GPAD	18.8 Persons	21

Source: TKC



SOURCE: THE KEITH COMPANIES

PROPOSED SEWER SYSTEM

RANCHO COACHELLA VINEYARDS
ENVIRONMENTAL IMPACT REPORT
CITY OF COACHELLA

EXHIBIT 17

THE KEITH COMPANIES

north side of Avenue 56, a six inch force main connecting the existing and proposed pump station, fifteen inch lines along Avenue 56 and Fillmore Street southerly of Avenue 55, an eighteen inch line along Fillmore Street from Avenue 55 to Avenue 54, and a twelve inch line along Avenue 55 and the internal collector road. Portions of this system are oversized so that they may be utilized by other users as adjoining properties are developed.

Based on typical generation rates utilized by the City for residential development, this project would generate a flow of approximately 627,500 gallons of effluent per day. The sewage generated by commercial uses cannot be estimated as these are handled on a case-by-base basis.

In the future, it is anticipated that a new treatment plant and force main will be constructed in the area. An expansion of the treatment plant is planned directly across the storm channel from the existing plant, at the southeast corner of Avenue 54 and the storm channel. The future force main would be constructed parallel to the storm channel along its eastern side from the proposed treatment plant at Avenue 54 to the proposed pump station at Avenue 56. The primary intent of these plans is to provide two separate sewage treatment systems. The existing plant and support infrastructure would serve the area of the City westerly of the storm channel.

The region of the City which is largely undeveloped easterly of the storm channel would be serviced by the new treatment plant and supporting infrastructure system easterly of the storm channel. Financing of these facilities is undetermined at this time, but would be borne by all affected properties.

Rancho Coachella Vineyards proposes to utilize the existing pump station located at Orange Street and Avenue 56. This station is being used approximately 50% of its capacity. The treatment plant is presently using 1.6 MGD of its 3.0 MGD capacity and would be able to sufficiently handle the waste from the Rancho Coachella Vineyards.

A barometer of the current availability of capacity is the existing pump station is active less than half of the time due to low demand. Based on typical generation rates utilized by the City for residential development, this project at full buildout (seven to ten years hence) would generate a flow of approximately 627,500 gallons of affluent per day. At full buildout, the increased flow from the Rancho Coachella Vineyards residential project will not exceed the maximum capacity of the existing sewer treatment plant.

At such time as the capacity at the pump station in Thermal is reached, the developer will be required to build a new pump station along Avenue 56 to carry the waste up the treatment plant. The City plans to expand the existing treatment plant with additional oxidation ponds to the south and a proposed new facility to be built on the east side of the storm channel at a future date.

SOLID WASTE

At buildout, the proposed project is estimated to generate approximately 35,595 pounds of solid waste daily or 5,800 tons annually. The estimated solid waste generation is summarized in Table 10.

Western Waste will provide solid waste pick-up service to the project site and does not anticipate any problems in providing adequate solid waste pick-up service. No impacts on the Company's ability to provide solid waste pick-up service in the area is anticipated.

3.11.3 MITIGATION MEASURES

FIRE PROTECTION

1. The water system for the project area shall be designed to provide sufficient fire flow capacity and pressure.

2. The applicant shall reach an agreement with the City to determine a pro rata share contribution toward the provision of fire protection facilities to serve the site. Such contributions may take the form of dedication of land, provision of fire protection facilities or equipment, or payment of fees.

POLICE PROTECTION

3. Consideration should be given by the City to reservation of space within the municipally designated areas of the project for the purposes of a police substation to serve the project and surrounding areas.

EDUCATIONAL FACILITIES

4. The applicant shall reach an agreement with the Coachella Valley Unified School for the provision of educational facilities to serve the project. Credit against school fees should be considered for any dedication of school sites within the project area.

TABLE 10

ESTIMATED SOLID WASTE GENERATION

LAND USE	GENERATION FACTORS PER DAY	SOLID WASTE LBS/DAY
Residential		
815 SFDU	13 lbs.[1]	10,595
270 MFDU	7 lbs.[1]	3,510
Commercial		
450,846 SF[2] Retail	110 lbs./2,500 SF[1]	19,837
150,282 SF[2] Office	110 lbs./10,000 SF[2]	1,653
	Total	35,595

[1] Western Waste, personal communication
[2] Estimated square footage

5. The applicant shall pay a developer fee per residential square foot and per commercial square foot.

LIBRARIES AND HOSPITALS

No mitigation measures are required.

ENERGY

No mitigation measures are required.

PARKS AND RECREATION

6. Ongoing park maintenance shall be the responsibility of the Coachella Valley Park District.

7. The applicant shall reach an agreement with the City for provision of parks, park maintenance, and design to serve the project. Credit against park fees for dedication of park sites in the project area will be in accordance with a separate development agreement executed by the City and the developer.

PEST CONTROL

8. All plant materials used in the proposed project shall be bought in the Coachella Valley. If any plants are brought in from outside the valley, the Agricultural Commissioner's Office requires that they be notified and that the plants are inspected before they are planted.

9. Since this project is closer to the commercial citrus in the valley than most residential areas, the applicant shall use clean nursery stock in landscaping.

10. The developer shall implement a maintenance program involving vegetation management.

11. The developer shall provide accessibility for mosquito control personnel and equipment to the site for both inspection and treatment.

12. Specific development plans shall incorporate vector prevention guidelines, standards, and checklists developed by the California State Department of Health Services and Environmental Management Branch.

WASTE AND WASTEWATER

13. All water features shall be subject to a mosquito abatement program under the jurisdiction of the Riverside County Health Department.

14. Standard construction practices shall be utilized to minimize soil loss.

15. Drip-irrigation systems shall be utilized where practicable.

16. Landscape maintenance contracts that contain economic disincentives for wasteful irrigation practices shall be utilized.

17. The development and operation of wastewater treatment facilities for the project shall take place under state-certified personnel employed by the City of Coachella and shall comply with guidelines and standards established by the Regional Water Quality Control Board.

18. Water conservation measures shall be implemented in accordance with the State Department of Water Resources for new development to ensure water-efficient plumbing fixtures.

19. Low water-using plants shall be used in landscaping wherever feasible.

20. Plants of similar water uses shall be grouped to reduce over-irrigation of low-water using plants.

21. Information shall be provided to occupants regarding benefits of low-water-using landscaping and sources of additional assistance.

22. Mulch shall be used extensively in all landscaped areas. Mulch applied on top of soil will improve the water-holding capacity of the soil by reducing evaporation and soil compaction.

23. Efficient irrigation systems shall be installed that minimize run-off and evaporation and maximize the water that will reach the plant roots. Drip irrigation, soil moisture sensors and automatic irrigation systems are a few methods of increasing irrigation efficiency.

24. Pervious paving material shall be utilized whenever feasible to reduce surface water run-off and to aid in groundwater recharge.

25. Slopes shall be graded so that run-off or surface water is minimized.

26. The feasibility of using reclaimed wastewater, stored rainwater or gray water for irrigation shall be investigated.

27. The applicant shall reach an agreement with the City to determine the reimbursement plan to the applicant for oversizing costs associated with sewer system.

SOLID WASTE

28. The developer shall provide sufficient access to accommodate the maneuvers of the waste disposal company's trucks.

29. Provisions for trash enclosures for all proposed uses shall be made in conformance with adopted City Standards.

30. The developer shall provide conveniently located trash compactors to service the refuse collection and disposal needs of the project.

31. The developer shall coordinate with Western Waste in the development of additional design criteria.

4.0 SIGNIFICANT UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

The following is a summary of the unavoidable adverse impacts which may be expected to occur upon implementation of the proposed project.

Geology/Soils

- Short-term exposure of underlying soils to increased erosion during grading and construction phases.
- Exposure to seismic hazards due to potential surface rupture of active faults on the property.

Hydrology

- Short-term increased sedimentation potential during grading and construction phases.
- Increased storm runoff volumes and urban pollutants within the project site and through the downstream drainage systems due to construction of buildings, roads and other impervious surfaces.
- Modifications of existing drainage features and flow patterns within the areas proposed for development.

Transportation/Circulation

- Generation of approximately 37,830 vehicle trips per day at full development, with approximately 3,290 p.m. peak hour trips.

Air Quality

- Short-term air quality impacts associated with the construction phases of development (e.g., dust, construction equipment, emissions, etc.).
- Cumulative significant long-term stationary and mobile source air emission increases within the Southeast Desert Air Basin.

Public Service and Utilities

- Increased demands on fire, police protection, schools, parks, solid waste disposal and telephone services; increased consumption of water and energy supplies; and increased wastewater generation/treatment demands.

Energy Resources

- The proposed project will result in a significant increased in the consumption of fossil fuels. This increase will contribute to cumulative demands upon regional energy supplies.

5.0 RELATIONSHIP BETWEEN SHORT-TERM USES OF ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The primary effect of this project is to commit undeveloped rural land to suburban and urban land uses. Conversion to residential neighborhoods, recreational, commercial and public uses will increase the project area's productivity in terms of land efficiency and greater economic return. Though the project would serve to increase the productivity and human use of the land, implementation of the project would incrementally contribute to the permanent loss of undeveloped rural lands and potentially agriculturally soils. However, these soils have become higher in soil alkalinity through past farming and are no longer considered productive.

Advantages to near-term development include greater economic productivity from the lands, providing housing opportunities and employment opportunities in the City of Coachella. Advantages of postponing the development of the site are difficult to analyze since the long-term alternatives for urban uses of the property are largely unpredictable. However, it is likely that a future development proposal for the site would implement uses similar to those presently proposed with similar impacts on the physical environment.

Implementation of the project represents a long-term commitment of the site to residential and other land uses. Approval of the currently proposed project is one of a series of steps prior to development of the site.

Development of the site would result in long-term impacts in contributing an incremental increase in demand for public services in the local area. The project will also contribute to increased traffic generation.

Short-term impacts of development due to construction activities would include localized increases in noise, dust, and vehicular emissions associated with construction vehicles and an increase in erosion and sedimentation to nearby drainage systems. Implementation of mitigation measures will adequately control these potential short-term impacts.

The only immediate short-term benefit of the project would be construction-related employment. A long-term benefit would be provision of additional housing to meet City housing demands and goals as set forth in the City's General Plan, and the economic benefits of the proposed commercial development.

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF ENERGY SUPPLIES AND OTHER RESOURCES SHOULD THE PROJECT BE IMPLEMENTED

Approval of the proposed Specific Plan and related actions will allow the urbanization of 260 acres of undeveloped land. Of this 189 acres will be developed in residential uses, 46 acres will be developed commercial retail uses and 25 acres will be developed in various municipal uses. Mixed-use residential community is a short-term irretrievable commitment of the land. After the 50 to 75-year structural lifespan of the facilities, it may be feasible to redevelop the site for an alternative land use. Any type of future redevelopment presently conceivable will also require irretrievable commitments of energy supplies and other resources. Therefore, development of the proposed project will result in an irreversible and irretrievable commitment of energy supplies and other resources.

Provided below is a summary of the anticipated long-term commitments of resources that may directly or indirectly result from project implementation.

COMMITMENT OF LAND

The development of the study areas will largely constrain the options for future land uses. Urban development of this site will involve irreversible alterations to the natural topography through improvements. Additionally, it is difficult to envision circumstances that would justify demolition of buildings and improvements to facilitate less intensive land uses within the next 50 to 75 years.

OPEN SPACE RESOURCES

The proposed project represents a permanent loss of vacant land, incrementally adding to the region-wide loss of such lands. Project implementation will, therefore, result in an irreversible alteration to the site's aesthetics.

ENERGY RESOURCES

The transformation of undeveloped rural land to an urban community will represent a long-term commitment to a variety of resources. As fossil fuels are the principal sources of energy, it can be stated that the proposed development would incrementally reduce existing supplies of fuels including oil and gasoline. These energy resource demands relate to initial project construction, heating and cooling of buildings, and transportation of people and goods. It has been estimated that ultimate development of the project site will require approximately 17 million kilowatt hours of electricity thereby creating a long-term irreversible commitment to energy resource consumption.

OTHER NATURAL RESOURCES

The construction of the proposed development also would require the commitment or depletion of other non-renewable and slowly renewable resources. These resources include, but are not limited to: lumber and other forest products; sand and gravel; asphalt; petrochemical construction material, steel, copper, lead and other metals; potentially productive agricultural lands; water, etc. An increased commitment of social services and public maintenance services would also be required.

7.0 GROWTH-INDUCING AND CUMULATIVE IMPACTS OF THE PROPOSED PROJECT

HOW THE PROJECT COULD FOSTER GROWTH

Development of the proposed project which includes approximately 1,085 residential units at various densities, 46 acres of commercial uses, and 25 acres of municipal facilities could facilitate growth in the surrounding area for the following reasons. Buildout of the project could lead to escalation in land values, lot sales and development of other subdivisions in the City of Coachella. The construction phase and permanent employment opportunities and direct and indirect economic activity created as a result of the proposed project could result in additional subregional growth. The improvements to sewer, water and other infrastructure which will occur with the build out of the proposed project may accommodate further development in the vicinity if capacities are designed to exceed project requirements significantly, or infrastructure is extended to areas previously unserved.

Approval of the proposed Specific Plan will allow the development of a significant mixed-use residential community in the largely undeveloped east valley area of Coachella. Ultimately, the proposed development will accommodate a total population of approximately 3,716. The project will add 1,085 dwelling units to the City's housing stock. Southern California Association of Government (SCAG) growth forecasts for RSA 53 demonstrate substantially increased growth pressures in this area irrespective of the proposed project.

The project will create an increased demand for municipal and public service including utilities, fire and police protection, which will extend beyond the study area boundaries. The project will provide directly and also increase demands indirectly for market support services (e.g., commercial and business uses), which in turn could stimulate additional growth within Coachella and RSA 53.

Secondary growth inducements, such as the project's influence of surrounding parcels and their ultimate land uses, can be expected. Lands to the north and east are retained in agricultural use, and are so designated at the City's General Plan. These areas are considered "growth sensitive areas." Portions of these lands northwest of the project site and along 50th and 52nd Streets are included in existing agricultural preserves.

Planned manufacturing and industrial uses are directly west of the project site and Fillmore Street. Appropriate edge treatments such as walls, landscaped berms, and setbacks will serve to separate and buffer proposed multi-family residential, commercial, and municipal land uses from planned manufacturing

uses to the west. The project will significantly increase human and economic activity in an area predominantly rural and agricultural in character.

Major roads providing access to the project such as Fillmore Street, 54th and 56th Streets are included in the City of Coachella Circulation Element and are therefore presumed consistent with respective General Plans. To the extent that the widening and extension of these roads may facilitate growth, such growth could be considered previously induced by its inclusion on the adopted Circulation Element.

Extension of a proposed 12-inch water transmission line from an existing line along Polk Street one-mile west of the project site is considered to have growth-inducing potential if capacity beyond that required to serve the project is made available to surrounding lands. The proposed line would be extended through areas designated for industrial and agricultural uses.

The proposed one-half mile sewer line extension from the project site to an existing City of Coachella sewer pump station west of the Coachella Valley Storm Channel would benefit the project and intervening areas designated as industrial and manufacturing on the City of Coachella General Plan.

The location of new development and attendant services almost invariably has a measurable potential to induce growth or create secondary impacts on surrounding lands. In particular, the extension of new sewer lines and roads through these low density areas could have significant growth inducing effects.

CUMULATIVE IMPACTS

The proposed project will result in significant direct and cumulative adverse impacts to public service systems. The proposed project, together with other proposed Specific Plans in the Eastern Coachella area, and additional General Plan growth in the Coachella vicinity could have significant cumulative effects on a number of public services (i.e., police, fire protection, water and sewer service) and energy resources.

The Brandenberg Specific Plan area is located approximately two miles north of the project site. This Specific Plan proposes 1,274 residential units and 54 acres of commercial uses.

The McNaughton Specific Plan area is located approximately two miles northeast of the Rancho Coachella Vineyards Specific Plan site. The McNaughton Specific Plan proposes 8,000 dwelling units, two luxury hotels, three golf courses, a major shopping center, a commercial office center and various recreational features within a 1600 acre site. The proposed project in

conjunction with these other specific plans will create significant demands on virtually all public services and utilities within an East Valley area largely devoid of such services.

The project will have significant effects on the environment in the City of Coachella. These effects are as indicated in the various sections of this report. On a cumulative basis, this project and other past, present and reasonably foreseeable future projects will contribute to the cumulative and degradation of air quality, and traffic conditions and increases in noise and exposure of people to safety hazards (e.g. flood, seismic related).

8.0 ALTERNATIVES TO THE PROPOSED PROJECT

8.1 NO PROJECT ALTERNATIVE

The California Environmental Quality Act requires that all environmental impact reports include a comparative evaluation of the "No Project" alternative. As defined for this project, the no project alternative assumes that the actions currently proposed, including adoption of the specific plan, do not occur.

This alternative assumes that development of the site as currently proposed or otherwise presently allowed is not realized in the future. The site would remain as undeveloped/unimproved open space.

This alternative avoids a broad range of impacts associated with the proposed development as described in this EIR, including drainage modifications; water and wastewater demands; removal of vegetation; loss of habitat and open space; increased traffic, air and noise effects; potential geologic hazards; and demands on public services and utilities. Other disadvantages of this alternative are primarily direct and indirect economic effects on growth in the City of Coachella. In addition to the lack of economic return on the land for the project proponent, this alternative would result in lost opportunities for new housing and affordable housing options, new commercial jobs and potential tax revenues to the City of Coachella and other taxing agencies.

The No Project alternative does not meet the project objectives of the specific plan and does not allow the property owner and project proponent to secure a viable use of the property.

The site would remain under its existing General Plan designation of Agriculture (A). The site would also remain under its existing zoning designations of Residential Estate (R-E), Residential Single-Family (R-S), and Agricultural-Transition (A-T). Under the A-T zoning designation, the City recognizes the site as land suited to eventual development in other uses and zones, pending proper timing for the economical provisions of utilities, major streets, and other facilities. Site characteristics are appropriately adaptable to higher intensity uses than agricultural uses. Features such as convenient site access via SR-86, multiple view amenities, and manageable drainage and topography promote the project's land values as a master planned community. In addition to these features, the project site contains significant amounts of ground salt and alkali in its soils, thereby severely limiting the range and type of agricultural uses on-site.

8.2 PREVIOUS GENERAL PLAN DESIGNATIONS

This alternative assumes development of the site under the previous General Plan designations of General Industrial and Agriculture. Refer to Exhibit 4. Under this scenario, most of the site would be developed as industrial development and the south end would be developed for agricultural uses.

The project site is surrounded by manufacturing areas to the west and northwest which have public services and utilities more readily available to them. Under the existing General Plan, there already are sufficient manufacturing and industrial uses directly west and northwest of the project site. Therefore, manufacturing and industrial uses are likely to be saturated under this alternative.

Development under this alternative does not meet the project objectives of the specific plan and does not allow the property owner and project proponent to secure a viable use of the property.

8.3 REDUCED DENSITY ALTERNATIVE

The Reduced Density alternative would retain the basic design concept, but reduce densities and intensities by 50 percent. This scenario assures development of the site with an overall gross density of 2.7 dwelling units per acre which is a 36 percent decrease from what is being proposed. The site would experience a 50 percent reduction in dwelling units and general commercial space. Specifically, this alternative would yield 540 du's and ± 200 gross residential acres, and approximately 36 acres of general commercial and municipal uses.

This concept plan would include 10,000 square foot or up to 20,000 square foot lots along Avenue 54 and along the eastern boundary of the project site. This residential configuration would allow for a more compatible land use transition to the nearby agricultural uses.

The Reduced Density alternative would increase on-site open space (i.e. natural or landscaped) by as much as 130 acres.

Physical environmental impacts to biological resources, traffic, air, noise, hydrology, and demands on public services and utilities would be reduced by as much as 40 to 50 percent.

This alternative would have a negative effect on socioeconomic characteristics in the City of Coachella. Socioeconomic benefits would be significantly reduced with probable losses in affordable housing options and employment. These negative effects would also result in lost economic benefits to the City of Coachella.

Under this scenario, the project may not be able to support infrastructure costs to sewer, circulation, and other utilities, due to reduced densities.

8.4 ALTERNATIVE LOCATION

Under this alternative, the proposed master planned community would be developed at another location. However, no other sites are apparently viable for such a project except for the Brandenburg project site and the McNaughton project site. The intent of the proposed Rancho Coachella Vineyards project is to create commercial and multi-family uses which serve as a transitional from the adjacent use of Heavy Manufacturing to the proposed single-family residential and public spaces. Also, the proposed project presently has excellent access from existing City and County Roads. This alternative would create impacts similar to the proposed project.

Development under this scenario is contrary to the project proponent's desire to produce a self-contained community that provides a transition from manufacturing uses on the east to the urban uses and densities proposed. in addition, this scenario does not make use of the excellent access at the proposed project site.

9.0 ORGANIZATIONS AND PERSONS CONSULTED

The Keith Companies

Roger Mobley, AICP	Principal-In-Charge
Tom Holm, AICP	Project Director
Wendy Matsuda	Assistant Project Manager
Larry Popp	Senior Planner
Bret McCulley	Project Engineer
Molly Kales	Planner
Dave Stearn	Planner
Lisa Picard	Graphics Technician
Vicki VanDelinder	Word Processing
Sandy Mathias	Word Processing
Annie Macias	Word Processing

Kunzman Associates - Traffic

John Kain, AICP	Principal

Leighton and Associates - Geology

Brent Inghram

The Lusardi Construction Company

Robert Napoli

PUBLIC AGENCIES

Riverside County Parks Department

George Balteria	Assistant Park Planner
Mark Brower	

County of Riverside Sheriff's Department

John Jones	Chief

Desert Sands Unified School District

Lucia Moran	Assistant

Coachella Valley Water District

Tom Levy	General Manager

Regional Water Quality Control Board

Shasi Kumar	Staff Engineer

Coachella Valley Community College District

David A. George	President

General Telephone

Cruse Gomez	Customer Service Superintendent

Imperial Irrigation District

Kenneth S. Noller	Assistant Manager

Riverside County Superintendent of Schools

Dale S. Holmes	County Superintendent

Riverside County Flood Control & Water Conservation District

Kenneth L. Edwards	Chief Engineer

Coachella Fire Department

John Rios	Fire Chief

Coachella Valley Unified School District

Dennis Learn	Assistant Superintendent

Southern California Gas Company

Paul Gudmundson	Technical Supervisor

Southern California Water Company

Ray Berdusco	Public Works Supervisor

Riverside County Citrus Pest Control

Larry Houser	Manager

Coachella Sanitation District

Joe DeLariva

Western Waste

Bob Nelson
Mr. Modeni

10.0 REFERENCES

Air Quality Handbook for EIR's. South Coast Air Quality Management District, 1983.

CEQA: The California Environmental Quality Act - Law and Guidelines. OPR, June 1986.

City of Coachella General Plan. January 1987.

City of Coachella Zoning Ordinance. Ordinance Number 378, updated July 1988.

General Plan Update Environmental Impact Report for the City of Coachella. Prepared by Sanchez Talarico Associates, Inc., July 1986.

Geotechnical Investigation Proposed Mini-Storage Development, North of Avenue 54 and West of Highway 111, Coachella, CA. Prepared by Leighton and Associates, October 1988.

Lusardi Specific Plan Traffic Study. Prepared by Kunzman Associates, October 1988.

Rancho Coachella Project Water and Sewer Concept Plans. Prepared by The Keith Companies, September 1988.

Rancho La Quinta Specific Plan Environmental Impact Report. Prepared by WESTEC Services, Inc., 1987.

SCAG Growth Forecast. SCAG, 1985

Summary of Air Quality in California's South Coast Air Basin. SCAQMD, 1982.

APPENDICES

APPENDIX A

PUBLIC PARTICIPATION AND REVIEW

NOTICE OF PREPARATION

TO: Betty Shaffer, Executive Director
Coachella Chamber of Commerce
P.O. Box 126
Coachella, CA 92236

FROM: City of Coachella Planning Dept.
1515 Sixth Street
Coachella, CA 92236

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report

The Coachella Community Develop. Dept. will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the probable environmental effects are contained in the attached materials. A copy of the Initial Study X is, ___ is not, attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to Richard P. Douglass, Associate Planner at the address shown above. We will need the name for a contact person in your agency.

Project Title: Specific Plan 88-2

Project Applicant, if any: Rancho Coachella Properties, Inc.

DATE 5-10-88

Signature Richard P. Douglass

Title Associate Planner

Telephone (619) 398-3102

Reference: California Administrative Code, Title 14, Sections 15082(a), 15103, 15375.

ENVIRONMENTAL CHECKLIST FORM

I. BACKGROUND

1. Name of Proponent: RANCHO COACHELLA PROPERTIES, INC.

2. Address and phone number of Proponent:
P.O. BOX 0936

COACHELLA, CA 92236 (619) 398-3616

3. Date of checklist submitted: MAY 2, 1988

4. Agency requiring checklist: LEAD AGENCY

5. Name of proposal, if applicable: A SPECIFIC PLAN OF 260 ACRES
COACHELLA FILE NO. SPECIFIC PLAN 88-2

II. ENVIRONMENTAL IMPACT

(Explanations of all "yes" and "maybe" answers are required on attached sheets.)

	YES	MAYBE	NO
1. Earth: Will the proposal result in:			
a. Unstable earth conditions or in changes geologic substructures?	___	X	___
b. Disruptions, displacements, compaction or overcovering of the soil?	X	___	___
c. Change in topography or ground surface relief features?	X	___	___
d. The destruction, covering or modification of any unique geologic or physical features?	___	___	X
e. Any increase in wind or water erosion of soils, either on or off the site?	___	___	X
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	___	___	X
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, ground failure, or similar hazards?	X	___	___

	YES	MAYBE	NO
2. Air: Will the proposal result in:			
a. Substantial air emissions or deterioration of ambient air quality?	___	X	___
b. The creation of objectionable ordors:	___	X	___
c. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?	___	___	X
3. Water: Will the proposal result in:			
a. Changes in currents, or the course or direction of water movements, in either marine or fresh water?	___	___	X
b. Changes in absorption rates, drainage pattern, or the rate and amount of surface water runoff?	X	___	___
c. Alterations to the course of flow of flood water?	___	X	___
d. Change in the amount of surface water in any water body?	___	___	X
e. Discharge into surface waters, or in any alteration of surface water quality, including, but not limited to temperature, dissolved oxygen or turbidity?	___	___	X
f. Alteration of the direction or rate of flow of ground waters?	___	___	X
g. Change in the quantity of ground waters either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	___	X	___
h. Substantial reduction in the amount of water other-wise available for public water supplies?	___	___	X
i. Exposure of people or property to water related hazards such as flooding or tidal waves?	___	___	X

	YES	MAYBE	NO
4. Plant Life: Will the proposal result in:			
a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants)?	___	___	X
b. Reduction of the numbers of any unique, rare or endangered species of plants?	___	___	X
c. Introduction of new species of plants into an area or in a barrier to the normal replenishment of existing species?	X	___	___
d. Reduction in acreage of anyagricultural crop?	___	___	X
5. Animal Life: Will the proposal result in:			
a. Change in the diversity of species, or numbers of any species of animals(birds, land animals including reptiles, fish and snellflish, benthic organisms, insects or microfauna)?	___	___	X
b. Reduction of the numbers of any unique, rare or endangered species of animals?	___	___	X
c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	___	___	X
d. Deterioration to existing fish wildlife habitat?	___	___	X
6. Noise: Will the proposal result in:			
a. Increases in existing noise levels?	X	___	___
b. Exposure of people to severe noise levels?	___	___	X
7. Light and Glare: Will the proposal produce new light or glare?	X	___	___
8. Land Use: Will the proposal result in a substantial alteration of the present or planned land use of an area?	X	___	___
9. Natural Resources: Will the proposal result in:			
a. Increase in the rate of use of any natural resources?	___	___	X

	YES	MAYBE	NO
b. Substantial depletion of any nonrenewable natural resource?			X
10. Risk of Upset: Does the proposal involve a risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiations) in event of an accident or upset conditions?			X
11. Population: Will the proposal alter the location, distribution, density, or growth rate of the human population of an area?	X		
12. Housing: Will the proposal affect existing or create a demand for additional housing:	X		
13. Transportation/Circulation: Will the proposal result in:			
a. Generation of substantial additional vehicular movements?	X		
b. Effects on existing parking facilities, or demand for new parking?	X		
c. Substantial impact upon existing transportation systems?	X		
d. Alterations to present patterns of circulation or movement of people and/or goods?	X		
e. Alterations to waterborne, rail or air traffic?	X		
f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrains?	X		
14. Public Services: Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:			
a. Fire protection?	X		
b. Police protection?	X		
c. Schools?	X		
d. Parks or other recreational facilities?	X		

	YES	MAYBE	NO
e. Maintenance of public facilities, including roads?	X		
f. Other governmental services?	X		
15. Energy: Will the proposal result in:			
a. Use of substantial amounts of fuel or energy?			X
b. Substantial increase in demand upon required the development of new sources of energy?			X
16. Utilities: Will the proposal result in a need for new systems, or substantial alteration to the following utilities:			
a. Power or natural gas?	X		
b. Communications systems?	X		
c. Water?	X		
d. Sewer or septic tanks?	X		
e. Storm water drainage:	X		
f. Solid waste and disposal?	X		
17. Human Health: Will the proposal result in:			
a. Creation of any health hazard or potential health hazard (excluding mental health)?			X
b. Exposure of people to potential health hazards?		X	
18. Aesthetics: Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?			X
19. Recreation: Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	X		
20. Archeological/Historical: Will the proposal result in an alteration of a significant archeological or historical site, structure, object or building?			X

	YES	MAYBE	NO
21. Mandatory Findings of Significance:			
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wild life species, cause a fish or wildlife population to drop below self sustaining levels, threaten to elimizate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or pre-history?	___	___	X
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (a short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future).	X	___	___
c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant)?	X	___	___
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	___	___	X

III. DISCUSSION OF ENVIRONMENTAL EVALUATION AND PROPOSED MITIGATION MEASURES:

IV. DETERMINATION
(To be completed by the Lead Agency)

On the basis of this initial evaluation:

/ / I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

/ / I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION WILL BE PREPARED.

/X/ I find the proposed project MAY have as significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

DATE: 5-2-88

Richard P. Doyle
Signature

FOR: LEAD AGENCY

III. DISCUSSION OF ENVIRONMENTAL EVALUATION AND PROPOSED MITIGATION MEASURES

1. b. Development of the project would involve the sculpting/grading of soils to facilitate proper drainage and construction of facilities to handle same. As with the construction of streets, this work would be done to accepted engineering standards.

   c. Changes in the topography and surface relief features would occur due to the development discussed in 1.b. above.

   g. The project site is largely uninhabited at present. Build out would entail significant population increases. Since the site is within an active seismic zone, measures addressing design and preparedness for earthquakes will need to be presented.

2. a. Long term development will result in numerous automobile trips into and out of the project area. Exhaust emissions will increase although not to a level probable to result in a substantial deterioration of air quality.

   b. Project development would yield a significant increase in population to the project area and to the city at large. Providing for sewage treatment in the vicinity will be an issue. Possible plans call for an increase in the number of sewage treatment ponds near the present location of the Coachella Sanitary District facilities which is approximately one mile from the westerly boundary of the project area. Prevailing wind patterns may contribute to odors being present at the project location.

3. b. Changes in surface water runoff will occur due to project engineering to control same. Such structures will be constructed to accepted engineering standards.

   c. The project area is subject to flooding in the event of extreme weather conditions. Onsite facilities will need to address and mitigate, where required, conditions which could be at risk in such and event.

   g. Eventual project buildout would yield an increase in population to a degree that would have an effect on the withdrawal of ground waters from the region. Such withdrawals are in all probability insignificant due to replenishment of ground water from a variety of sources.

4. c. The existing project area is mainly fallow and under-utilized agricultural land. Significant amounts of ground salt and alkali are present in the soils. Project development will involve significant landscaping and park development. Introduction of numerous new species of plants is probable. Attention should be given to plants which are tolerant to the levels of ground salt. Additional measures should be introduced to eliminate or mitigate salt and alkali to facilitate successful long term landscape health and maintenance.

6. a. Project development and accompanying increases in automobile traffic will lead to increases in noise levels. Specific site mitigation measures will need to be incorporated to reduce same.

7. Project development will yield numerous structures with potential for glare. Additionally street development and structures will produce new light sources. Each will be addressed and mitigated through architectural design.

8. The present land uses are transitional agricultural uses and various designations of residential land use. The specific plan will designate new specific land uses and site development standards for clearly delineated areas.

11. The development of the project would introduce significant numbers of new population to the area.

12. The development will create a wide variety of new housing stock and will contribute to commercial growth thereby generating employment opportunities and the need for new housing.

13.a. The increase in population to the area will yield significant numbers of automobile (vehicle) trips/movements.

b. Site and specific development design will be required to provide parking areas appropriate for the type of use.

c. The large numbers of new residents/workers to the project area will impact the existing transportation system which is largely designed for rural use. Upgrades to the Coachella General Plan Circulation Element are proposed, including the re-designation of

local streets to arterial designs. Other impacts to be considered are the design of the crossing bridge at Avenue 56 and the Coachella Valley Storm Channel and the signalized intersection at Avenue 56 and Hwy. 111. Also to be considered is an application to create an at-grade railroad crossing at Avenue 54 and Hwy. 111. Lastly, it is anticipated that the extension to Hwy. 86 will yield an offramp in the vicinity of Avenue 56.

d. See above.

e. The Southern Pacific Railroad shall be consulted on the application to construct an at-grade railroad crossing at Ave. 54.

f. The major transportation alterations detailed above are necessitated due to the significant increase in the population to the project area. A corresponding increase in hazards to pedestrians, motor vehicles and bicyclists can be expected.

14.a. Fire protection will need to be borne by project oriented facilities which shall be provided by the developer as part of the specific plan.

b. Police protection will also be provided by a sub-station facility.

c. A school site shall be provided as part of the specific plan.

d. A park and recreational complex will be provided as part of the specific plan.

e. The alterations/upgrading of the roadways and other public facilities will require a corresponding increase in city staff to maintain and service such alterations and developments.

f. Other governmental services will increase based upon the demand generated by the proposed alterations and developments.

16.a. Coordination with the appropriate power and natural gas company will be required to provide services appropriate to the proposed project as well as to other projects which may be stimulated by this development.

16.b. Coordination with the appropriate communication will be required to provide services appropriate to the proposed project as well as to other projects which may be stimulated by this development.

c. There are conflicts of jurisdiction between the Coachella Valley Water District and The City of Coachella Water District within the overall project area. A resolution to who will provide service must be addressed. A master water plan for the area will be required as part of the specific plan. Appropriate special studies on the amount of water required will be provided. Impacts on city facilities at build out will be required to be presented.

d. A master sewerage plan for the area will be required as part of the specific plan. Appropriate special studies on the amount of sewerage generated will be required. Impacts on city facilities at build out and recommendations on subsequent additional will also be required to be presented.

e. A master storm water drainage plan will be required.

f. Impacts on existing landfills for solid waste and disposal will be required. The specific plan will provide a report on the method of waste collection and the purveyor of same.

17.b. All of the above must be adequately addressed in order to to minimize exposure of people to potential health hazards.

19. The project will involve substantial numbers of people in need of recreational facilities. Recreational facilities and opportunities shall be needed to provide a quality living environment.

21.b. The project will have the effect of bringing significant increases in services, facilities and structures into an area which is currently relatively remote and rural. The cumulative impact on the sub-region can be termed significant. Further, since the provision of these facilities can be viewed as enabling further future development, the long term impact is significantly above what is the current character, zoning and general plan designation of the project area.

21.c. The project will have impacts on the entire range of municipal services. Additional impacts will occur on the existing transportation system. Parks and recreation and public safety will also be issues which will need to have impacts assessed and mitigated.

T E OF CALIFORNIA—OFFICE OF THE GOVERNOR GEORGE DEUKMEJIAN, Governor

OFFICE OF PLANNING AND RESEARCH
4 TENTH STREET
A RAMENTO, CA 95814

DATE: May 20, 1988

TO: Reviewing Agencies

RE: The City of Coachella Community Development Department's NOP for Specific Plan 88-2
SCH# 88051622

Attached for your comment is the Coachella Community Development Department's Notice of Preparation of a draft Environmental Impact Report (EIR) for the Specific Plan 88-2.

Responsible agencies must transmit their concerns and comments on the scope and content of the EIR, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Richard P. Douglas
Coachella Community Development
1515 Sixth Street
Coachella, CA 92236

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call John Keene at 916/445-0613.

Sincerely,

David C. Nunenkamp
Chief
Office of Permit Assistance

Attachments

cc: Richard P. Douglas

88051622

CM#: _____

'S': Sent by Lead - 'X': Sent by SCH

Bob Fletcher
Air Resources Board
1102 Q Street
Sacramento, CA 95814
916/322-8267

Barbara Kierbow
Dept. of Boating & Waterways
1629 S Street
Sacramento, CA 95814
916/445-6281

Gary L. Holloway
California Coastal Commission
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/543-8555

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California Energy Commission
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916/324-3231

Sandy Hesnard
Caltrans - Division of Aeronautics
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916/324-0761

Ron Helgeson
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916/445-5570

Dennis O'Bryant
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1416 Ninth Street, Room 1326-2
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- Div. of Mines and Geology
- Div. of Oil and Gas
- Land Resources Protect. Unit

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Douglas Wickizer
Dept. of Forestry
1416 Ninth Street, Room 1516-2
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James Margrove
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Arlene Chanos
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Sgt. Jim Weddell
California Highway Patrol
Long Range Planning Section
Planning and Analysis Division
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916/445-1981

William A. Johnson
Native American Heritage Comm.
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Mike Doyle
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Sacramento, CA 94296-0001
916/324-6421

George Hersh
Public Utilities Commission
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San Francisco, CA 94102
415/557-1375 (8-597)

William P. Vaughn, Jr.
Public Works Board
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916/445-5332

Mel Schwartz
Reclamation Board
1416 Ninth Street Room 204-8
Sacramento, CA 95814
916/445-2458

Norris Milliken
S.F. Bay Conservation & Dev't. Comm.
30 Van Ness Avenue, Room 2011
San Francisco, CA 94102
415/557-3686

Mike Leach
Calif. Waste Management Board
1020 Ninth Street, Room 300
Sacramento, CA 95814
916/322-2674

Ted Fukushima
State Lands Commission
1807 - 13th Street
Sacramento, CA 95814
916/322-7813

Nadell Gayou
Dept. of Water Resources
1416 Ninth Street, Room 215-A
Sacramento, CA 95814
916/445-7416

Reed Holderman
State Coastal Conservancy
1330 Broadway, Suite 1100
Oakland, CA 94612

Department of Transportation
District Contacts

Jerry Haynes
Caltrans, District 1
1656 Union Street
Eureka, CA 95501
707/445-6320

Michelle Gallagher
Caltrans, District 2
1657 Riverside Drive
Redding, CA 96001
916/225-3259

Brian J. Smith
Caltrans, District 3
703 B Street
Marysville, CA 95901
916/741-4277

Gary Adams
Caltrans, District 4
P.O. Box 7310
San Francisco, CA 94120
415/557-8371

Jerry Laumer
Caltrans, District 5
P.O. Box 8114
San Luis Obispo, CA 93403-8114
805/549-3161

Nathan Smith
Caltrans, District 6
P.O. Box 12616
Fresno, CA 93778
209/488-4088

Wayne Ballentine
Caltrans, District 7
120 South Spring Street
Los Angeles, CA 90012
213/620-5335

Guy Vishal
Caltrans, District 8
247 West Third Street
San Bernardino, CA 92403
714/383-4557

Tom Dayak
Caltrans, District 9
500 South Main Street
Bishop, CA 94514
619/873-8411

Terri Barrie
Caltrans, District 10
P.O. Box 2048
Stockton, CA 95201
209/948-3687

Jim Cheshire
Caltrans, District 11
P.O. Box 85406
2829 Juan Street
San Diego, CA 92138-5406
714/237-6755

SOUTH COAST AQMD
9150 FLAIR DRIVE
EL MONTE, CA 91731

Fish and Game - Regional Offices

A. Naylor, Regional Manager
Department of Fish and Game
601 Locust
Redding, CA 96001
916/225-2300

Jim Messersmith, Regional Manager
Department of Fish & Game
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670
916/355-0922

B. Hunter, Regional Manager
Department of Fish and Game
P.O. Box 47
Yountville, CA 94599
707/944-2011

G. Nokes, Regional Manager
Department of Fish and Game
1234 East Shaw Avenue
Fresno, CA 93710
209/222-3761

Fred A. Worthley,Jr., Reg. Manager
Department of Fish and Game
245 West Broadway, Suite 350
Long Beach, CA 90802
213/590-5113

Rolf E. Mall
Marine Resources Region
245 West Broadway, Suite 350
Long Beach, CA 90802
213/590-5155

State Water Resources Control Board

Joan Jurancich
State Water Resources Control Board
Division of Clean Water Grants
P.O. Box 100
Sacramento, CA 95801
916/322-3413

Ed Anton
State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95801
916/445-9552

Dave Beringer
State Water Resources Control Board
Delta Unit
P.O. Box 2000
Sacramento, CA 95810
916/322-9870

Mike Falkenstein
State Water Resources Control Board
Division of Water Rights
901 P Street
Sacramento, CA 95814
916/324-5716

OTHER: _____

Regional Quality Control Boards

NORTH COAST REGION (1)
1440 Guerneville Rd.
Santa Rosa, CA 95401
707/576-2220

SAN FRANCISCO BAY REGION (2)
1111 Jackson Street, Room 6000
Oakland, CA 94607
415/464-1255

CENTRAL COAST REGION (3)
1102-A Laurel Lane
San Luis Obispo, CA 93401
805/549-3147

LOS ANGELES REGION (4)
107 South Broadway, Room 4027
Los Angeles, CA 90012
213/620-4460

CENTRAL VALLEY REGION (5)
3443 Routier Road
Sacramento, CA 95827-3098
916/361-5600

Fresno Branch Office
3374 East Shields Avenue, Room 18
Fresno, CA 93726
209/445-5116

Redding Branch Office
100 East Cypress Avenue
Redding, CA 96002
916/225-2045

LAHONTAN REGION (6)
2092 Lake Tahoe Boulevard
P.O. Box 9428
South Lake Tahoe, CA 95731
916/544-3481

Victorville Branch Office
15371 Bonanza Road
Victorville, CA 92392-2494
619/245-6583

COLORADO RIVER BASIN REGION (7)
73-271 Highway 111, Suite 21
Palm Desert, CA 92260
619/346-7491

SANTA ANA REGION (8)
6809 Indiana Avenue, Suite 200
Riverside, CA 92506
714/782-4130

SAN DIEGO REGION (9)
9771 Clairemont Mesa Blvd., Suite B
San Diego, CA 92124-1331
619/265-5114

NOTICE OF PREPARATION LIST FOR COACHELLA VALLEY

Ralph Luchs
Administrative Superintendent
Riverside County Environmental Health
3575 11th Street
Riverside, CA 92502
787-6543

E. Leon Spaugy
Agricultural Commissioner
Riverside County Agricultural Commission
4080 Lemon Street, Room 19
Riverside, CA 92501
787-2561

George Balteria
Assistant Park Planner
Riverside County Parks Department
P.O. Box 3507
Riverside, CA 92519
787-2551

Cynthia Crotinger
Deputy Planning Director
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501
787-2331

LeRoy D. Smoot
Road Commissioner & County Surveyor
County of Riverside
P.O. Box 1090
Riverside, CA 92502
787-6554

Bernard J. Clark, Sheriff
Sheriff Department
County of Riverside
4050 Main St., P.O. Box 512
Riverside, CA 92502
787-2444

Gerald A. Maloney
Clerk of the Board
Riverside County Board of Supervisors
4080 Lemon St.
14th Floor, Administrative Center
Riverside, CA 92501
787-2717

Dr. Don Panny
County Superintendent
Riverside County Superintendent of Schools
P.O. Box 868
Riverside, CA 92502
788-6530

Kenneth L. Edwards
Chief Engineer
Riverside County Flood Control
& Water Conservation District
1995 Market St., P.O, Box 1033
Riverside, CA 92502-1033
737-2015

Villa Vargas
Fire Inspector
Coachella Fire Marshall
1377 6th Street
Coachella, CA 92236
(619) 398-8895

Betty Shaffer
Executive Director
Coachella Chamber of Commerce
P.O. Box 126
Coachella, CA 92236
(619) 398-5111

Mayor ~~Yolanda Coba~~ Frances Duran
Coachella City Council
1515 6th Street
Coachella, CA 92236
(619) 398-6131

Dennis Learn
Assistant Superintendent of Business
Coachella Valley Unified School District
P.O. Box 847
Thermal, CA 92274
(619) 399-5137

Richard Beck
Facilities Planner
Desert Sands Unified School District
82-871 Highway 111
Indio, CA 92201
(619) 347-8631

~~Lowell O. Weeks~~ ~~Thomas~~ Tom Levy
General Manager-Chief Engineer
Coachella Valley Water District
P.O. Box 1058
Coachella, CA 92236
(619) 398-2651

Sam Aslan
District Conservationist
U.S. Department of Agriculture
85-180 Requa Avenue, Suite 3
Indio, CA 92201
(619) 347-7658

Jack Saluja
Staff Engineer
Regional Water Quality Control Board
73271 Highway 111, Suite 21
Palm Desert, CA 92260
(619) 346-7491

Fred A. Worthley, Jr.
Regional Manager
Department of Fish & Game
245 W. Broadway, Suite 350
Long Beach, CA 90802
(213) 990-5132

Bill Dotson
District Director
Caltrans District 11
2829 Juan Street
San Diego, CA 92110
686-3646 or 383-4229

Lester Cleaveland
Executive Director
Coachella Valley Association of Governments
74133 El Paseo, Suite 4
Palm Desert, CA 92260
(619) 346-1127

Dr. F.D. Stout
Superintendent
Coachella Valley Community College District
43500 Monterey
Palm Desert, CA 92660
(619) 346-8041

John Richard
Supervisor
Coachella Valley Public Cemetary District
82925 Ave. 52
Coachella, CA 92236
(619) 398-3221

Michael Wargo
District Manager
Coachella Valley Mosquito Abatement District
83733 Ave 55
Thermal, CA 92274
(619) 398-0119

Leslie Cone
Area Manager
U.S. Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507
351-6663

Steve Fine
Chief, Environmental Resources Branch
U.S. Army Corps of Engineers
P.O. Box 2711
Los Angeles, CA 90053-2325
(213) 894-5300

Mr. Riggs
Customer Service Superintendent
General Telephone
82901 Bliss Avenue
Indio, CA 92201
(619) 347-2711

K.S. Noller
General Superintendent
Imperial Irrigation District
P.O. Box 248
Coachella, CA 92236
(619) 398-8683

Ray Sharp
District Manager
Southern California Gas Company
211 N. Sunrise Way
Palm Springs, CA 92262
(619) 369-8988

Ray Berdusco
Public Works Supervisor
Southern California Water Company
1515 6th Street
Coachella, CA 92236
(619) 398-2702

Larry Howser
Manager
Citrus Pest Control District No. 2
Vector Control
46-209 Oasis Street, Room 14
Indio, CA 92201

Desert Beautiful
73970 El Paseo
Palm Desert, CA 92260
(619) 346-2217

Bill Northrup
Director of Planning and Development
City of Indio
P.O. Box Drawer 1788
Indio, CA 92202

Thermal Chamber of Commerce
~~Vic Higgins~~, ~~President~~ John Dicker
P.O. Box 284
Thermal, CA 92274
(619) 399-5567 (Bob Shephard, V. President)

Southern Coachella Valley Community Ser... Distr...

Supervisor Patricia Larson
Riverside County Board of Supervisors
4080 Lemon Street
14th Floor, Administrative Center
Riverside, CA 92501
787-2717

Ms. Carmen Zacueta
Community Development
Coachella Sanitation District
City of Coachella
1515 6th Street
Coachella, CA 92236
(619) 398-3302 or 1102

Ms. Flora Russel
General Manager
Valley Sanitation District
45-500 Van Buren
Indio, CA 92201
(619) 347-2356

Tom W. Dowell
Superintendent
Bureau of Indian Affairs
Southern California Agency
3600 Lime Street, Suite 722
Riverside, CA 92501
(714) 351-6630

Dr. Allen Muth
Coachella Valley Ecological Reserve Foundation
P.O. Box 1738
Palm Desert, CA 92261
(619) 341-3655

Warren Bradshaw
Check ~~Stag~~ and get new name.

~~Lawrence L. Stevens~~
Community Development Director
City of La Quinta
P.O. Box 1504
La Quinta, CA 92253
(619) 564-2246

Glen Stober
State Clearinghouse
Office of Planning & Research
1400 Tenth Street, Room 121
Sacramento, CA 95814
(916) 445-0613

City of La Quinta

78-105 CALLE ESTADO - LA QUINTA, CALIFORNIA 92253 - (619) 564-2246

May 26, 1988

Mr. Richard P. Douglas, Associate Planner
City of Coachella Planning Department
1515 Sixth Street
Coachella, CA 92236

Subject: Specific Plan 88-2

Dear Mr. Douglas:

The City of La Quinta Staff have no comments on the above-noted project.

Thank you for providing the City of La Quinta with the opportunity to comment on the project.

For your records, please send future notices to:

Mr. Murrel Crump, Planning Director
City of La Quinta
Planning and Development Department
P. O. Box 1504
La Quinta, CA 92253

Very truly yours,

MURREL CRUMP
PLANNING DIRECTOR

Jerry Herman
Principal Planner

JH:bja

MAILING ADDRESS - P.O. BOX 1504 - LA QUINTA, CALIFORNIA 92253

Coachella
Chamber of Commerce
1258 6TH STREET / P. O. BOX 126 / COACHELLA, CALIFORNIA 92236

May 18, 1988

Mr. Richard Douglass
Associate Planner
City of Coachella
1515 Sixth St.
Coachella, Ca. 92236

Dear Richard;

The Board of Directors of the Coachella Chamber of Commerce have studied the environmental information on Coachella File No. Specific Plan 88-2 and concur with the findings of the lead agency, Coachella Community Development Dept.

Sincerely,

Betty Shaffer
Executive Director

BS/bc

RIVERSIDE COUNTY
PLANNING DEPARTMENT

June 1, 1988
PFC:10132DO

Mr. Richard P. Douglas, Associate Planner
City of Coachella Planning Department
1515 Sixth Street
Coachella, CA 92236

RE: Notice of Preparation for EIR on Specific Plan 88-2; Rancho Coachella Properties, Inc.

Dear Mr. Douglas:

Thank you for providing the Riverside County Planning Department with a copy of your department's Notice of Preparation for this EIR. The Specific Plan, including the areas of both proposed and possible land uses, is bounded by FillmoreStreet on the west and Pierce Street on the east, and by Avenue 54 on the north and Airport Boulevard on the south.

The adjacent areas within Riverside County's jurisdiction include land to the north and south of the proposed specific plan. This land is designated "Agriculture" on the Eastern Coachella Valley Community Plan, which limits the parcel size to a minimum of 10 acres. The EIR should address the compatibility between the proposed land uses and the existing agricultural uses. A 20 acre parcel, located south of Airport Boulevard in the E ½, NW ¼, NW ¼, of Section 23, T.6 S., R.8 E., is designated as "Residential 3B," requiring a minimum lot size of 2½ acres. The zoning of the unincorporated county land in question includes A-1-20 (Light Agriculture with a 20 acre minimum lot size), A-2-20 (Heavy Agriculture with a minimum 20 acre lot size), and R-A-20 (Residential Agricultural with a 20 acre minimum parcel size).

The traffic and circulation impacts of this project should be fully explored. I would encourage a regional viewpoint to be taken in this matter with special attention to the SCAG Coachella Valley Area Transportation Study (December 1987). The project applicant and the City of Coachella should coordinate with the Riverside County Road Department, particularly with Mr. Ed Studor, Transportation Planner at (714) 787-2519 and Mr. Warren Stallard, Desert Office Manager at (619) 342-8267.

The following items included on the Initial Study/Environmental Checklist form should be added for further consideration and should be addressed in the EIR:

4080 LEMON STREET, 9TH FLOOR
RIVERSIDE, CALIFORNIA 92501
(714) 787-6181

46-209 OASIS STREET, ROOM 304
INDIO, CALIFORNIA 92201
(619) 342-8277

II. 1.e. Grading of the project site could create a reduction of air quality in the area due to an increase in dust and blowsand emissions created by a lack of or reduction of groundcover/vegetation. The project blowsand emissions should be quantified. Mitigation measures should include, but not be limited to, irrigation of the site during and after construction, planting of landscaping/ground cover, and the provision of windbreaks, windrows, and/or fencing.

II. 2.c. Changing the surface characteristics of the land from soil and vegetation to concrete, asphalt, and structures may significantly alter local climatic conditions such as patterns of air movement and air temperature, both of which can cause changes in the relative humidity/moisture content of the air.

II. 4.a and c. The development of streets and structure must reduce and change the acreage of the agricultural crops and the diversity and number of plant species in the area.

II. 15.a. Such a large project will undoubtedly use substantial additional amounts of fuel or energy. The EIR should quantify and discuss in context of state and regional plans the project's use of fuel and energy.

Please forward a copy of the draft EIR to the Riverside County Planning Department's Desert Office in Indio when it becomes available and any notice of hearing for the project applications themselves. Please advise this office if special arrangements must be made in advance for notification of project public hearings. Should you or the applicant request further information, please contact Mr. Matthew Blinstrub at (619) 342-8277.

Sincerely,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Roger S. Streeter, Planning Director

Paul F. Clark, Supervising Planner

PFC:br
cc: Warren Stallard, Road Department
Olivia Gutierrez, Supervising Planner

Dale S. Holmes, Superintendent

RIVERSIDE COUNTY OFFICE OF EDUCATION

3939 Thirteenth Street • P.O. Box 868 • Riverside, California 92502
Telephone: (714) 788-6670

May 25, 1988

City of Coachella Planning Dept.
1515 Sixth Street
Attn: Richard P. Douglass, Associate Planner
Coachella, California 92236

Dear Mr. Douglass:

We have recently received correspondence from your office addressed to Dr. Don Panny, as Riverside County Superintendent of Schools. I thought you would like to know that Dr. Kenny retired in January of 1987, and that Dr. Dale S. Holmes is now in his second year as Riverside County Superintendent of Schools. Dr. Holmes' mail may be sent to the same address: P.O. Box 868, Riverside, CA 92502.

For your information, I have forwarded your correspondence to Dr. Holmes.

Sincerely,

Deanna L. Andrews

Deanna L. Andrews
Secretary to the Superintendent

Encl.

NOTICE OF PREPARATION

TO: Dr. Don Panny, Co. Superintendent
Riverside Co. Super. of Schools
P.O. Box 868
Riverside, CA 92502

FROM: City of Coachella Planning Dept
1515 Sixth Street
Coachella, CA 92236

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report

The Coachella Community Develop. Dept. will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the probable environmental effects are contained in the attached materials. A copy of the Initial Study X is, ___ is not, attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to Richard P. Douglass, Associate Planner at the address shown above. We will need the name for a contact person in your agency.

Project Title: Specific Plan 88-2

Project Applicant, if any: Rancho Coachella Properties, Inc.

DATE 5-10-88

Signature Richard P. Douglass

Title Associate Planner

Telephone (619) 398-3102

Reference: California Administrative Code, Title 14, Sections 15082(a), 15103 15375.

FIRE DEPARTMENT
1377 Sixth Street
Coachella, California 92236
Telephone (619) 398-8525

November 14, 1988

The Keith Companies
151 Kalmus, Bldg. B-101
Costa Mesa, CA. 92626

Mr. Dave Stearm;

As per your response sheet to the questions asked for the Lusardi project the following comments are hereby provided.

1. Currently there are no services within this area. If Fire Protection or E.M.S. services are required; they are provided from the main Fire station approx. 4 miles away.

2. Without a question, primary because of the type/size of development and the increase in density of people who dwell within the project area.

3. I.S.O. and N.F.P.A.

4. Without a doubt, the owner/developer will be asked to construct/provide new facilities and purchase fire fighting equipment.

5. Not for the current facilities, but yes to providing sub-fire stations and additional equipment and man-power.

6. The current and only Fire station is located at 1377 Sixth Street which is approx. 4 miles from the proposed impact development area.

7. Not unless new facilities and equipment are provided to service this area.

8. Fire sprinkler systems for commercial type building, public buildings.

9. Meeting the fire flow requirements. Development of adequate water distribution system to meet flow requirements.

10. Not unless public safety facilities and equipment are overlooked.

Sincerely,

John M. Rios
Fire Chief

JMR:dcl

College of the Desert
43-500 Monterey Avenue Palm Desert, California 92260

May 26, 1988

Richard P. Douglass, Associate Planner
COACHELLA COMMUNITY DEVELOPMENT DEPARTMENT
CITY OF COACHELLA PLANNING DEPARTMENT
1515 Sixth Street
Coachella, CA 92236

Re: Draft EIR Coachella File No. Specific Plan 88-2

Dear Mr. Douglass:

After review of the above referenced draft, we are concerned that no mention has been made of the potential impact of the project upon community college facilities. The number of new residents is not clearly discernible from the draft. However, the finding 11. that "The development of the project would introduce significant numbers of new population to the area," and 14.c. "A school site shall be provided as part of the specific plan," would indicate there should be concern for serving an increased community college age population.

Because of the lack of information regarding population change, it is not possible to provide information regarding needs by their District in order for it to carryout its mission. Current statistics indicate a districtwide participation rate of 4.6 enrollments per 100 residents, or 5.6 enrollments per 100 adult population. At this rate, an increase of 535 adult residents (or 282 dwelling units) places a new burden of one full classroom, plus one full-time instructor and associated overhead costs upon the District.

We strongly urge that these factors and plans for mitigating these effects, be considered in the final EIR for the project.

Sincerely,

David A. George
Superintendent/President

DAG:kv:coachela

SOUTHERN COACHELLA VALLEY
COMMUNITY SERVICES DISTRICT
P. O. BOX 284
THERMAL, CALIFORNIA 92274

RAY BACA, GENERAL MANAGER
(619) 399-5771

May 26, 1988

Mr. Richard Douglass
Associate Planner
City of Coachella
1515 Sixth Street
Coachella, Ca. 92236

Dear Mr. Douglass:

Thank you for sending the "Notice of Preparation for the Rancho Coachella Project".

I would like to request that you change your mailing notices to the Southern Coachella Valley Community Services District rather than the Thermal Chamber of Commerce, as the CSD Board is the more appropriate Board to make comments on developments in the surrounding areas.

I would also like to request that you change your address files to reflect that the Thermal Chamber of Commerce President is John Dicken, rather than Vic Higgins.

Thank you for your prompt attention to the above and I will present this packet to my Board at their next regularly scheduled meeting for their comments.

Sincerely yours,

M. R. Baca

M. R. Baca
General Manager

MRB/tc

COACHELLA VALLEY UNIFIED SCHOOL DISTRICT

POST OFFICE BOX 847 THERMAL, CALIFORNIA 92274 (619) 399-5137

May 26, 1988

Mr. Richard P. Douglass, Associate Planner
City of Coachella Planning Dept.
1515 Sixth Street
Coachella Ca 92236

Re: Notice of Preparation
Specific Plan 88-2
Rancho Coachella Properties, Inc.

Dear Mr. Douglass:

In regard to Item 14C of the Environmental Checklist Form, Public Services:

> will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: Schools

We feel that a school site will not be sufficient for the acreage and homes that are planned. As a minimum, the number of school sites that should be considered is at least 3 - 4 for one square mile.

Therefore, we would object to only one school site.

If you need further information in this regard, please do not hesitate to contact me.

Sincerely,

Dennis J. Learn

Dennis J. Learn
Assistant Superintendent
Business Services

DJL:svt

STATE OF CALIFORNIA GEORGE DEUKMEJIAN, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN • REGION 7
73-271 HIGHWAY 111, SUITE 21
PALM DESERT, CALIFORNIA 92260
Phone: (619) 346-7491

May 24, 1988

City of Coachella Planning Department
1515 Sixth Street
Coachella, CA 92236

Attn: Richard P. Douglass

RE: The City of Coachella's Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) and Environmental Checklist Form for Specific Plan 88-2.

According to our review of the subject document and subsequent telephone conversation with Mr. Richard P. Douglass, Associate Planner, City of Coachella, we understand that a draft EIR will be prepared for Specific Plan 88-2.

The draft EIR should address how the sewage and solid wastes generated from this project would be treated and disposed. The draft EIR should also address any adverse impacts on the quality of ground and surface waters due to the proposed project.

Measures should also be included in the draft EIR to mitigate any adverse impacts.

If you have any questions concerning the above, please contact me at (619) 346-7491.

S Kasi Kumar

SHASI KUMAR
Staff Engineer

SK/sw

File Ref: EIR - Riverside County

SOUTHERN CALIFORNIA gas COMPANY

3700 CENTRAL AVENUE • RIVERSIDE, CALIFORNIA

MAILING ADDRESS: P.O. BOX 2200 • RIVERSIDE, CALIFORNIA 92516-2200

May 18, 1988

City of Coachella Planning Department
1515 Sixth Street
Coachella, CA 92236

ATTENTION: Richard P. Douglass-Associate Planner

RE: Coachella File No. Specific Plan 88-2

The Southern California Gas Company has a gas main in 54th Avenue located 2,198' east of Polk Avenue. Distribution lines could be extended from these mains to serve the proposed development without any significant impact on the environment. The service would be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of federal regulatory agencies. Should these agencies take any action which affects gas supply or the conditions under which service is available, gas service will be provided in accordance with revised conditions.

Typical demand use for:

a. Residential (System Area Average/Use Per Meter) Yearly

Single Family	799 therms/year dwelling unit
Multi-Family 4 or less units	482 therms/year dwelling unit
Multi-Family 5 or more units	483 therms/year dwelling unit

These averages are based on total gas consumption in residential units served by Southern California Gas Company, and it should not be implied that any particular home, apartment or tract of homes will use these amounts of energy.

b. Commercial

Due to the fact that construction varies so widely (a glass building vs. a heavily insulated building) and there is such a wide variation in types of materials and equipment used, a typical

demand figure is not available for this type of construction. Calculations would need to be made after the building has been designed.

We have developed several programs which are available, upon request, to provide assistance in selecting the most effective applications of energy conservation techniques for a particular project. If you desire further information on any of our energy conservation programs, please contact our Area Market Services Manager, P.O. Box 3003, Redlands, CA 92373-0306, phone (800)624-2497.

Sincerely,

Paul T. Gudmundson

Paul T. Gudmundson
Technical Supervisor

PTG:teb

GF : SP 88-2

Coachella Valley Mosquito Abatement District

83-733 Avenue 55 • Thermal, CA 92274 • (619) 398-0119

June 9, 1988

Richard P. Douglass, Associate Planner
City of Coachella
1515 Sixth Street
Coachella, CA 92236

RE: Notice of Preparation of a Draft EIR

Dear Mr. Douglass:

Upon examination of the Environmental Checklist Form received in our offices on May 13, 1988, I note under item 17, Human Health, that you have marked NO to question a and MAYBE to question b. I would like to discuss several aspects of Human Health which are not normally considered.

As a public health agency, our District is responsible with providing for the health and safety of residents of the Coachella Valley against mosquitoes and eye gnats which are capable of transmitting human diseases and/or causing public discomfort or injury.

Throughout the Coachella Valley including Coachella, man is continuing to make conditions conducive for the production of mosquitoes and eye gnats through conversion and development of land for agricultural, commercial, recreational and residential uses.

Eye gnats are an annoyance to anyone engaged in outdoor activities whether they are playing golf, gardening or just sitting on their patio. Also, they transmit the disease, conjunctivitis or "pinkeye", to humans and animals. This painful disease frequently affects children and can result in time lost from school.

Mosquitoes can be both an annoyance and a disease vector of encephalitis, which is endemic to this area of California. This disease can strike a person of any age but is extremely serious for the young and the elderly. These insects will breed in all types of situations capable of holding water such as golf course lakes, ponds, swimming pools, jars, buckets, street drains, storm drains, underground drainage systems and many others.

Considerable work is required to keep these insects and the diseases they transmit under control to protect the public's health. Our district's control programs are aimed at keeping these insect vectors within tolerable limits through preventive measures where possible.

A vector is any insect or other arthropod, rodent or other animal of public health significance capable of causing human discomfort, injury, or capable of harboring or transmitting the causative agent of human disease.

The eye gnat problem is handled by our staff applying an attractant bait mixture to agricultural areas. In residential and recreational areas, we make this bait available to individuals and/or organizations for their own application in order to keep eye gnats within reasonable limits.

It is possible in the planning or developmental phase to make provisions to prevent or mitigate mosquito problems through a mosquito management plan which would include:

1. A maintenance program that would involve vegetation management. Since uncontrolled weeds and aquatic vegetation can provide ideal breeding areas for mosquitoes, it is important that this issue be addressed before construction.

2. Accessibility for mosquito control personnel and equipment to the site for both inspection and treatment.

3. Specific development plans should incorporate vector prevention guidelines, standards, and checklists developed by the California State Department of Health Services, Environmental Management Branch. A copy of this document is available from our District or the State.

Finally, the Health and Safety Code Sections which mosquito abatement districts operate under allows for our agency to recover part or all costs of abatement of a "public nuisance" from the owner of the "property". The Health and Safety Code give clear definitions of "property" and "public nuisance" and the procedures for dealing with these matters.

Our District is interested in preventing problems and cooperating with everyone to protect the public's health from these insects and the diseases they can transmit.

We appreciate the opportunity to review EIRs and plans of projects in your city in order to have our concerns taken into consideration. The development of a mosquito management plan as discussed above can help prevent or lessen these problems. I hope your city will continue to notify us of any upcoming projects in order we can all work together for everyone's benefit.

If you would additional information or have any questions, please contact me at your convenience.

Sincerely,
COACHELLA VALLEY MOSQUITO
ABATEMENT DISTRICT

Michael J. Wargo

Michael J. Wargo,
District Manager

MJW/chb

NOTICE OF PREPARATION

TO: Michael Wargo, District Manager
Coachella Valley Mosquito Abatement Dist.
83733 Avenue 55
Thermal, CA 92274

FROM: City of Coachella Planning Dept.
1515 Sixth Street
Coachella, CA 92236

SUBJECT: **Notice of Preparation of a Draft Environmental Impact Report**

The Coachella Community Develop. Dept. will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the probable environmental effects are contained in the attached materials. A copy of the Initial Study X is, ___ is not, attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to Richard P. Douglass, Associate Planner at the address shown above. We will need the name for a contact person in your agency.

Project Title: Specific Plan 88-2

Project Applicant, if any: Rancho Coachella Properties, Inc.

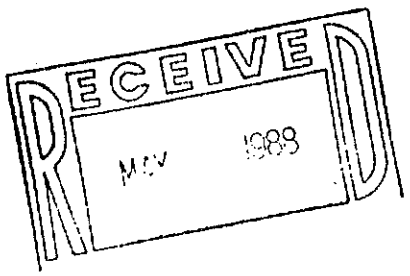
DATE 5-10-88

Signature Richard P. Douglass

Title Associate Planner

Telephone (619) 398-3102

Reference: California Administrative Code, Title 14, Sections 15082(a), 15103, 15375.



OFFICE OF THE ROAD COMMISSIONER AND COUNTY SURVEYOR
COUNTY OF RIVERSIDE

LeRoy D. Smoot
Road Commissioner and
County Surveyor

County Administrative Cent
4080 Lemon Street, 8th Fl
P.O. Box 1090
Riverside, CA 92502
(714) 787-6554

June 15, 1988

Mr. Richard P. Douglass, Associate Planner
City of Coachella Planning Department
1515 Sixth Street
Coachella, CA 92236

RE: Notice of Preparat
an Environmental
Report - Specifi
88-2 - Coachella

Dear Mr. Douglass:

The Road Department has reviewed the project ref above and has the following comments.

We suggest that a traffic study be conducted f project, and we request an opportunity to review and com the DEIR.

If you desire additional information, contact me a 787-1445.

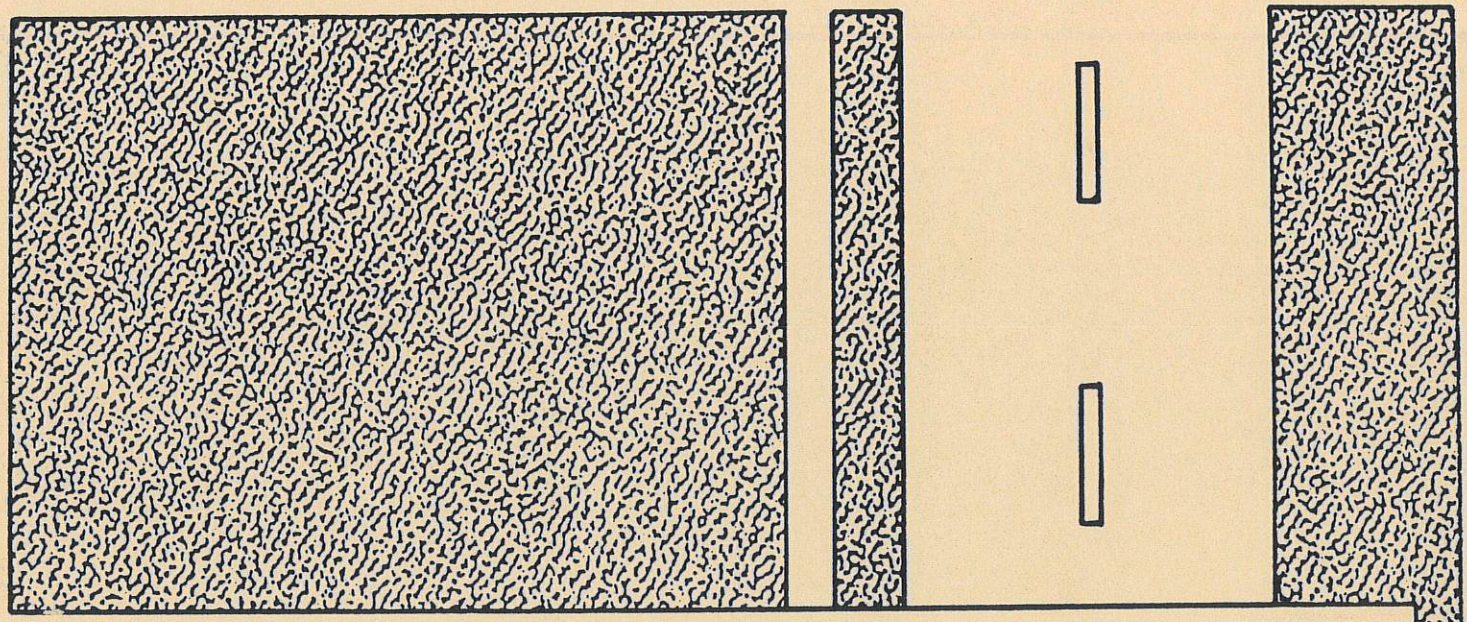
Very truly yours,

John Johnson
Associate Planner

JJ:lg

APPENDIX B

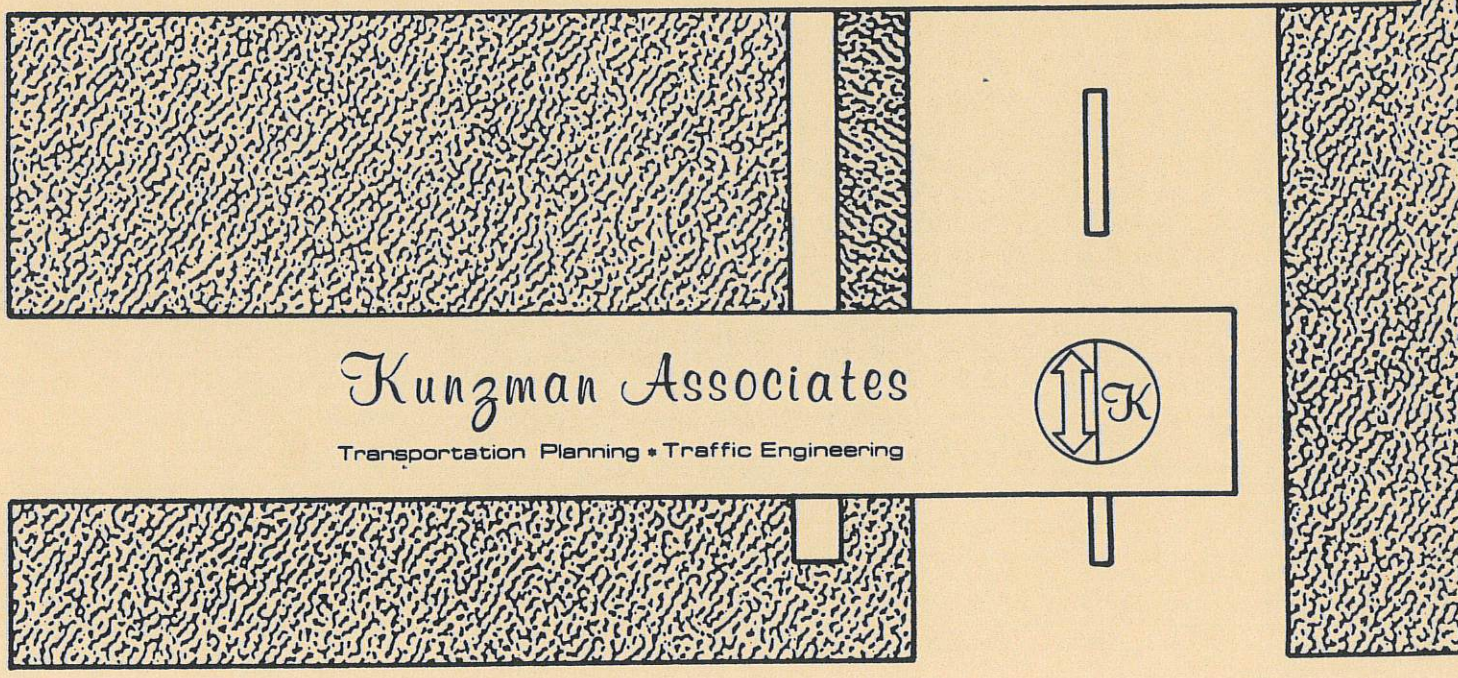
TRAFFIC STUDY



LUSARDI SPECIFIC PLAN

TRAFFIC STUDY

(November 9, 1988)



Kunzman Associates

Transportation Planning • Traffic Engineering

Kunzman Associates
Transportation Planning • Traffic Engineering

November 9, 1988

Mr. Tom Holm
The Keith Companies
151 Kalmus, Building B, Suite 101
Costa Mesa, CA 92626

Dear Mr. Holm:

We are pleased to present this revised traffic impact analysis of the proposed Lusardi Specific Plan located south of 54th Avenue and east of Fillmore Street in the Coachella area of the County of Riverside. This report summarizes our methodology, analysis, findings, and recommended mitigation measures. We trust that the findings, which are summarized in the front of the report and include the mitigation measures, will be of immediate as well as continuing value to you and the City of Coachella in evaluating the project's traffic impacts.

It has been a pleasure to serve your needs on this project. Should you have any questions, or if we can be of further assistance, please do not hesitate to call.

Sincerely,

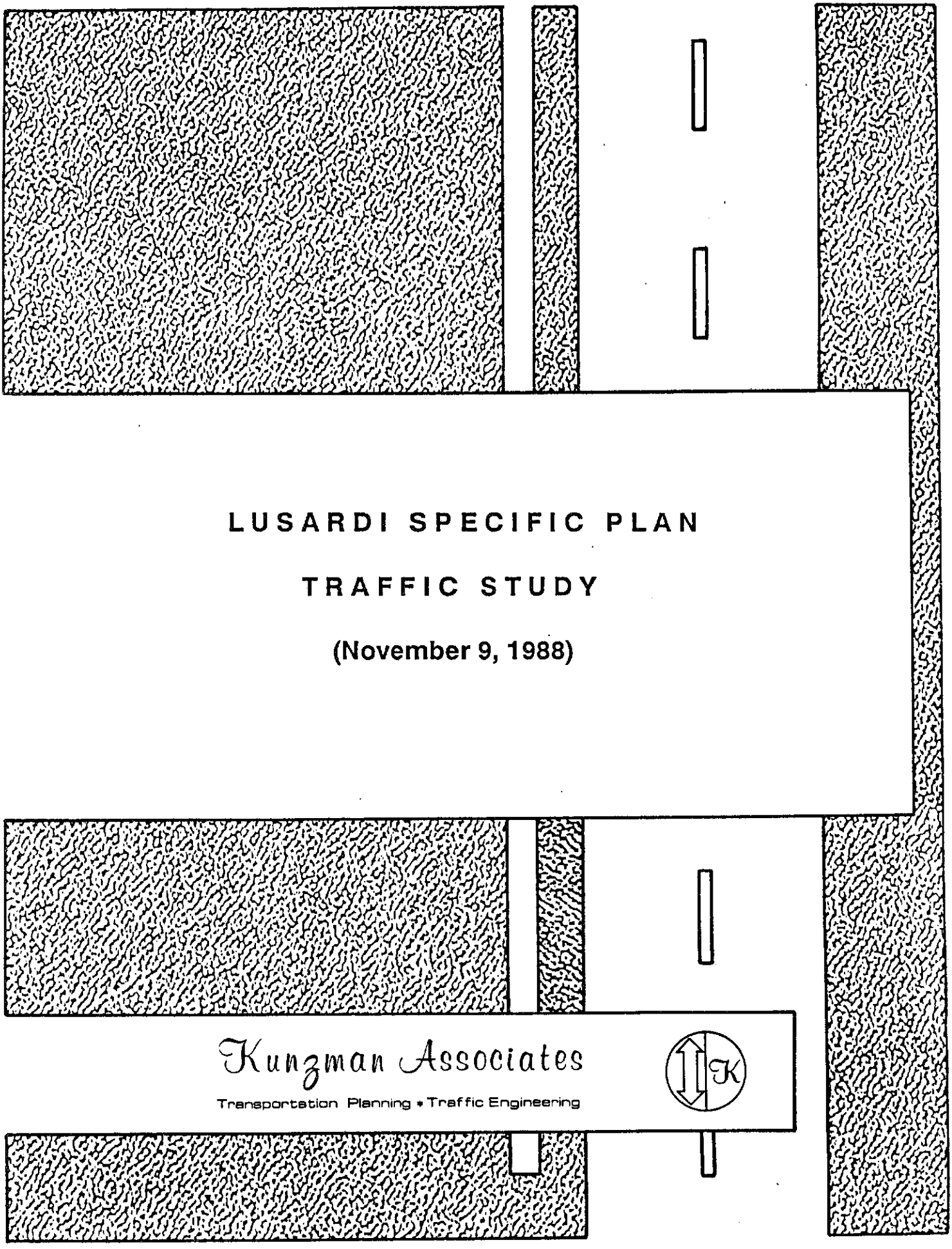
KUNZMAN ASSOCIATES

John Kain

John Kain, AICP

#1423a

4650 Barranca Parkway • Irvine, CA 92714 • FAX (714) 559-0260 • Telephone (714) 559-4231



LUSARDI SPECIFIC PLAN

TRAFFIC STUDY

(November 9, 1988)

Kunzman Associates

Transportation Planning • Traffic Engineering

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LUSARDI SPECIFIC PLAN

TRAFFIC STUDY

This report contains the revised traffic impact analysis for the proposed Lusardi Specific Plan located south of 54th Avenue and east of Fillmore Street in the Coachella area of the County of Riverside.

The traffic report contains documentation of existing traffic conditions, traffic generated by the project, distribution of the project traffic to roads outside the project, and an analysis of future traffic conditions. Each of these topics is contained in a separate section of the report. The first section is "Findings", and subsequent sections expand upon the findings. In this way, information on any particular aspect of the study can be easily located by the reader.

1. Findings

This section summarizes the existing traffic conditions, project traffic impacts, and the proposed mitigation measures.

Existing Traffic Conditions

a. The project site is vacant at present, and does not generate traffic.

b. The proposed project will have access to 54th Avenue, 55th Avenue, and Fillmore Street.

c. Arterial roadways in the vicinity of the site are at present only partially improved.

d. The arterial system is incomplete at present.

e. Existing intersections in the vicinity of the site are currently operating well within acceptable service levels.

f. Substantial additional development in the vicinity of the project is currently planned or in progress.

Traffic Impacts

a. Proposed land uses for the site include residential, commercial, and recreational uses.

b. The project will generate 37,830 external daily vehicle trips, 3,290 of which will occur during the evening peak hour.

c. For existing plus project traffic conditions with the new Route 86 Freeway Extension, intersections in the vicinity of the site will operate at a Level of Service D or better in the evening peak hour with recommended improvements.

d. Roadway links in the vicinity of the site will operate at a Level of Service D or better for future traffic conditions with recommended improvements and the new State Route 86 Freeway extension.

e. Construction of the proposed circulation network will adequately service future traffic volumes without a crossing of the Route 86 Freeway at 54th Avenue.

f. For future traffic conditions with areawide growth, traffic signals will be warranted at the intersections of:

State Route 111/50th Avenue
State Route 111/54th Avenue
Polk Street/50th Avenue
Polk Street/52nd Avenue
Fillmore Street/50th Avenue
Fillmore Street/52nd Avenue
Fillmore Street/54th Avenue
Fillmore Street/56th Avenue
Pierce Street/52nd Avenue

g. The proposed project will generate approximately 272,400 vehicle miles of travel daily, once occupied.

Mitigation Measures

As development occurs the measures listed below are recommended to mitigate the impact of the project on traffic circulation. The implementation of each measure shall be determined as future entitlements are granted for development in and around the project area.

a. Amend the City of Coachella General Plan Circulation Element to accommodate the following changes:

1. Designate Fillmore Street as a Secondary Arterial from 52nd Avenue to 56th Avenue.

2. Designate 52nd Avenue as a Primary Arterial from the Route 86 Freeway Extension to Pierce Street.

b. Adequate phasing for construction of arterial improvements should be provided as required by development.

c. Upgrade 56th Avenue to a Primary Arterial (110 foot right-of-way) from State Route 111 to Fillmore Street.

d. Upgrade Fillmore Street to a Secondary Arterial (100 foot right-of-way) from 52nd Avenue to 56th Avenue.

e. Maintain a high level of service along arterials by restricting parking and controlling roadway access.

f. For existing plus project traffic conditions, traffic signals should be installed at the intersections of:

Fillmore Street/54th Avenue
Fillmore Street/56th Avenue

g. Improve all internal and adjacent project streets shown on Figure 18 to appropriate roadway standards as indicated, and install traffic signals at project roadways when warranted as shown on Figure 18.

h. Landscape plantings and signs should be limited in height within the vicinity of project roadways to assure good visibility.

2. Project Description

This section discusses the project's location, proposed development, and traffic characteristics of such a development. Figure 1 illustrates the site plan.

Location

The project site is located south of 54th Avenue and east of Fillmore Street in the Coachella area of the County of Riverside.

Proposed Development

The project site is proposed to be developed with residential, commercial, and recreational uses. Table 1 summarizes the proposed land uses for the project.

The following describes the proposed land uses from a traffic engineering viewpoint:

Single-Family Detached Dwellings: The primary market for these units will be families with children. As a result, peak traffic volumes will occur during home-to-work and work-to-home trips. Child-related trips such as home-to-school or home-to-Little League are also a significant factor in the daily trip generation, but they have a smaller influence on peak hour volumes.

Apartments: Peak traffic volumes occur in the morning and evening when inhabitants are going to and from work. Mid-day volumes are quite often shopping oriented or child related.

General/Tourist Commercial: Commercial developments of this type are characterized by a large number of short duration trips throughout the day. Their typical opening times produce minor traffic volumes during the morning peak hour. During the evening peak hour, people driving home from work stop to shop, creating a minor peak in commercially generated traffic volumes.

Shopping Center: A shopping center is an integrated group of commercial establishments which is planned, developed, owned and managed as a unit. It is related to its market area in terms of size, location and type of store. Community shopping centers of this type are characterized by a large number of short duration trips throughout the day. Their typical late morning opening times produce only minor traffic volumes during the morning peak hour.

Recreational/Institutional: Uses of this type include the "municipal" designation on the proposed specific plan. They are characterized by a number of short duration trips throughout the day by residents living in the area or visitors.

Table 1

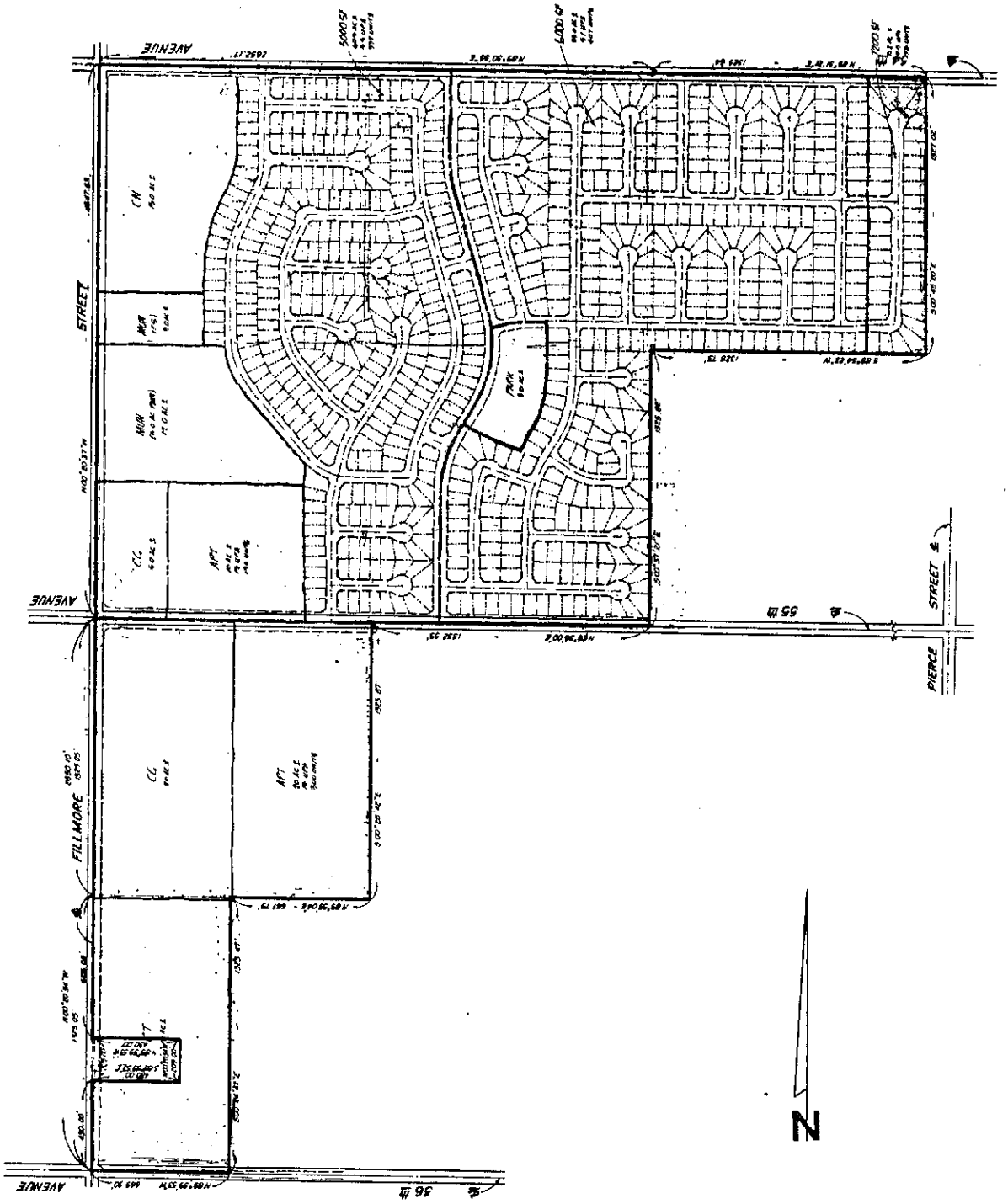
PROJECT LAND USE SUMMARY

Land Use	Quantity
Single Family	820 DU
Apartments	450 DU
TOTAL	1270 DU
General Commercial	250 TSF
Shopping Center	150 TSF
Recreational/Institutional	14 acres
Tourist Commercial	180 TSF

DU = dwelling units
TSF = thousand square feet

Figure 1

Site Plan



3. Existing Traffic Conditions

The traffic conditions as they exist today are discussed below and illustrated in Figures 2 to 4.

Surrounding Street System

Roadways that will be utilized by the development include Interstate 10, State Route 86S, State Route 111, 52nd Avenue, 54th Avenue, 56th Avenue (Airport Boulevard), Fillmore Street, and Pierce Street. In the vicinity of the project site, the following roadway conditions exist.

Interstate 10: This east-west freeway extends from the Los Angeles area eastward. It is currently four lanes in the vicinity of the site.

State Route 86S: This freeway currently terminates at Dillon Road. It is proposed to extend to the southeast, parallel to State Route 111, with an interchange at 56th Avenue (Airport Boulevard).

State Route 111: This roadway is designated as a Primary Arterial (110 foot right-of-way) south of Route 86 on the City of Coachella General Plan. It is currently two lanes in the vicinity of the site.

52nd Avenue: This east-west roadway is currently designated as a Major Arterial (120 foot right-of-way) west of the Route 86 Freeway Extension and as a Secondary Arterial (100 foot right-of-way) eastward on the City of Coachella General Plan. It is currently two lanes in the vicinity of the site.

54th Avenue: This east-west roadway is currently designated as a Secondary Arterial (100 foot right-of-way) west of State Route 111, as a Secondary Arterial (100 foot right-of-way) between State Route 111 and Fillmore Street, and as a collector east of Fillmore Street on the City of Coachella General Plan. It is currently two lanes adjacent to the site.

56th Avenue (Airport Boulevard): This east-west roadway is currently designated as a Major Arterial (120 foot right-of-way) west of the Route 86 Freeway Extension and as a Secondary Arterial (100 foot right-of-way) eastward on the City of Coachella General Plan. It is currently two lanes adjacent to the site.

Fillmore Street: This north-south roadway is currently designated as a collector in the vicinity of the site. It is currently two lanes adjacent to the site.

Pierce Street: This north-south roadway is currently designated as a Secondary Arterial (100 foot right-of-way) in the vicinity of the site. It is currently two lanes adjacent to the site.

Existing Travel Lanes and Intersection Controls

Figure 2 identifies the existing roadway conditions for arterials near the site. The number of through lanes for existing roadways and the existing intersection controls are identified.

Daily Traffic Volumes

Figure 3 depicts the average daily two-way traffic volumes. Traffic volumes were obtained from the County of Riverside, the 1987 Traffic Volumes on State Highways from CalTrans, and from counts factored by Kunzman Associates.

Existing Intersection Capacity Utilization

The technique used to assess the operation of an intersection is known as Intersection Capacity Utilization (ICU). To calculate an ICU the volume of traffic using the intersection is compared to the capacity of the intersection. ICU is usually expressed as a percent. The percent represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. The ICU's for existing intersections in the vicinity of the project are shown in Table 2. Existing ICU's are based upon manual peak hour turning movement counts made by Kunzman Associates in September and October, 1988 (see Figure 4). An explanation of ICU and Level of Service is included in Appendix A. Intersections in the vicinity of the site operate well within acceptable service levels in the evening peak hour for existing traffic conditions.

Riverside County Circulation Element

Figure 5 exhibits the current roadway functional classifications for the Riverside County Circulation Element. This figure shows the nature and extent of existing and proposed arterial highways which are needed to adequately serve the ultimate development depicted by the Land Use Element of the County General Plan and serves to coordinate the improvement of future arterials.

City of Coachella Circulation Element

Figure 6 exhibits the circulation system for the City of Coachella. This system has been developed to assist in the planning and development of the surrounding community. Table 3 lists the proposed classification system along with a general description of lane configuration and daily vehicle capacity data. Figure 7 illustrates the City of Coachella arterial street cross-sections.

Coachella Valley Area Transportation Study

The Coachella Valley Area Transportation Study (CVATS) is the result of an extensive effort to develop a highway improvement plan to accommodate growth through the year 2010. The administrative basis for the study is rooted in the SCAG 1984 Regional Transportation Plan (RTP) directive to initiate Corridor and Area Planning Studies in subregions experiencing transportation problems. Since preliminary investigations indicated the need for transportation facility improvements in the Coachella Valley, the study was developed and funded under the SCAG 1985-86 Overall Work Program (OWP).

An analysis of the recommended year 2010 highway system (see Figure 8) revealed that the proposed system will be able to properly mitigate the bulk of the projected year 2010 capacity deficiencies. According to this analysis, most arterials will be operating free of congestion with volumes below 75% of their practical capacity under Level of Service (LOS) C or better conditions.

A few roadway segments would still be operating at or above capacity in the year 2010. These isolated minor capacity deficiencies, however, could all be eliminated if traffic is distributed among adjacent parallel arterials -- on most of which ample excess capacity would be available. Only a few locations exhibit capacity deficiencies which can not be remedied by utilizing the surplus capacity on adjacent alternate routes.

Table 2

EXISTING INTERSECTION CAPACITY UTILIZATION AND LANE GEOMETRICS

Intersection	Intersection Approach Lanes (1)												Evening Peak Hour ICU (2)
	Northbound			Southbound			Eastbound			Westbound			
	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	PM
State Route 111 (NS) at													
50th Avenue (EW)	1	0	1	1	0	1	1	0	0	1	0	0	56
52nd Avenue (EW)	2	0	1	1	0	1	2	1	1	2	0	1	47
54th Avenue (EW)	1	0	1	1	0	0	1	0	0	0	0	0	35
56th Avenue - Airport Boulevard (EW)	1	1	1	1	1	1	1	0	0	1	0	0	41
58th Avenue (EW)	1	0	0	1	0	1	0	0	0	1	0	0	31
Tyler Street (NS) at													
50th Avenue-West (EW)	0	1	1	0	0	0	1	0	0	1	0	0	22
50th Avenue-East (EW)	0	0	0	1	0	0	1	0	0	1	0	0	21
52nd Avenue (EW)	1	0	0	1	0	0	2	0	1	2	0	1	30
Polk Street (NS) at													
50th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
52nd Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	21
54th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	14
Fillmore Street (NS) at													
52nd Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
54th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
56th Avenue - Airport Boulevard (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
58th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	21
Pierce Street (NS) at													
54th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	21
56th Avenue - Airport Boulevard (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
58th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28

(1) When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

(2) Intersection Capacity Utilization (ICU)

T = Through
Rt = Right
Lt = Left

Table 3

CITY OF COACHELLA
ROADWAY CLASSIFICATION CAPACITIES

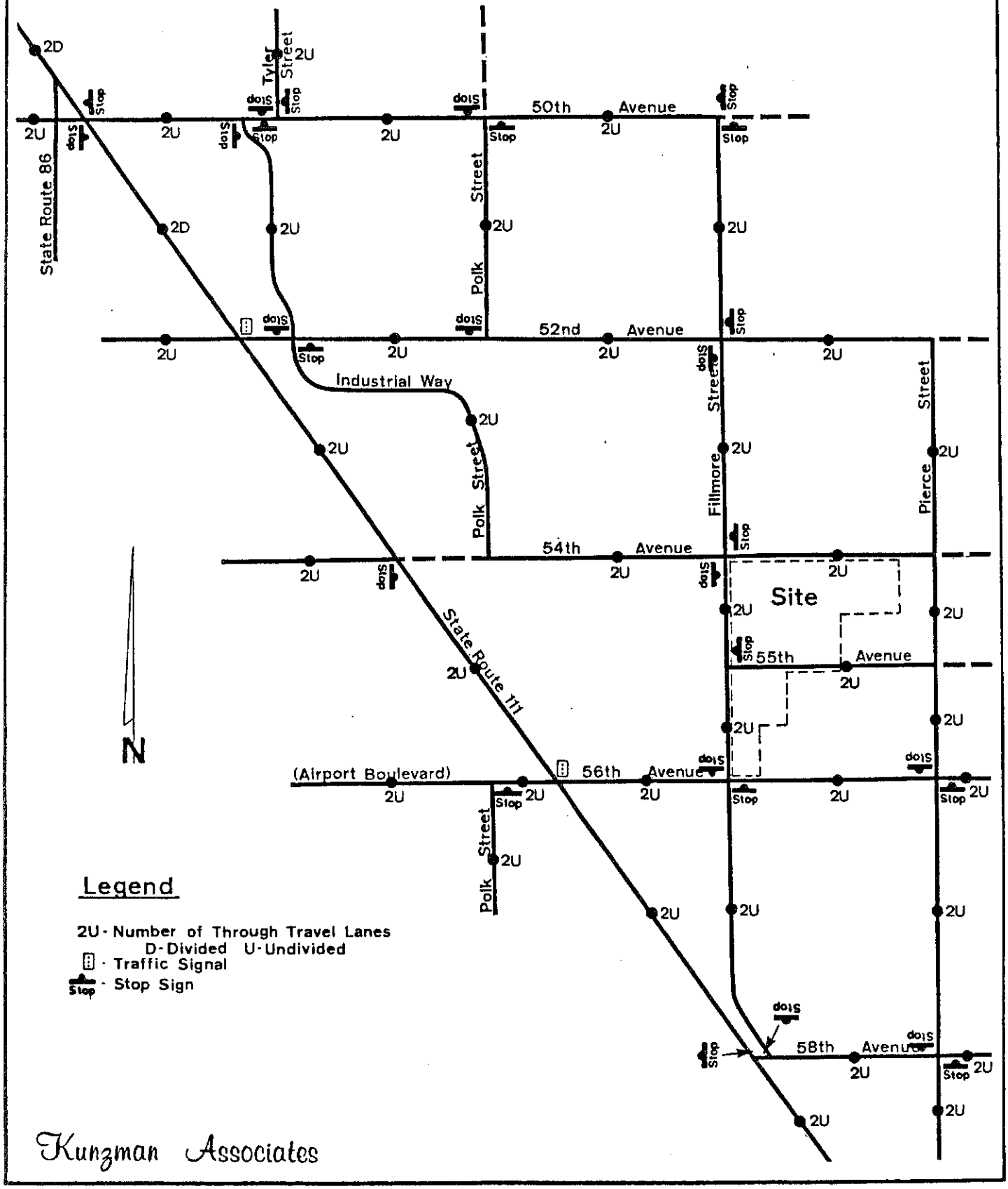
Classification	Lane Configuration	Design Capacity Level of Service C (1)	Maximum Capacity Level of Service E (2)
Major Arterial	6 Lanes Divided	50,000	60,000
Primary Arterial	4 Lanes Divided	30,000	38,000
Secondary Arterial	4 Lanes Divided	24,000	29,000
Collector	2 Lanes Divided	12,000	18,000

(1) "Level of Service C" (LOS C) used for analysis and evaluation, defined as a stable flow condition in which volume and density restrict freedom to select speed, change lanes or pass. Values indicate Average Daily Traffic.

(2) "Level of Service E" (LOS E) this value reflects the absolute maximum volume under ideal conditions. This level of service is characterized by unstable flow, extremely high volumes and limited operating speed with intermittent vehicle queueing. Values indicate Average Daily Traffic.

Figure 2

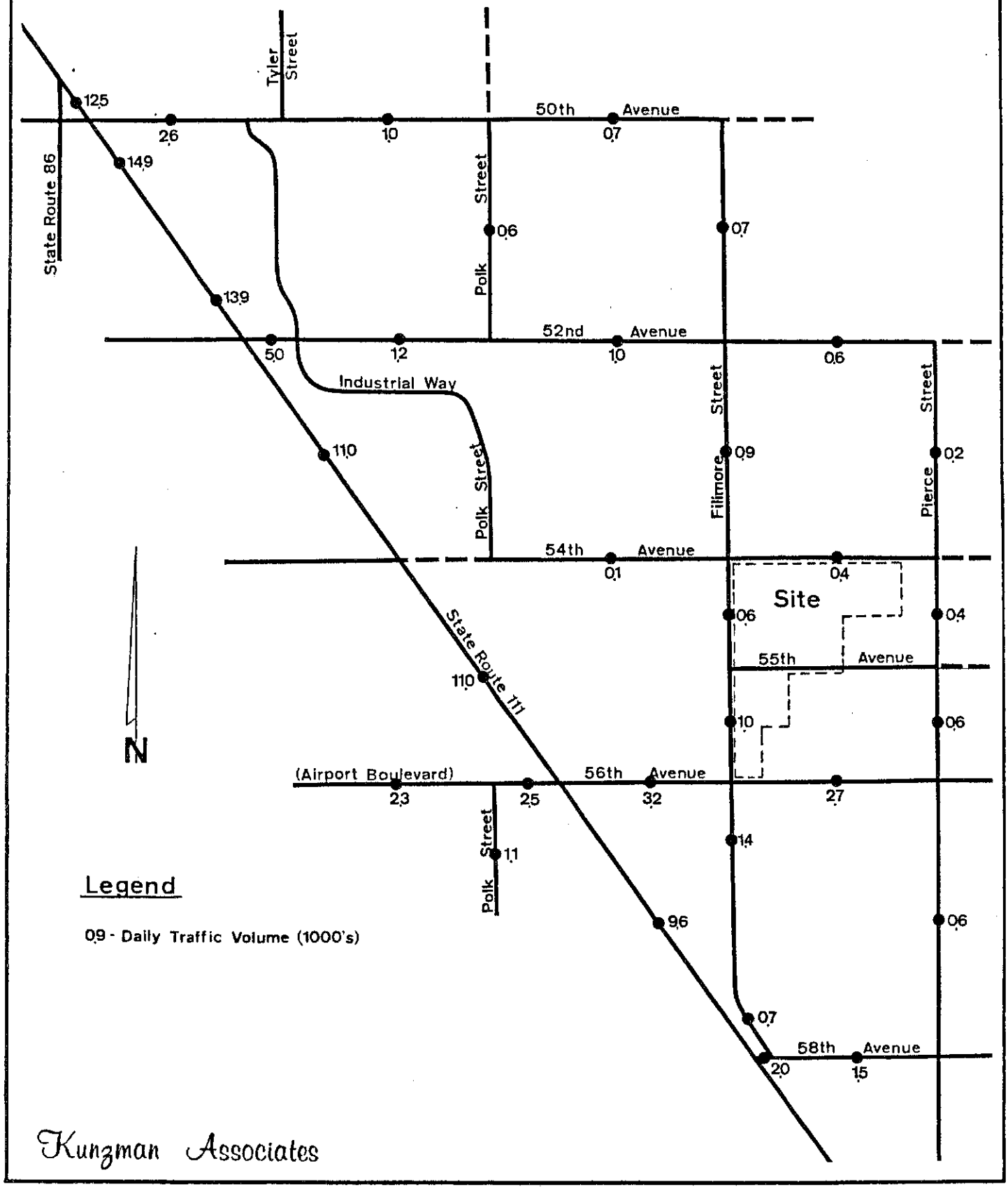
Existing Number of Through Travel Lanes and Intersection Controls



Kunzman Associates

Figure 3

Existing Daily Traffic Volumes



Kunzman Associates

Figure 4

Existing Evening Peak Hour Turning Movement Volumes

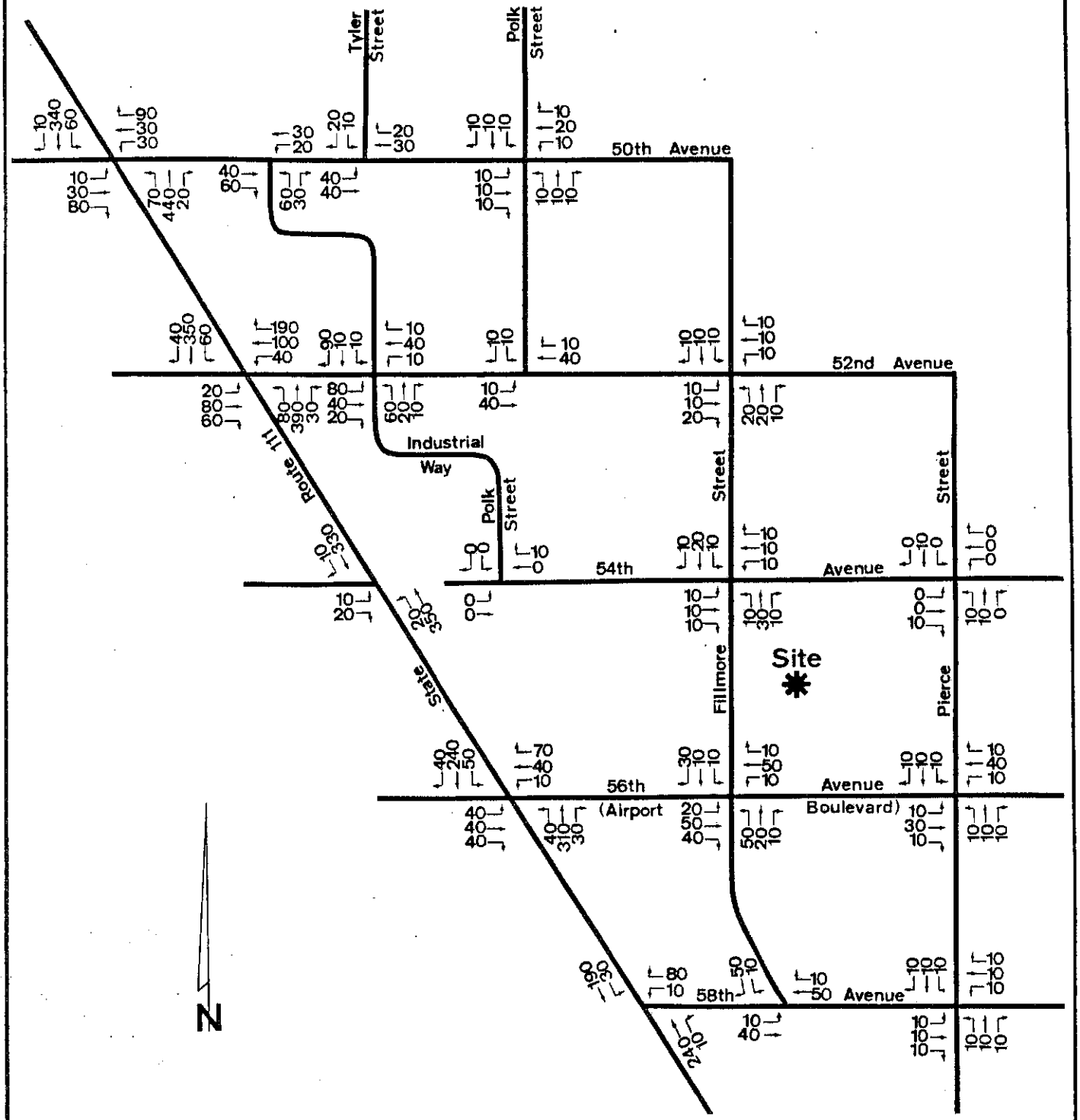


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Figure 5

Riverside County General Plan Circulation Element

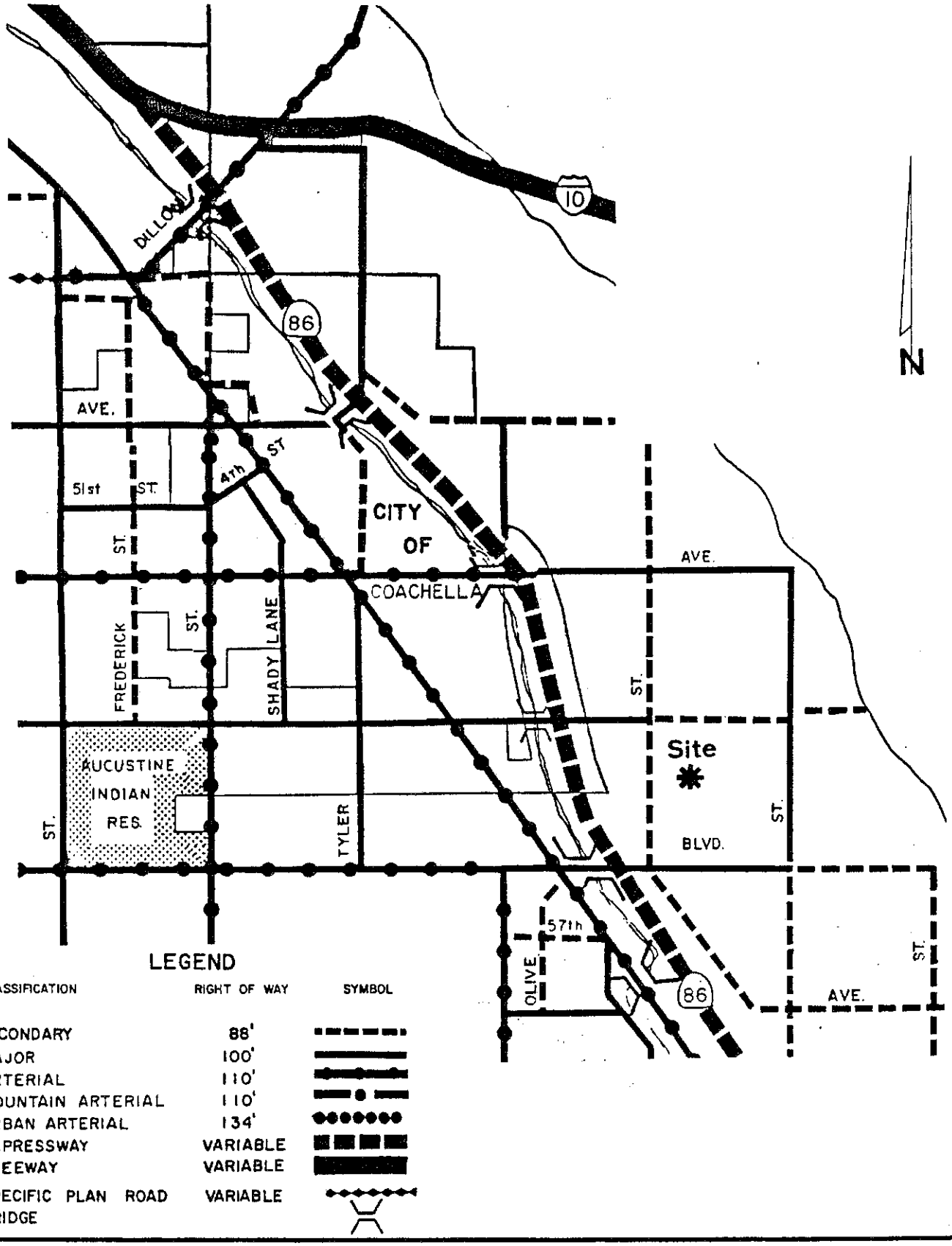
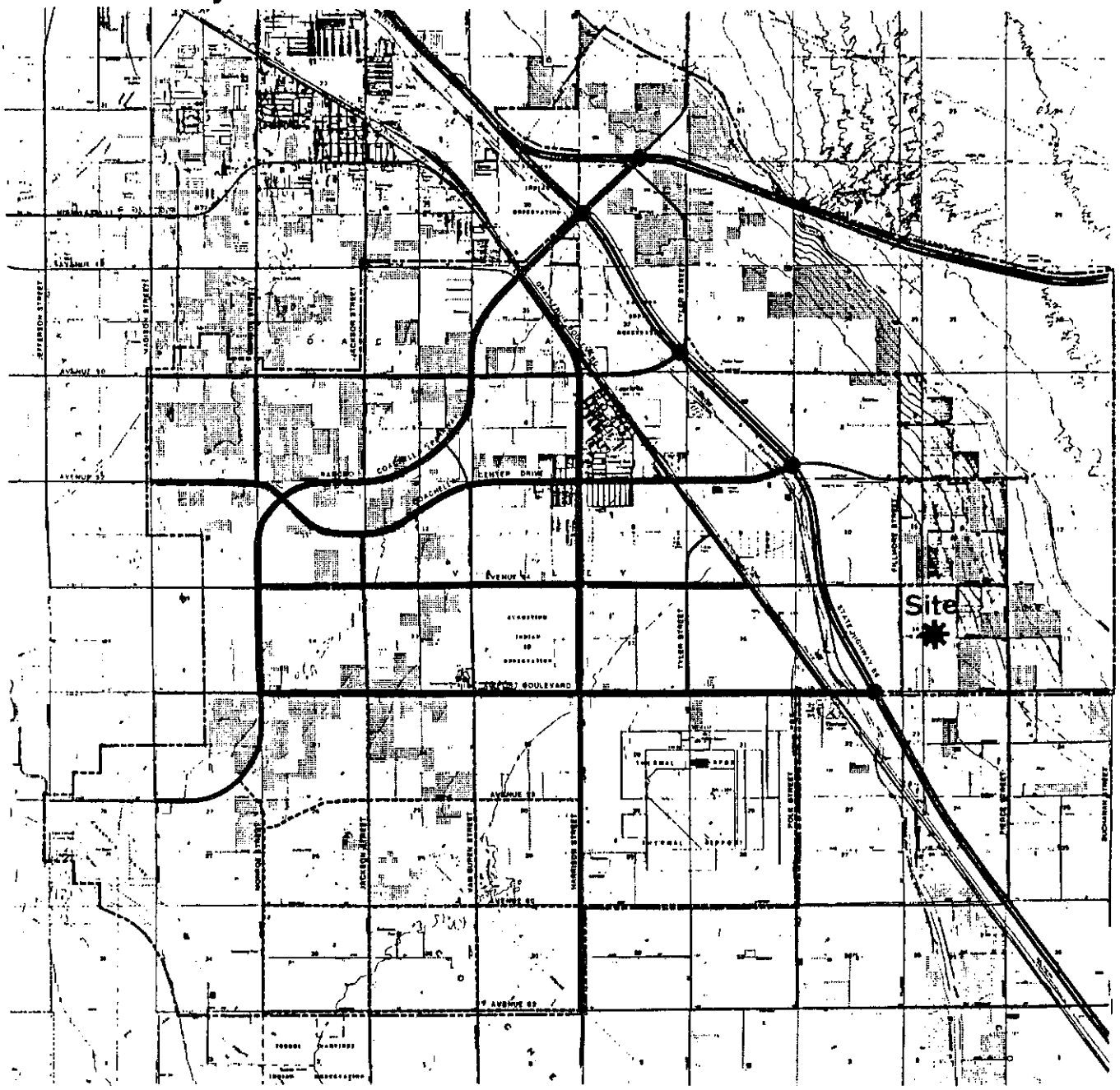


Figure 6

City of Coachella General Plan Circulation Element



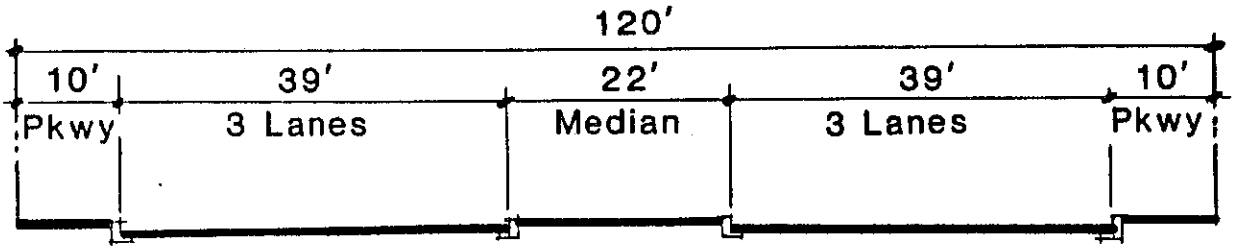
LEGEND

CIRCULATION CLASSIFICATION

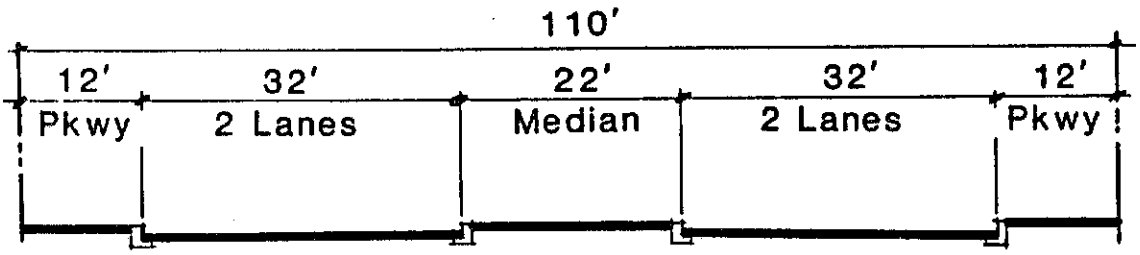
- FREEWAY
- INTERCHANGE
- MAJOR ARTERIAL
- PRIMARY ARTERIAL
- SECONDARY ARTERIAL
- COLLECTOR
- EXISTING STREETS (NOT DESIGNATED)

Figure 7

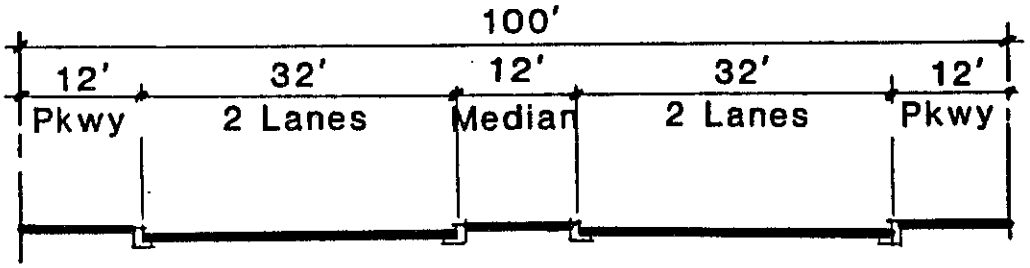
City of Coachella
Typical Street Cross-Sections



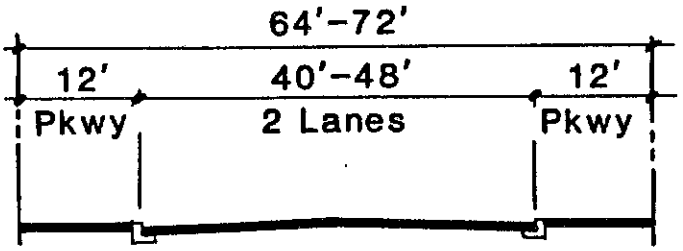
MAJOR ARTERIAL



PRIMARY ARTERIAL



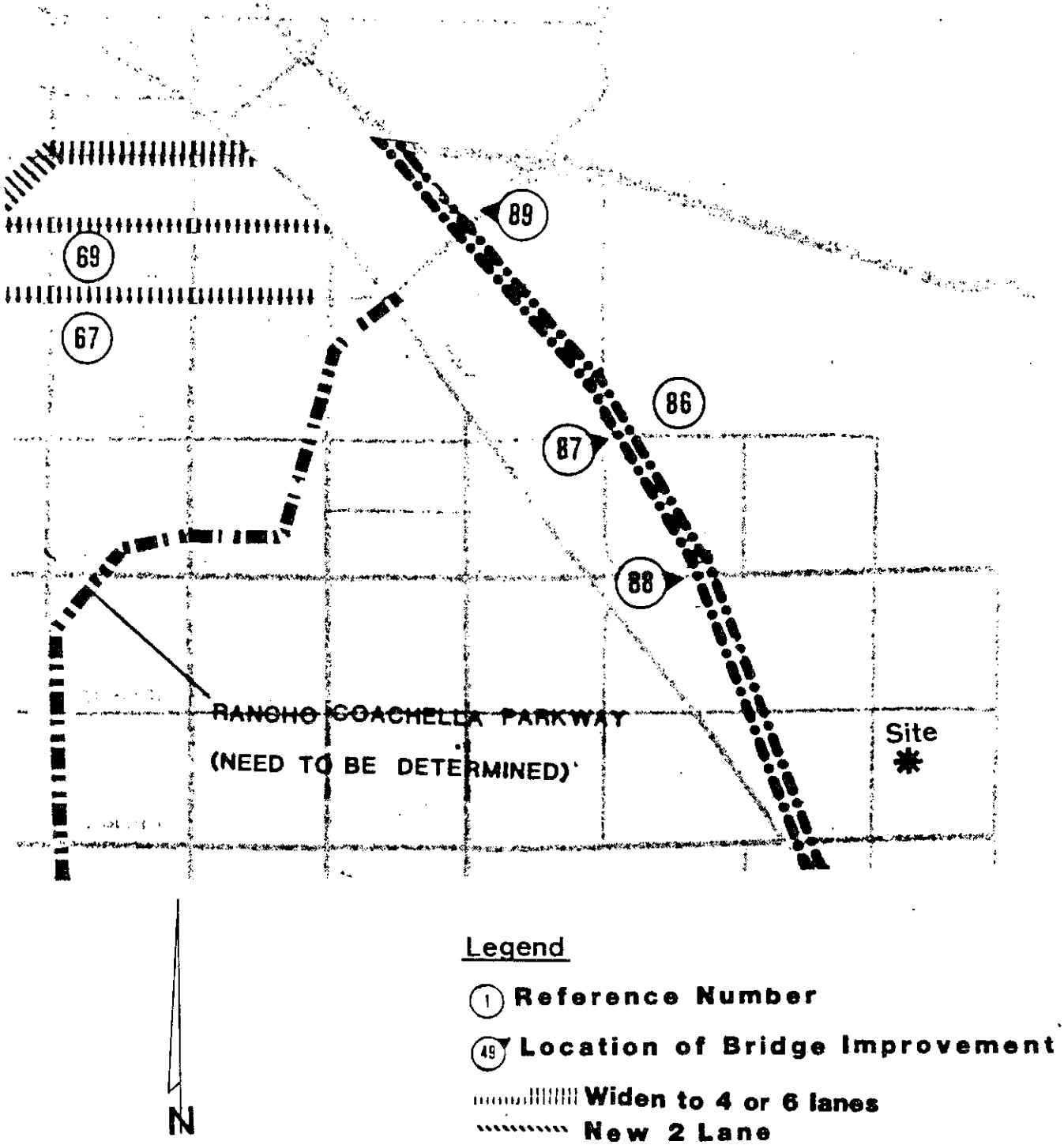
SECONDARY ARTERIAL



COLLECTOR

Figure 8

Coachella Valley Area Transportation Study, Year 2010 Final Recommended System



4. Project Traffic

To estimate project-related traffic volumes at various points on the street network, a three step process is utilized. First, the traffic which will be generated by the proposed development is determined. Secondly, the traffic volumes are geographically distributed to major attractions of trips, such as employment centers, commercial centers, recreational areas or residential areas. Finally, the trips are assigned to specific roadways and the project-related traffic volumes are determined on a route-by-route basis.

Traffic Generation

The traffic generated by the project is determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and our life styles remain similar to what we know today. A major change in these variables may affect trip generation rates.

Trip generation rates were determined for daily traffic, morning peak hour inbound and outbound traffic, and evening peak hour inbound and outbound traffic for the proposed land uses. By multiplying the traffic generation rates by the land use quantities, the traffic volumes are determined. Table 4 exhibits the traffic generation rates and Table 5 shows the project peak hour and daily traffic volumes.

Traffic volumes shown in Table 5 include the external trips generated by the project. As a residential trip generated within the project will also be making trips to a commercial or other land use within the project, a double counting of those trips occurs. Fifteen percent of traffic generated by the project has been removed for interaction of commercial and residential uses.

Traffic Distribution and Assignment

Traffic distribution is the determination of the directional orientation of traffic. It is based on the geographical location of employment centers, commercial centers, recreational areas, or residential area concentrations.

Traffic assignment is the determination of which specific route development traffic will use, once the generalized traffic distribution is determined. The basic factors affecting route selection are minimum time path and minimum distance path.

Figure 9 contains the directional distribution and assignment of the project traffic with the Route 86 Extension. To determine the traffic distribution for the proposed project, peak hour traffic counts of the existing directional distribution of traffic for existing areas in the vicinity of the site, and other additional information on future development and traffic impacts in the area were reviewed.

Project-Related Traffic

Based on the identified traffic generation and distribution, project related traffic volumes are shown on Figure 10.

Table 4

TRAFFIC GENERATION RATES

Land Use	Units*	Morning Peak Hour		Evening Peak Hour		Daily
		In	Out	In	Out	
Single Family	DU	0.20	0.55	0.64	0.37	10.06
Apartments	DU	0.11	0.41	0.41	0.22	6.60
General Commercial	TSF	0.92	0.40	2.11	2.38	58.93
Shopping Center	TSF	1.22	0.53	3.05	3.18	74.31
Recreational/ Institutional	AC	1.22	1.21	1.68	1.69	6.00
Tourist Commercial	TSF	0.73	0.49	1.83	1.83	40.68

*DU = dwelling unit
TSF = thousand square feet
AC = acre

Source: Institute of Transportation Engineers, Trip Generation, Fourth Edition, 1987, Land Use Categories 210, 221, 814, and 820.

Table 5

PROJECT EXTERNAL TRAFFIC GENERATION

Time Period	Trips Generated By Project
Morning Peak Hour	
Inbound	660
Outbound	780
Total	1,440
Evening Peak Hour	
Inbound	1,740
Outbound	1,550
Total	3,290
Daily	37,830

Note: Trips generated are rounded to nearest 10.

Figure 9

Project External Traffic Distribution With Route 86 Extension

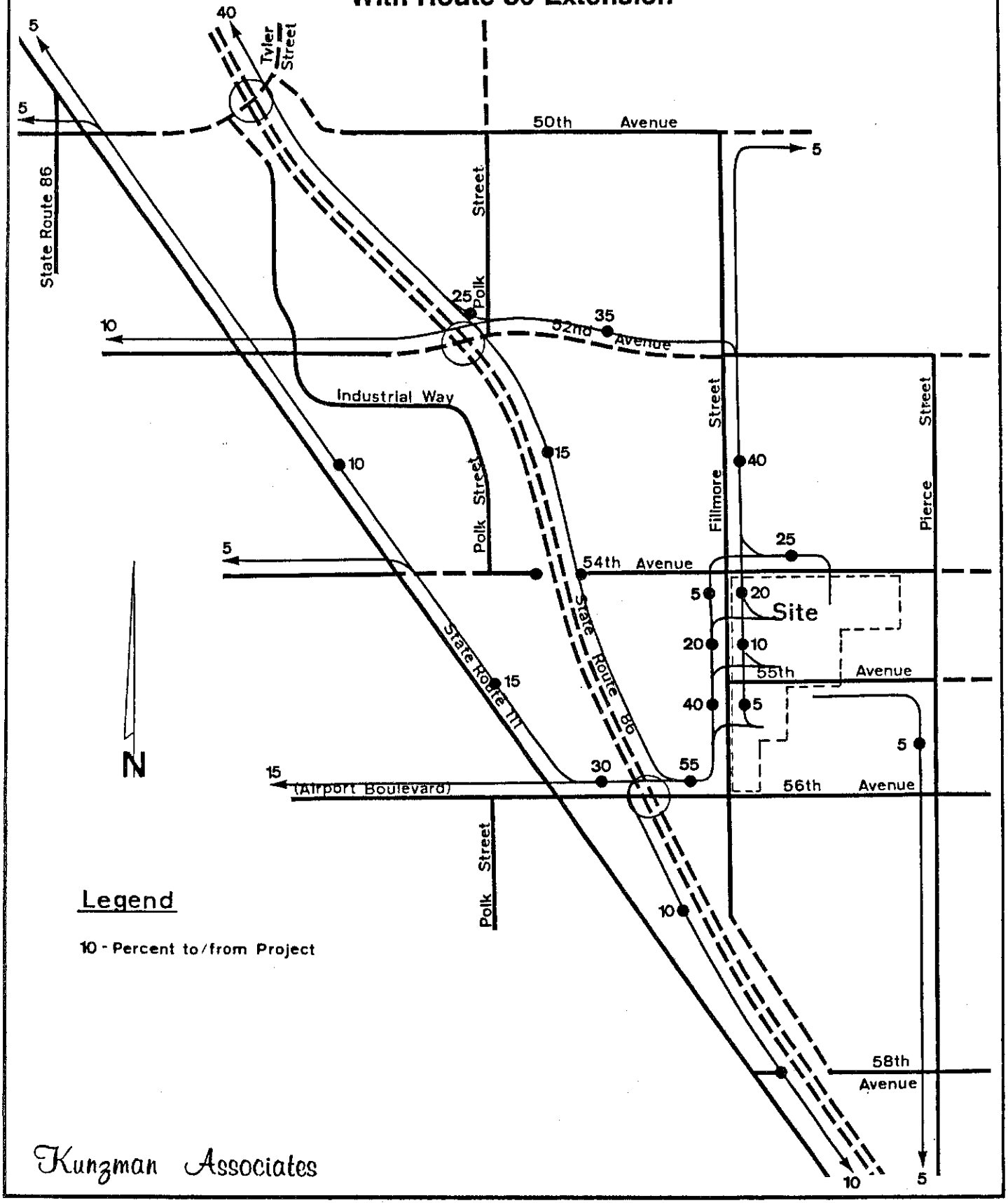


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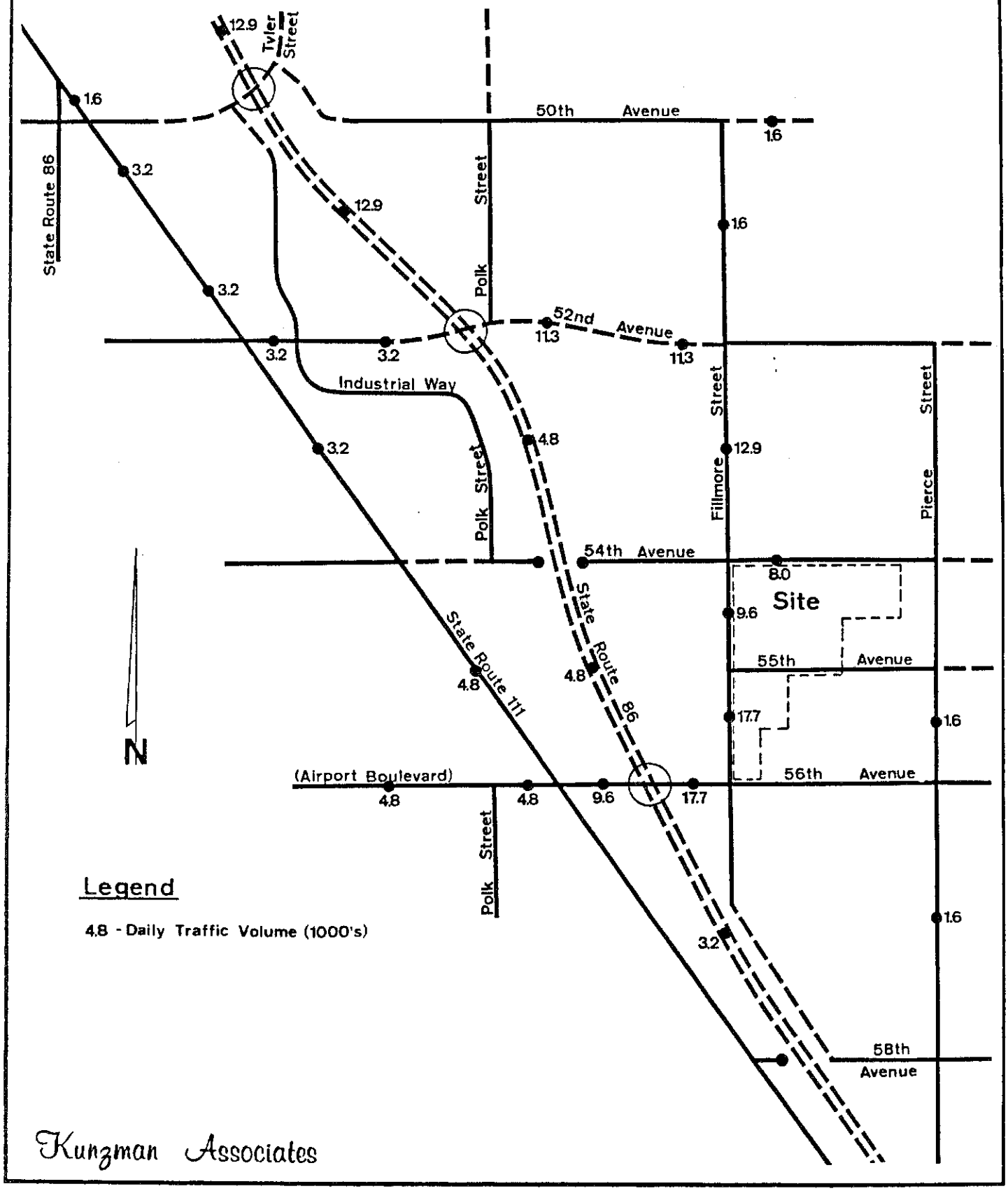
Figure 10

Project Daily Traffic Volumes



5. Existing Plus Project Traffic Conditions

Once the project-related traffic is assigned to the existing street network and added to existing volumes, the traffic impact can be assessed. Figure 11 illustrates the existing plus project traffic conditions.

Existing Plus Project Daily Traffic Volumes

Upon project completion and occupancy the expected daily two-way traffic volumes are as illustrated in Figure 11. Figure 11 shows expected daily traffic volumes for existing plus project traffic conditions without other planned development.

Existing Plus Project Intersection Capacity Utilization

Intersection Capacity Utilization (ICU) for the existing plus project traffic conditions have been calculated and are shown in Table 6 without improvements. ICU calculations presented in Table 7 are based on the recommended geometrics at the intersections. As shown in Table 7, intersections in the vicinity of the project are projected to operate at a Level of Service D or better in the evening peak hour for existing plus project traffic conditions.

To accommodate existing plus project traffic forecasts, the following network links should be improved:

1. Upgrade 56th Avenue to a Primary Arterial (110 foot right-of-way) from State Route 111 to Fillmore Street.

2. Upgrade Fillmore Street to a Secondary Arterial (100 foot right-of-way) from 52nd Avenue to 56th Avenue.

Traffic Signal Warrants

Traffic signals will be warranted at the following intersections:

Fillmore Street/54th Avenue
Fillmore Street/56th Avenue

Traffic signal warrants have been adopted by the Federal Highway Administration and CalTrans. These warrants are based upon the eighth highest hour volumes in a day. It is assumed by CalTrans that the eighth highest hour is 62.5 percent of the peak hour, and the peak hour is generally 10 percent of the daily traffic. Thus, the signal warrants can also be expressed in terms of daily traffic volumes. Rural traffic volume warrants are

utilized when the 85th percentile speed of the major street traffic exceeds 40 miles per hour or when the intersection lies within the built up area of an isolated community having a population of less than 10,000. Table 8 shows the signal warrants in terms of daily traffic volumes.

When calculating signal volume warrants, the volumes of both the major and minor street must meet or exceed those listed in Table 8. Determining the major street daily signal warrant volume involves calculating the number of daily vehicles approaching the intersection on both major street legs; usually the daily approach volume is 50 percent of the street's daily two-way volume on each leg. Finding the minor street daily signal warrant volume involves calculating the number of daily vehicles approaching the intersection on only the highest volume leg; usually the daily approach volume is 50 percent of the street's two-way daily volume. If the minor street forms a tee intersection with the major street, then the minor street volume is the highest volume because there is no other volume.

It should be noted that signals should be installed only when warranted and that installation of unwarranted signals can increase accident potential, energy consumption, and air pollutant emissions, while costing governmental jurisdictions approximately $500 per month for maintenance and utilities.

Table 6

EXISTING PLUS PROJECT INTERSECTION CAPACITY UTILIZATION AND LANE GEOMETRICS, WITHOUT IMPROVEMENTS

Intersection	Intersection Approach Lanes (1)												Evening Peak Hour ICU (2)
	Northbound			Southbound			Eastbound			Westbound			
	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	PM
State Route 111 (NS) at													
50th Avenue (EW)	1	0	1	1	0	1	1	0	0	1	0	0	57
52nd Avenue (EW)	2	0	1	1	0	1	2	1	1	2	0	1	53
54th Avenue (EW)	1	0	1	1	0	0	1	0	0	0	0	0	41
56th Avenue - Airport Boulevard (EW)	1	1	1	1	1	1	1	0	0	1	0	0	79
58th Avenue (EW)	1	0	0	1	0	1	0	0	0	1	0	0	23
Tyler Street (NS) at													
50th Avenue-West (EW)	0	1	1	0	0	0	1	0	0	1	0	0	27
50th Avenue-East (EW)	1	0	0	1	0	0	0	0	0	1	0	0	21
52nd Avenue (EW)	1	0	0	1	0	0	2	0	1	2	0	1	32
Polk Street (NS) at													
50th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
52nd Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	51
54th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	14
Fillmore Street (NS) at													
52nd Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	110
54th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	95
56th Avenue - Airport Boulevard (EW)	1	0	0	1	0	0	1	0	0	1	0	0	157
58th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	14
Pierce Street (NS) at													
54th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	21
56th Avenue - Airport Boulevard (EW)	1	0	0	1	0	0	1	0	0	1	0	0	31
58th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	31

(1) When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

(2) Intersection Capacity Utilization (ICU)

T = Through
Rt = Right
Lt = Left

Table 7

EXISTING PLUS PROJECT INTERSECTION CAPACITY UTILIZATION AND LANE GEOMETRICS, WITH IMPROVEMENTS

Intersection	Intersection Approach Lanes (1)												Evening Peak Hour ICU (2)
	Northbound			Southbound			Eastbound			Westbound			
	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	T	Rt	Lt	PM
State Route 111 (NS) at													
50th Avenue (EW)	1	0	1	1	0	1	1	0	0	1	0	0	57
52nd Avenue (EW)	2	0	1	1	0	1	2	1	1	2	0	1	53
54th Avenue (EW)	1	0	1	1	0	0	1	0	0	0	0	0	41
56th Avenue - Airport Boulevard (EW)	1	1	1	1	1	1	1	0	0	1	0	0	79
58th Avenue (EW)	1	0	0	1	0	1	0	0	0	1	0	0	23
Tyler Street (NS) at													
50th Avenue-West (EW)	0	1	1	0	0	0	1	0	0	1	0	0	27
50th Avenue-East (EW)	1	0	0	1	0	0	0	0	0	1	0	0	21
52nd Avenue (EW)	1	0	0	1	0	0	2	0	1	2	0	1	32
Polk Street (NS) at													
50th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	28
52nd Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	51
54th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	14
Fillmore Street (NS) at													
52nd Avenue (EW)	1	0	1	1	0	0	1	1	0	1	0	0	57
54th Avenue (EW)	2	0	1	2	0	1	1	0	0	1	0	1	65
56th Avenue - Airport Boulevard (EW)	1	0	1	1	1	1	2	0	1	2	0	1	82
58th Avenue (EW)	0	0	0	1	0	0	1	0	0	1	0	0	14
Pierce Street (NS) at													
54th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	21
56th Avenue - Airport Boulevard (EW)	1	0	0	1	0	0	1	0	0	1	0	0	31
58th Avenue (EW)	1	0	0	1	0	0	1	0	0	1	0	0	31

(1) When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

(2) Intersection Capacity Utilization (ICU)

T = Through
Rt = Right
Lt = Left

Table 8

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic - See Note 2)

URBAN ..... RURAL	Minimum Requirements EADT	
1. Minimum Vehicular	Vehicles per day on major street (total of both approaches)	Vehicles per day on higher-volume minor-street approach (one direction only)
Satisfied _____ Not Satisfied _____		
Number of lanes for moving traffic on each approach		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 ..... 1	8,000 / 5,600	2,400 / 1,680
2 or more 1	9,600 / 6,720	2,400 / 1,680
2 or more ..... 2 or more	9,600 / 6,720	3,200 / 2,240
1 ..... 2 or more	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous Traffic	Vehicles per day on major street (total of both approaches)	Vehicles per day on higher-volume minor-street approach (one direction only)
Satisfied _____ Not Satisfied _____		
Number of lanes for moving traffic on each approach		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 ..... 1	12,000 / 8,400	1,200 / 850
2 or more 1	14,400 / 10,080	1,200 / 850
2 or more ..... 2 or more	14,400 / 10,080	1,600 / 1,120
1 ..... 2 or more	12,000 / 8,400	1,600 / 1,120
3. Combination	2 Warrants	2 Warrants
Satisfied _____ Not Satisfied _____		
No one warrant satisfied but following warrants fulfilled		
80% or more ..... _____ (1) _____ (2)		

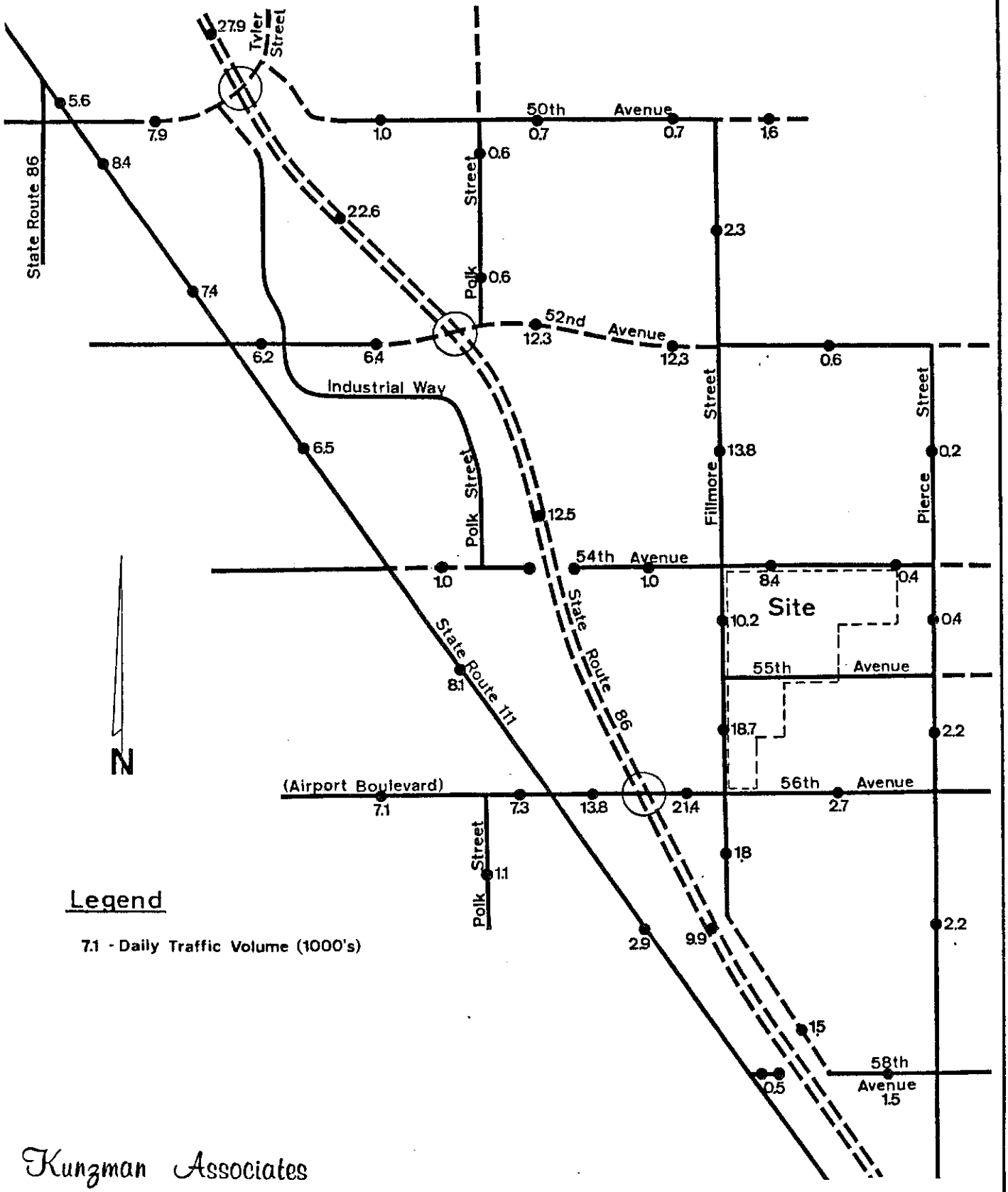
NOTE:

1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

Source: CalTrans, Traffic Manual, page 9-8

Figure 11

Existing Plus Project Daily Traffic Volumes



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Future Daily Volume to Capacity Ratios

Table 3 contains the daily capacity estimates by roadway functional classification on the City of Coachella Circulation Element. Based on the ultimate roadways shown on the recommended roadway network (see Figure 18), daily volume to capacity ratios for Level of Service E conditions have been calculated and are shown in Figure 17. Based on daily volume to capacity, roadways in the vicinity of the project site are projected to operate at Level of Service D or better for future traffic conditions.

Table 9

EXTERNAL TRIPS GENERATED BY OTHER DEVELOPMENT

Project	Morning Peak Hour		Evening Peak Hour		Daily
	In	Out	In	Out	
Brandenburg	950	680	730	930	14,760
McNaughton	2,610	2,000	4,110	4,340	94,950
Total	3,560	2,680	4,840	5,270	109,710

Note: Trips generated are rounded to nearest 10.

Figure 12

Brandenburg Specific Plan Traffic Distribution

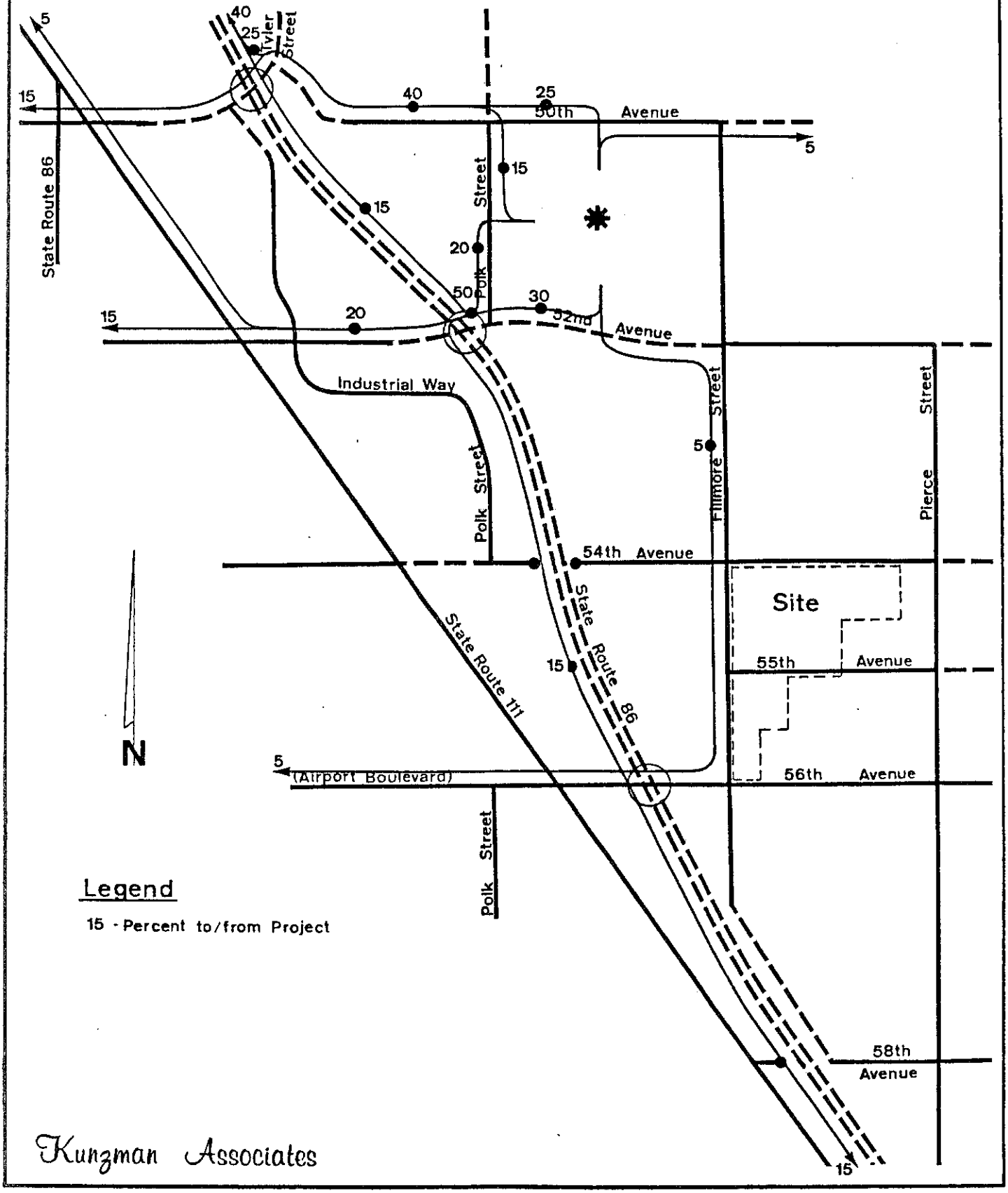

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Figure 13

McNaughton Specific Plan Traffic Distribution

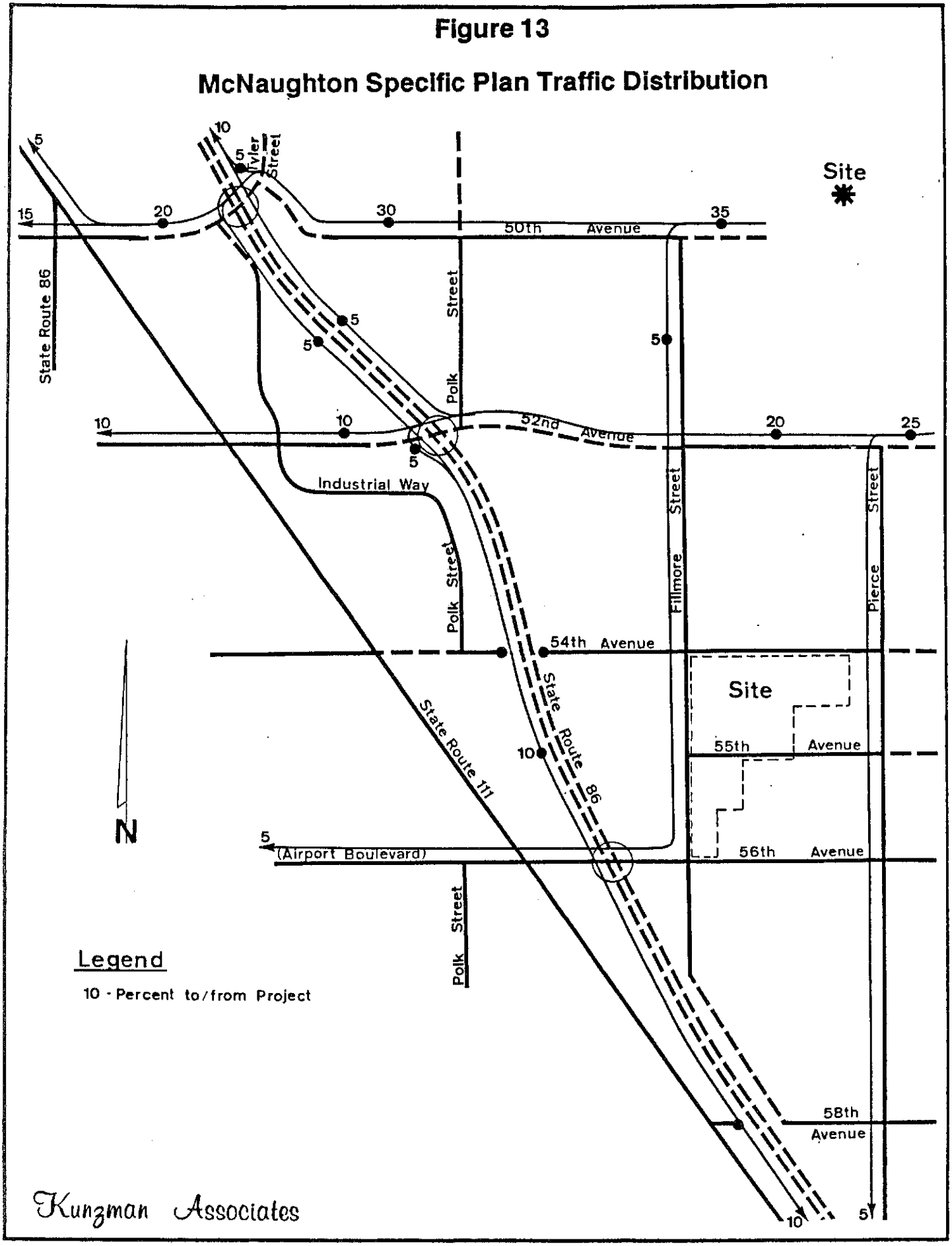

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Figure 14

Other Development Daily Traffic Volumes With Route 86 Extension

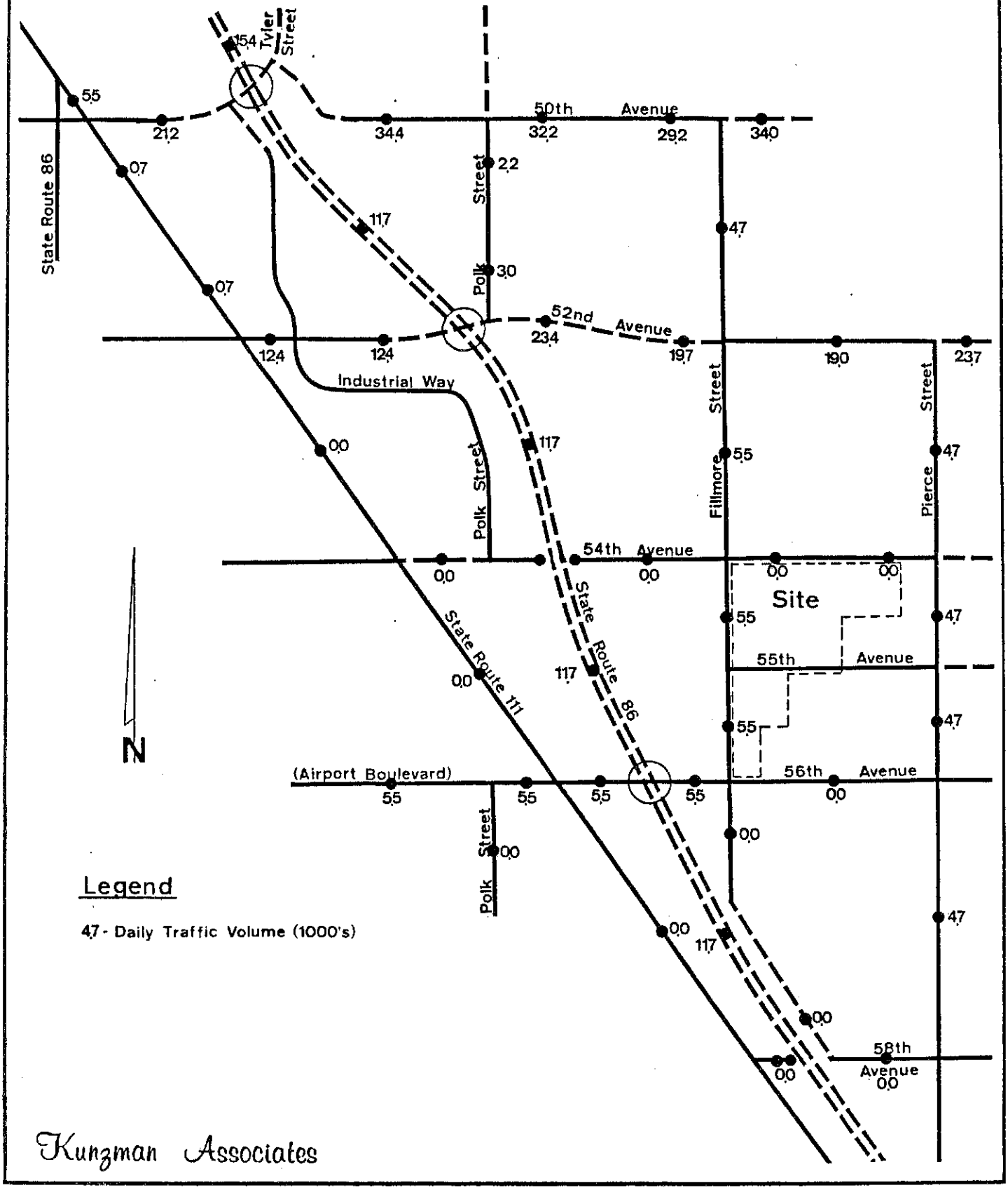

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Figure 15

Background Traffic Forecasts With Route 86 Extension

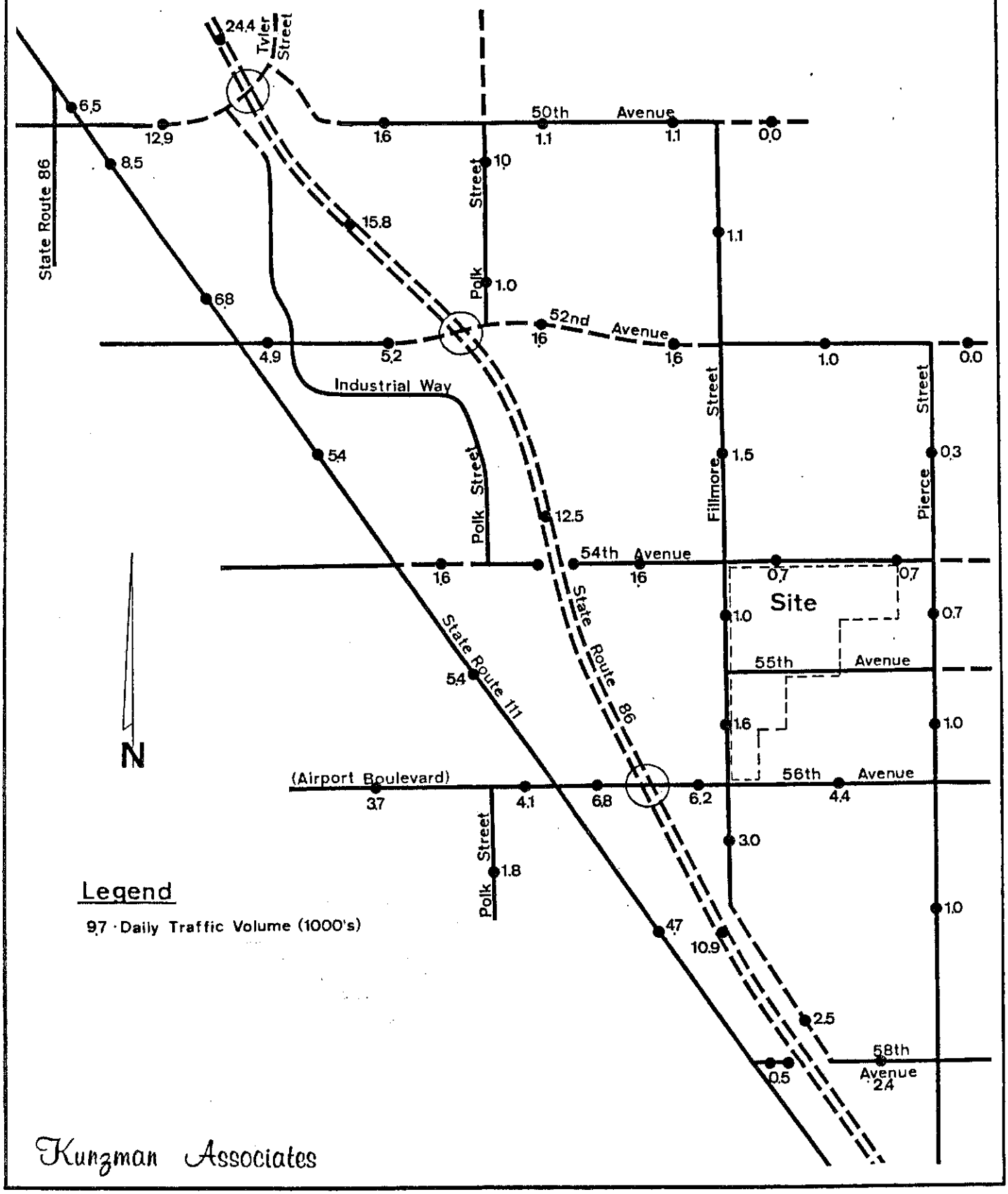

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Figure 16

Future Daily Traffic Volumes

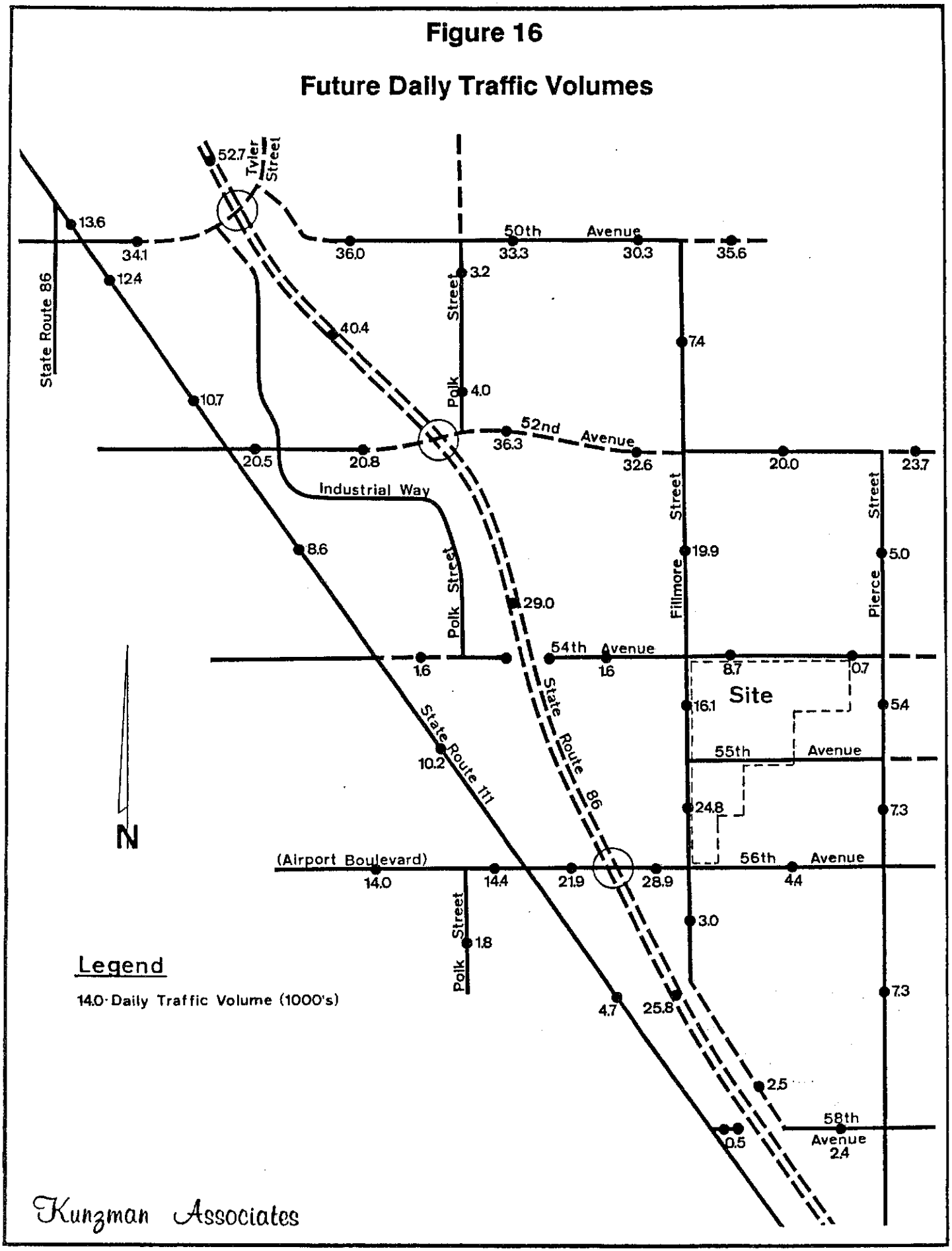

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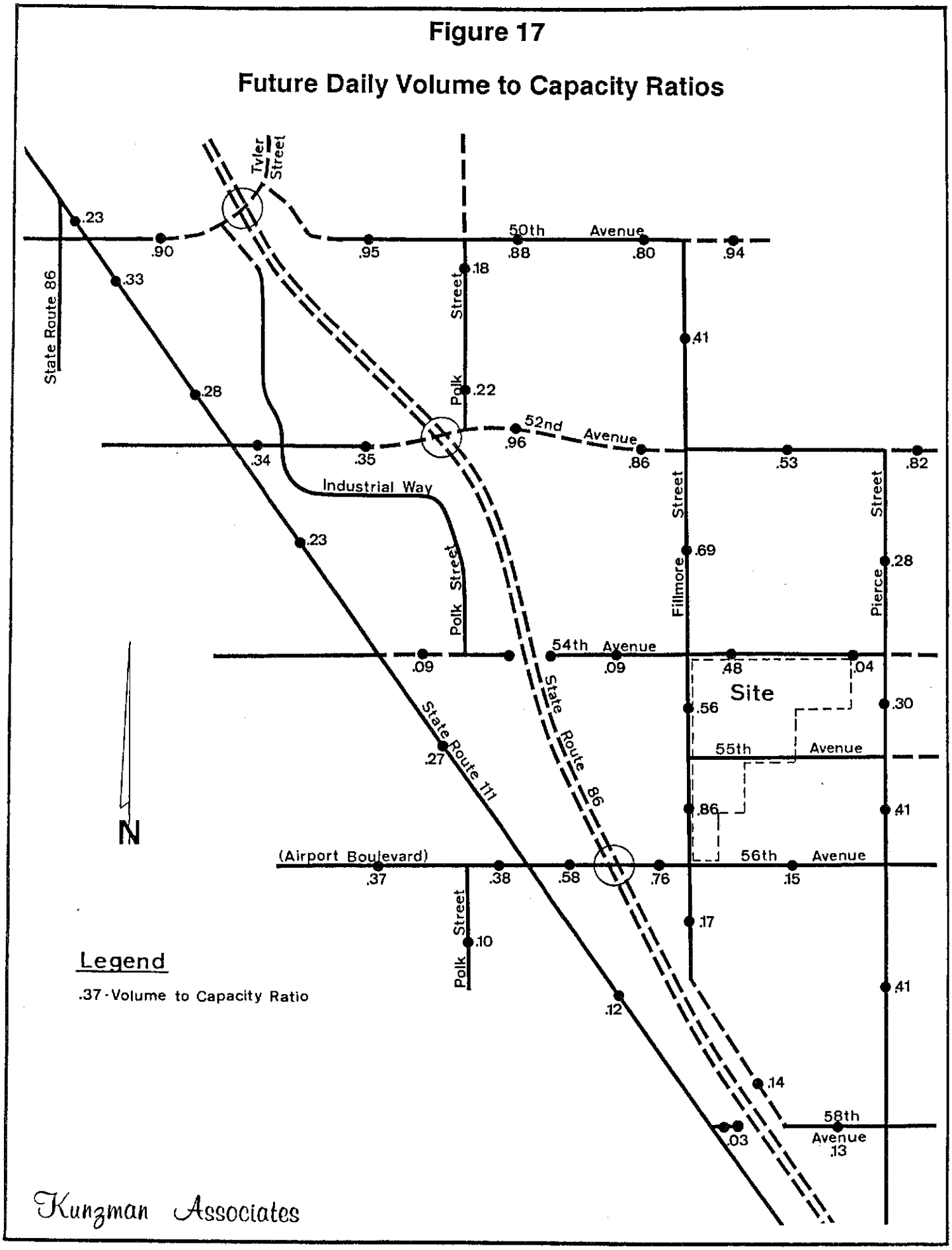
Figure 17

Future Daily Volume to Capacity Ratios



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7. Roadway Classification and Design Considerations

Discussed below are areawide circulation recommendations and internal design guidelines for the development.

Circulation Recommendations

Amend the City of Coachella General Plan Circulation Element to accommodate the following changes:

a. Designate Fillmore Street as a Secondary Arterial from 52nd Avenue to 56th Avenue.

b. Designate 52nd Avenue as a Primary Arterial from the Route 86 Freeway Extension to Pierce Street.

Adequate phasing for construction of arterial improvements should be provided as required by development.

To identify future internal circulation needs to the project, future traffic volumes for roadways internal to the project have been identified.

Based on projected daily and peak hour volumes, the number of roadway lanes have been identified and recommended future roadway sizes are shown in Figure 18.

Internal Design Guidelines for Residential Development

As the site plan for the project becomes more definitive, the following guidelines should be incorporated into the project design. Listed below for more detailed planning are recommended guidelines for the development.

1. Local streets should have a minimum radius of 250 feet (25 m.p.h. design speed).

2. Cul-de-sacs should not exceed 1,000 feet in length to facilitate emergency access.

3. Long straight roadway stretches should be avoided to discourage excessive speeds and thereby reduce safety hazards.

4. Adjacent intersections along the same street, but on opposite sides, should be offset a minimum of 150 feet centerline to centerline on collector and local streets.

5. Streets grades should not exceed 15 percent. Steep grades do not pose major problems but do increase braking distances, vehicle delay, and the likelihood of accidents.

6. Streets should intersect at as near to a right angle as possible, and at not more than a 15 degree skew.

7. Streets should intersect others on the outside rather than the inside of a horizontal curve.

8. Streets should not intersect on a crest vertical curve.

9. Schools should be located on low volume local streets and not on collectors.

10. Landscape plantings and signs should be limited in height within the vicinity of project roadways to assure good visibility.

Internal Design Guidelines for Commercial Development

1. Pedestrian walkways should be provided which separate pedestrian/vehicle conflicts. The conflicts seldom lead to accidents because of the low speeds; however, it is clearly desirable to separate vehicles and pedestrians whenever possible.

2. The traffic aisles which interconnect parcels are desirable; however, the aisles should have sufficient turns so that "through street" effects do not exist. Long stretches of straight travelway invite higher speeds. The maximum length of straight travelways should not exceed 300 or 400 feet when possible.

3. Circulation within the parking areas should allow relatively free flow of vehicular traffic with no constrictions.

4. The aisles should be placed in such a way that it is easy to reach any destination within a property after entering any driveway.

Commercial Access Design Guidelines

1. Access roads and/or driveways for the commercial developments should be located at least 200 feet apart and at least 200 feet from the nearest intersection.

2. Driveways to retail commercial should be curb-return type with at least 35 foot radius.

3. Driveways should be at least 28 feet wide, and preferably 30 to 35 feet wide, so that an entering vehicle does not interfere with an exiting vehicle. Narrower driveways lead to conflict between entering and exiting vehicles, causing one to stop and wait for the other.

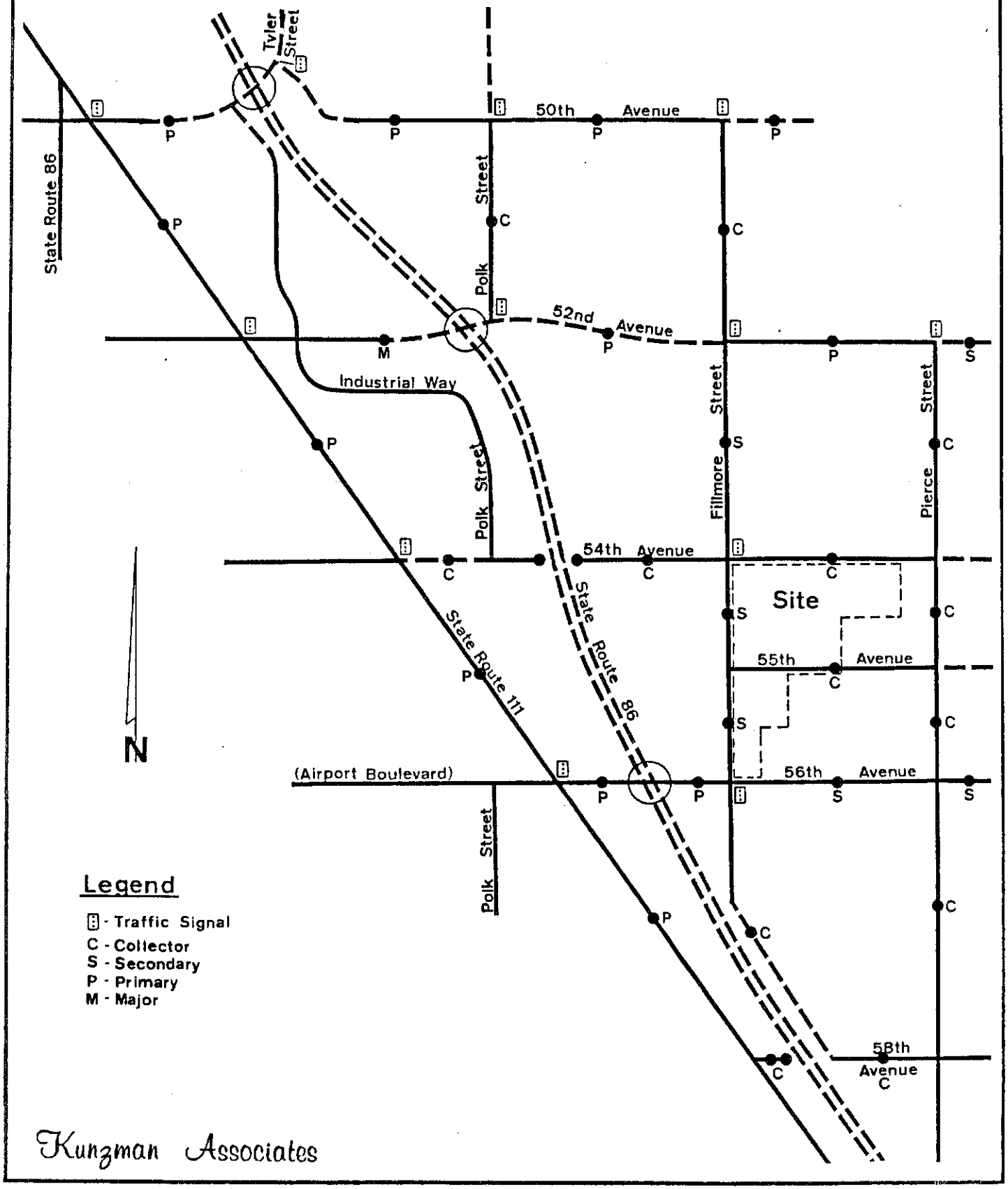
4. The first parking stall which is perpendicular to a driveway, or first aisle juncture, should be at least 40 feet back from the curb. The reason for this recommendation is to provide a queueing area off street so that if a vehicle is parking or unparking in the stall nearest the street, there is room for at least one vehicle to queue while waiting for the other vehicle to park. Without this provision, vehicles will queue into the street.

5. To provide for sufficient site access and yet minimize the number of required access locations, joint site access with adjacent sites should be encouraged in the planning of site development.

6. Landscape plantings and signs should be limited in height within the vicinity of project roadways to assure good visibility.

Figure 18

Circulation Recommendations



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8. Other Traffic Considerations

This section discusses average trip length and vehicle miles of travel.

Average Trip Length

LARTS data by CalTrans suggests a 7.2 mile per trip average for all trips as can be seen in Table 10. This estimate appears to be appropriate for the project site.

Vehicle Miles of Travel

Based upon the 7.2 mile average trip length discussed above, the proposed project will generate approximately 272,400 vehicle miles of travel daily. It should be noted that the vehicle miles of travel estimated above are not directly indicative of the air pollutant loading that will result from this project. The future users of this site exist today and probably live in this air basin. By relocating, their current pollutant emissions will probably remain almost constant, on an overall basis, and simply be displaced. Additionally, vehicle miles of travel are not directly proportional to air pollutant emissions. Other factors including cold starts, speed of travel, congestion, and vehicle age and maintenance strongly influence emission rates.

Table 10

ONE-WAY TRIP LENGTHS BY LAND USE

Land Use	Trip Lengths Miles
Residential	6.9
Commercial	3.5
Employment	9.8 (estimated)*
High School	2 (estimated)
Elementary School	1 (estimated)
All Trips	7.2

Source: Los Angeles Regional Transportation (LARTS) Base Year Report with the "estimated" numbers furnished by Kunzman Associates.

* LARTS data indicated the home-to-work trip is 10.5 miles and all "other" trips to place of employment is 8.3 miles. The 9.8 assumes two work trips for each "other" trip.

Appendix

Appendix A - Explanation and Calculation of Intersection Capacity Utilization

APPENDIX A

EXPLANATION AND CALCULATION
OF INTERSECTION CAPACITY UTILIZATION

EXPLANATION AND CALCULATION OF INTERSECTION CAPACITY UTILIZATION (ICU)

The ability of a roadway to carry traffic is referred to as capacity. The capacity is usually greater between intersections and less at intersections because traffic flows continuously between them and only during the green phase at them. Capacity at intersections is best defined in terms of vehicles per lane per hour of green. If capacity is 1600 vehicles per lane per hour of green, and if the green phase is 50 percent of the cycle and there are three lanes, then the capacity is 1600 times 50 percent times 3 lanes, or 2400 vehicles per hour.

The technique used to compare the volume and capacity at an intersection is known as Intersection Capacity Utilization (ICU). ICU, usually expressed as a percent, is the proportion of an hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. If an intersection is operating at 80 percent of capacity, then 20 percent of the signal cycle is not used. The signal could show red on all indications 20 percent of the time and the signal would just accommodate approaching traffic.

ICU analysis consists of (a) determining the proportion of signal time needed to serve each conflicting movement of traffic, (b) summing the times for the movements, and (c) comparing the total time required to the total time available. For example, if for north-south traffic the northbound traffic is 1600 vehicles per hour, the southbound traffic is 1200 vehicles per hour, and the capacity of either direction is 3200 vehicles per hour, then the northbound traffic is critical and requires 1600/3200 or 50 percent of the signal time. If for the east-west traffic 30 percent of the signal time is required, then it can be seen that the ICU is 50 plus 30, or 80 percent. When left turn phases exist, they are incorporated into the analysis. The critical movements are usually the heavy left turn movements and the opposing through movements.

Level of service is used to describe the quality of traffic flow. Levels of Service A to C operate quite well. Level of Service C is typically the standard to which rural roads are designed, and level of Service D is the standard to which urban roadways are typically designed. Level of Service D is characterized by fairly restricted traffic flow. Level of Service E is the maximum volume a facility can accomodate and will result in possible stoppages of momentary duration. Level of Service F occurs when a facility is overloaded and is characterized by stop-and-go traffic with stoppages of long duration. A description of the various levels of traffic service appears on the following page, along with the relationship between ICU and level of traffic service.

The ICU calculation assumes that an intersection is signalized and that the signal is ideally timed. Although calculating ICU for an unsignalized intersection is invalid, the presumption is that a signal can be installed and the calculation shows whether the geometrics are capable of accommodating the expected volume with a signal. It is possible to have an ICU well below 100 percent, yet have severe traffic congestion. This would occur if one or more movements is not getting sufficient green time to satisfy its demand, and excess green time exists on other movements. This is an operational problem which should be remedied.

Capacity is often defined in terms of roadway width; however, standard lanes have approximately the same capacity whether they are 11 or 14 feet wide. Our data indicates a typical lane, whether a through lane or a left turn lane, has a capacity of approximately 1750 vehicles per hour, with nearly all locations showing a capacity greater than 1600 vehicles per hour per lane. This finding is published in the August, 1978 issue of ITE Journal in the article entitled, "Another Look at Signalized Intersection Capacity" by William Kunzman. For this study, a capacity of 1600 vehicles per hour per lane will be assumed for both through and left turn lanes.

The yellow time can either be assumed to be completely used and no penalty applied, or it can be assumed to be only partially usable. Total yellow time accounts for less than 10 percent of a cycle, and a penalty up

to three percent is reasonable. On the other hand, during peak hour traffic operation the yellow times are nearly completely used. If there are no left turn phases, the left turn vehicles completely use the yellow time. If there are left turn phases, the through traffic continues to enter the intersection on the yellow until just a split second before the red. In this study no penalty will be applied for the yellow because the capacities have been assumed to be only 1600 vehicles per hour per lane when in general they are 1750.

The ICU technique is an ideal tool to quantify existing as well as future intersection operation. The impact of adding a lane can be quickly determined by examining the effect the lane has on the intersection capacity utilization.

ICU parallels another calculation procedure known as the Critical Lane Method with one exception. Critical Lane Method dimensions capacity in terms of standardized vehicles per hour per lane. A Critical Lane Method result of 800 vehicles per hour means that the intersection operates as though 800 vehicles were using a single lane continuously. If one assumes a lane capacity of 1600 vehicles per hour, then a Critical Lane Method calculation resulting in 800 vehicles per hour is the same as an ICU calculation of 50 percent since 800/1600 is 50 percent. It is our opinion that the Critical Lane Method is inferior to the ICU method simply because a statement such as "The Critical Lane Method value is 800 vehicles per hour" means little to most persons, whereas a statement such a "the Intersection Capacity Utilization is 50 percent" communicates clearly. A Critical Lane Method of ICU correspondence table is as follows, assuming a lane capacity of 1600 vehicles per hour.

Critical Lane Method Result	Corresponding ICU Result
800 vehicles per hour	50 percent
960 vehicles per hour	60 percent
1120 vehicles per hour	70 percent
1280 vehicles per hour	80 percent
1440 vehicles per hour	90 percent
1600 vehicles per hour	100 percent

LEVEL OF SERVICE DESCRIPTION

Level of Service	Description	Stopped Delay Per Vehicle (Seconds)	Intersection Capacity Utilization (Percent)
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 5.0	0 to 60
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	5.1 to 15.0	61 to 70
C	Level of Service generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	15.1 to 25.0	71 to 80
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	25.1 to 40.0	81 to 90
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	40.1 to 60.0	91 to 100
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	60.1 +	100 +

Source: "Highway Capacity Manual" Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 1985, Pages 9-4 to 9-5.

INTERSECTION: STATE ROUTE 111 (NS) AT 50TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	440	0	0	0	440	7*	29*
NR	0	0	0	20	0	0	0	20	0	0
NL	1	1600	0	70	0	0	0	70	7	7
ST	1	1600	0	340	0	0	0	340	7	22
SR	0	0	0	10	0	0	0	10	0	0
SL	1	1600	0	60	0	0	0	60	7*	7*
ET	1	1200	0	30	0	0	0	30	7*	10
ER	0	0	0	80	0	0	0	80	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1200	0	30	0	0	0	30	7	13*
WR	0	0	0	90	0	0	0	90	0	0
WL	0	0	0	30	0	0	0	30	0*	7
ICU										56
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	2	3200	0	390	0	0	0	390	7*	13
NR	0	0	0	30	0	0	0	30	0	0
NL	1	1600	0	80	0	0	0	80	7	7*
ST	1	1600	0	350	0	0	0	350	7	24*
SR	0	0	0	40	0	0	0	40	0	0
SL	1	1600	0	60	0	0	0	60	7*	7
ET	2	3200	0	80	0	0	0	80	7*	7
ER	1	1600	0	60	0	0	0	60	7	7
EL	1	1600	0	20	0	0	0	20	7	7*
WT	2	3200	0	100	0	0	0	100	7	9*
WR	0	0	0	190	0	0	0	190	0	0
WL	1	1600	0	40	0	0	0	40	7*	7
ICU										47
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	350	0	0	0	350	7	22
NR	0	0	0	0	0	0	0	0	0	0
NL	1	1600	0	20	0	0	0	20	7*	7*
ST	1	1600	0	330	0	0	0	330	7*	21*
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	0	0	0	0	0	0	0
ET	1	1200	0	0	0	0	0	0	7*	7
ER	0	0	0	20	0	0	0	20	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	0	0	0	0	0	0	0	0	0	0*
WR	0	0	0	0	0	0	0	0	0	0
WL	0	1600	0	0	0	0	0	0	0*	0
ICU										35
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 56TH AVENUE - AIRPORT BOULEVARD (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	310	0	0	0	310	7*	19*
NR	1	1600	0	30	0	0	0	30	7	7
NL	1	1600	0	40	0	0	0	40	7	7
ST	1	1600	0	240	0	0	0	240	7	15
SR	1	1600	0	40	0	0	0	40	7	7
SL	1	1600	0	50	0	0	0	50	7*	7*
ET	1	1600	0	40	0	0	0	40	7*	8
ER	0	0	0	40	0	0	0	40	0	0
EL	0	0	0	40	0	0	0	40	0	7*
WT	1	1600	0	40	0	0	0	40	7	8*
WR	0	0	0	70	0	0	0	70	0	0
WL	0	0	0	10	0	0	0	10	0*	7
ICU										41
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 58TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	240	0	0	0	240	7*	16*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	0	0	0	0	0	0	0
ST	1	1600	0	190	0	0	0	190	7	12
SR	0	0	0	0	0	0	0	0	0	0
SL	1	1600	0	30	0	0	0	30	7*	7*
ET	0	0	0	0	0	0	0	0	0	0
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	0	0	0	0	0	0*	0*
WT	1	1200	0	0	0	0	0	0	7*	8*
WR	0	0	0	80	0	0	0	80	0	0
WL	0	0	0	10	0	0	0	10	0	7
ICU										31
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: TYLER STREET (NS) AT 50TH AVENUE - WEST (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRCS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0
NR	1	1200	0	30	0	0	0	30	7	7
NL	1	1200	0	60	0	0	0	60	7*	7*
ST	0	0	0	0	0	0	0	0	0*	0*
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	0	0	0	0
ET	1	1200	0	40	0	0	0	40	7*	8*
ER	0	0	0	60	0	0	0	60	0	0
EL	0	0	0	0	0	0	0	0	0	0
WT	1	1600	0	30	0	0	0	30	7	7
WR	0	0	0	0	0	0	0	0	0	0
WL	0	0	0	20	0	0	0	20	0*	7*
ICU										22
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: TYLER STREET (NS) AT 50TH AVENUE - EAST (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0*
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0*	0
ST	1	1200	0	0	0	0	0	0	7*	7
SR	0	0	0	20	0	0	0	20	0	0
SL	0	0	0	10	0	0	0	10	0	7*
ET	1	1600	0	40	0	0	0	40	7*	7
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	40	0	0	0	40	0	7*
WT	1	1200	0	30	0	0	0	30	7	7*
WR	0	0	0	20	0	0	0	20	0	0
WL	0	1200	0	0	0	0	0	0	0*	0
ICU										21
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: TYLER STREET (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	20	0	0	0	20	7*	8
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	60	0	0	0	60	0	7*
ST	1	1200	0	10	0	0	0	10	7	9*
SR	0	0	0	90	0	0	0	90	0	0
SL	0	0	0	10	0	0	0	10	0*	7
ET	2	3200	0	40	0	0	0	40	7*	7
ER	0	0	0	20	0	0	0	20	0	0
EL	1	1600	0	80	0	0	0	80	7	7*
WT	2	3200	0	40	0	0	0	40	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	1	1600	0	10	0	0	0	10	7*	7
ICU										30
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: POLK STREET (NS) AT 50TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	10	0	0	0	10	7*	7*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	10	0	0	0	10	0	7
ST	1	960	0	10	0	0	0	10	7	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0*	7*
ET	1	1600	0	10	0	0	0	10	7*	7
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1600	0	20	0	0	0	20	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7
ICU										28
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: POLK STREET (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0*
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0*	0
ST	1	1200	0	0	0	0	0	0	7*	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0	7*
ET	1	1600	0	40	0	0	0	40	7*	7
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1600	0	40	0	0	0	40	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	1600	0	0	0	0	0	0	0*	0
ICU										21
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: POLK STREET (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0*	0*
ST	1	1600	0	0	0	0	0	0	7*	7*
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	0	0	0	0
ET	1	1600	0	0	0	0	0	0	7*	7*
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	0	0	0	0	0	0	0
WT	1	1600	0	0	0	0	0	0	7	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	1600	0	0	0	0	0	0	0*	0*
ICU										14
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	20	0	0	0	20	7*	7*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	20	0	0	0	20	0	7
ST	1	1600	0	10	0	0	0	10	7	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0*	7*
ET	1	1200	0	10	0	0	0	10	7*	7*
ER	0	0	0	20	0	0	0	20	0	0
EL	0	0	0	10	0	0	0	10	0	7
WT	1	1200	0	10	0	0	0	10	7	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7*
ICU										28
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	30	0	0	0	30	7*	7*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	10	0	0	0	10	0	7
ST	1	1600	0	20	0	0	0	20	7	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0*	7*
ET	1	1200	0	10	0	0	0	10	7*	7*
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7
WT	1	1200	0	10	0	0	0	10	7	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7*
ICU										28
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 56TH AVENUE - AIRPORT BOULEVARD (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	20	0	0	0	20	7*	7
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	50	0	0	0	50	0	7*
ST	1	1200	0	10	0	0	0	10	7	7*
SR	0	0	0	30	0	0	0	30	0	0
SL	0	0	0	10	0	0	0	10	0*	7
ET	1	1600	0	50	0	0	0	50	7*	7
ER	0	0	0	40	0	0	0	40	0	0
EL	0	0	0	20	0	0	0	20	0	7*
WT	1	1600	0	50	0	0	0	50	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7
ICU										28
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 58TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0*
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0*	0
ST	1	1200	0	0	0	0	0	0	7*	7
SR	0	0	0	50	0	0	0	50	0	0
SL	0	0	0	10	0	0	0	10	0	7*
ET	1	1600	0	40	0	0	0	40	7*	7
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1600	0	50	0	0	0	50	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	1600	0	0	0	0	0	0	0*	0
ICU										21
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: PIERCE STREET (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	10	0	0	0	10	7*	7
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	10	0	0	0	10	0	7*
ST	1	1600	0	10	0	0	0	10	7	7*
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	0	0	0*	0
ET	1	1600	0	0	0	0	0	0	7*	7*
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	0	0	0	0	0	0	0
WT	1	960	0	0	0	0	0	0	7	7
WR	0	0	0	0	0	0	0	0	0	0
WL	0	960	0	0	0	0	0	0	0*	0*
ICU										21
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: PIERCE STREET (NS) AT 56TH AVENUE - AIRPORT BOULEVARD (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	10	0	0	0	10	7*	7*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	10	0	0	0	10	0	7
ST	1	1200	0	10	0	0	0	10	7	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0*	7*
ET	1	1600	0	30	0	0	0	30	7*	7
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1600	0	40	0	0	0	40	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7
ICU										28
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: PIERCE STREET (NS) AT 58TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITHOUT PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	10	0	0	0	10	7*	7*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	10	0	0	0	10	0	7
ST	1	1200	0	10	0	0	0	10	7	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0*	7*
ET	1	1600	0	10	0	0	0	10	7*	7*
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7
WT	1	1600	0	10	0	0	0	10	7	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7*

ICU	28
LEVELS OF SERVICE	A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

.NTERSECTION: STATE ROUTE 111 (NS) AT 50TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	260	40	80	40	340	7	25*
NR	0	0	0	60	0	0	0	60	0	0
NL	1	1600	0	30	40	80	40	110	7*	7
ST	1	1600	0	200	30	90	30	290	7*	19
SR	0	0	0	10	0	0	0	10	0	0
SL	1	1600	0	70	0	0	0	70	7	7*
ET	1	1200	0	70	0	0	0	70	7*	18*
ER	0	0	0	40	30	90	30	130	0	0
EL	0	0	0	10	0	0	0	10	0	7
WT	1	1200	0	70	0	0	0	70	7	13
WR	0	0	0	60	0	0	0	60	0	0
WL	0	0	0	30	0	0	0	30	0*	7*
ICU										57
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	2	3200	0	230	80	160	80	390	7*	14
NR	0	0	0	70	0	0	0	70	0	0
NL	1	1600	0	40	0	0	0	40	7	7*
ST	1	1600	0	210	70	170	70	380	7	25*
SR	0	0	0	20	0	0	0	20	0	0
SL	1	1600	0	80	0	0	0	80	7*	7
ET	2	3200	0	120	70	170	70	290	7	9
ER	1	1600	0	30	0	0	0	30	7	7
EL	1	1600	0	10	0	0	0	10	7*	7*
WT	2	3200	0	160	80	160	80	320	7*	14*
WR	0	0	0	120	0	0	0	120	0	0
WL	1	1600	0	40	0	0	0	40	7	7
ICU										53
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	210	80	160	80	370	7	23
NR	0	0	0	0	0	0	0	0	0	0
NL	1	1600	0	20	40	80	40	100	7*	7*
ST	1	1600	0	200	70	170	70	370	7*	24*
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	0	0	0	0	0	0	0
ET	1	1200	0	0	0	0	0	0	7*	10*
ER	0	0	0	20	30	90	30	110	0	0
EL	0	0	0	10	0	0	0	10	0	7
WT	0	0	0	0	0	0	0	0	0	0
WR	0	0	0	0	0	0	0	0	0	0
WL	0	1600	0	0	0	0	0	0	0*	0*
ICU										41
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 56TH AVENUE - AIRPORT BOULEVARD (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	190	0	0	0	190	7*	12*
NR	1	1600	0	50	0	0	0	50	7	7
NL	1	1600	0	20	0	0	0	20	7	7
ST	1	1600	0	140	0	0	0	140	7	9
SR	1	1600	0	20	0	0	0	20	7	7
SL	1	1600	0	70	100	260	100	330	7*	21*
ET	1	1600	0	80	100	260	100	340	7	24
ER	0	0	0	20	0	0	0	20	0	0
EL	0	0	0	20	0	0	0	20	0*	7*
WT	1	1600	0	80	120	230	120	310	15*	39*
WR	0	0	0	70	120	230	120	300	0	0
WL	0	0	0	10	0	0	0	10	0	7
ICU										79
LEVELS OF SERVICE										C

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: STATE ROUTE 111 (NS) AT 58TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY.

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	140	0	0	0	140	7*	9*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	0	0	0	0	0	0	0
ST	1	1600	0	110	0	0	0	110	7	7
SR	0	0	0	0	0	0	0	0	0	0
SL	1	1600	0	10	0	0	0	10	7*	7*
ET	0	0	0	0	0	0	0	0	0	0*
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	0	0	0	0	0	0*	0
WT	1	1200	0	0	0	0	0	0	7*	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0	7*
ICU										23
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: TYLER STREET (NS) AT 50TH AVENUE - WEST (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRCS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0
NR	1	1200	0	60	0	0	0	60	7	7
NL	1	1200	0	30	0	0	0	30	7*	7*
ST	0	0	0	0	0	0	0	0	0*	0*
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	0	0	0	0
ET	1	1200	0	130	0	0	0	130	7*	13*
ER	0	0	0	30	0	0	0	30	0	0
EL	0	0	0	0	0	0	0	0	0	0
WT	1	1600	0	70	0	0	0	70	7	8
WR	0	0	0	0	0	0	0	0	0	0
WL	0	0	0	50	0	0	0	50	0*	7*
ICU										27
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: TYLER STREET (NS) AT 50TH AVENUE - EAST (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
GEOMETRICS WITH PROJECT

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	40	0	0	0	40	7*	7*
NR	0	0	0	40	0	0	0	40	0	0
NL	0	0	0	0	0	0	0	0	0	0
ST	1	1600	0	20	0	0	0	20	7	7
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	10	0	0	0	10	0*	7*
ET	0	0	0	0	0	0	0	0	0	0*
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	0	0	0	0	0	0*	0
WT	1	1200	0	0	0	0	0	0	7*	7
WR	0	0	0	20	0	0	0	20	0	0
WL	0	0	0	30	0	0	0	30	0	7*
ICU										21
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS. DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: TYLER STREET (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	20	0	0	0	20	7*	8*
NR	0	0	0	40	0	0	0	40	0	0
NL	0	0	0	30	0	0	0	30	0	7
ST	1	1200	0	10	0	0	0	10	7	8
SR	0	0	0	40	0	0	0	40	0	0
SL	0	0	0	50	0	0	0	50	0*	7*
ET	2	3200	0	130	70	170	70	300	7	10*
ER	0	0	0	10	0	0	0	10	0	0
EL	1	1600	0	40	0	0	0	40	7*	7
WT	2	3200	0	100	80	160	80	260	7*	10
WR	0	0	0	50	0	0	0	50	0	0
WL	1	1600	0	20	0	0	0	20	7	7*
ICU										32
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: POLK STREET (NS) AT 50TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	10	0	0	0	10	7*	7*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	10	0	0	0	10	0	7
ST	1	960	0	10	0	0	0	10	7	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0*	7*
ET	1	1600	0	10	0	0	0	10	7*	7
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1600	0	20	0	0	0	20	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7
ICU										28
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: POLK STREET (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0*
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0*	0
ST	1	1200	0	0	0	0	0	0	7*	7
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0	7*
ET	1	1600	0	40	230	610	230	650	14	41
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	10	0	0	0	10	0*	7*
WT	1	1600	0	40	270	540	270	580	17*	37*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	1600	0	0	0	0	0	0	0	0
ICU										51
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: POLK STREET (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0*	0*
ST	1	1600	0	0	0	0	0	0	7*	7*
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	0	0	0	0
ET	1	1600	0	0	0	0	0	0	7*	7*
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	0	0	0	0	0	0	0
WT	1	1600	0	0	0	0	0	0	7	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	1600	0	0	0	0	0	0	0*	0*
ICU										14
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 52ND AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
GEOMETRICS WITH PROJECT

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	20	40	80	40	100	7	7
NR	0	0	0	10	0	0	0	10	0	0
NL	1	1600	0	20	270	540	270	560	17*	35*
ST	1	1600	0	10	30	90	30	100	7*	8*
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0	7
ET	1	1200	0	10	0	0	0	10	7*	7*
ER	1	1200	0	20	230	610	230	630	19	53
EL	0	0	0	10	0	0	0	10	0	7
WT	1	1200	0	10	0	0	0	10	7	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7*
ICU										57
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
GEOMETRICS WITH PROJECT

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	2	3200	0	30	160	310	160	340	7*	14*
NR	0	0	0	10	30	90	30	100	0	0
NL	1	1600	0	10	0	0	0	10	7	7
ST	2	3200	0	20	130	350	130	370	7	12
SR	0	0	0	10	0	0	0	10	0	0
SL	1	1600	0	10	130	350	130	360	8*	23*
ET	1	1600	0	10	0	0	0	10	7*	7
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1600	0	10	0	0	0	10	10	21*
WR	0	0	0	10	160	310	160	320	0	0
WL	1	1600	0	10	40	80	40	90	7*	7
ICU										65
LEVELS OF SERVICE										B

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 56TH AVENUE - AIRPORT BOULEVARD (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
GEOMETRICS WITH PROJECT

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	20	0	0	0	20	7*	7
NR	0	0	0	10	0	0	0	10	0	0
NL	1	1600	0	100	0	0	0	100	7	7*
ST	1	1600	0	10	0	0	0	10	7	7*
SR	1	1600	0	30	430	850	430	880	27	55
SL	1	1600	0	10	0	0	0	10	7*	7
ET	2	3200	0	50	0	0	0	50	7	7
ER	0	0	0	40	0	0	0	40	0	0
EL	1	1600	0	20	360	960	360	980	23*	61*
WT	2	3200	0	50	0	0	0	50	7*	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	1	1600	0	10	0	0	0	10	7	7
ICU										82
LEVELS OF SERVICE										D

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: FILLMORE STREET (NS) AT 58TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	0	0	0	0	0	0	0	0	0	0*
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	0	0	0	0	0	0*	0
ST	1	1200	0	0	0	0	0	0	7*	7
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	60	0	0	0	60	0	7*
ET	1	1600	0	0	0	0	0	0	7*	7*
ER	0	0	0	0	0	0	0	0	0	0
EL	0	0	0	0	0	0	0	0	0	0
WT	1	1600	0	0	0	0	0	0	7	7
WR	0	0	0	60	0	0	0	60	0	0
WL	0	1600	0	0	0	0	0	0	0*	0*
ICU										14
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: PIERCE STREET (NS) AT 54TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1600	0	10	0	0	0	10	7*	7
NR	0	0	0	0	0	0	0	0	0	0
NL	0	0	0	10	0	0	0	10	0	7*
ST	1	1600	0	10	0	0	0	10	7	7*
SR	0	0	0	0	0	0	0	0	0	0
SL	0	0	0	0	0	0	0	0	0*	0
ET	1	1600	0	0	0	0	0	0	7*	7*
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	0	0	0	0	0	0	0
WT	1	960	0	0	0	0	0	0	7	7
WR	0	0	0	0	0	0	0	0	0	0
WL	0	960	0	0	0	0	0	0	0*	0*
ICU										21
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: PIERCE STREET (NS) AT 56TH AVENUE - AIRPORT BOULEVARD (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	10	30	90	30	100	7	10*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	10	0	0	0	10	0*	7
ST	1	1200	0	10	40	80	40	90	7*	9
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0	7*
ET	1	1600	0	30	0	0	0	30	7*	7
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7*
WT	1	1600	0	40	0	0	0	40	7	7*
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7
ICU										31
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

INTERSECTION: PIERCE STREET (NS) AT 58TH AVENUE (EW)
RUN TITLE: LUSARDI SPECIFIC PLAN TRAFFIC STUDY

LAND USE: EXISTING WITH PROJECT 1
EXISTING GEOMETRICS

INTERSECTION VOLUMES AND CAPACITY UTILIZATION

MOVEMENTS	LANES	CAPACITY	EXISTING VOLUME		PROJECT VOLUME		TOTAL VOLUME		V/C RATIO(%)	
			AM	PM	AM	PM	AM	PM	AM	PM
NT	1	1200	0	10	30	90	30	100	7	10*
NR	0	0	0	10	0	0	0	10	0	0
NL	0	0	0	10	0	0	0	10	0*	7
ST	1	1200	0	10	40	80	40	90	7*	9
SR	0	0	0	10	0	0	0	10	0	0
SL	0	0	0	10	0	0	0	10	0	7*
ET	1	1600	0	10	0	0	0	10	7*	7*
ER	0	0	0	10	0	0	0	10	0	0
EL	0	0	0	10	0	0	0	10	0	7
WT	1	1600	0	10	0	0	0	10	7	7
WR	0	0	0	10	0	0	0	10	0	0
WL	0	0	0	10	0	0	0	10	0*	7*
ICU										31
LEVELS OF SERVICE										A

ICU IS THE SUM OF THE CRITICAL MOVEMENTS, DENOTED BY AN ASTERISK (*)

THE TURNING MOVEMENTS ADD TO THE THROUGH VOLUMES
WHEN THERE ARE NO TURNING LANES.

N: NORTH, S: SOUTH, E: EAST, W: WEST
T: THROUGH, R: RIGHT, L: LEFT

APPENDIX C

GEOLOGY STUDY

LEIGHTON AND ASSOCIATES, INC.

Geotechnical and Environmental Engineering Consultants

GEOTECHNICAL STUDY FOR PLANNING PURPOSES FOR PROPOSED RANCHO COACHELLA COMMERCIAL, INDUSTRIAL, AND RESIDENTIAL DEVELOPMENT LOCATED AROUND THE AREA OF AVENUE 54 AND HIGHWAY 111, COACHELLA, CALIFORNIA

December 8, 1988

Project No. 5880673-01

Prepared for:

LUSARDI CONSTRUCTION COMPANY
54-000 Highway 111
P.O. Box 936
Coachella, California 92236
Attn: Mr. Robert Napoli

74-240 HIGHWAY 111, PALM DESERT, CALIFORNIA 92260

(619) 568-0993
FAX (619) 341-7490

LEIGHTON AND ASSOCIATES, INC.
Geotechnical and Environmental Engineering Consultants

December 8, 1988

Project No. 5880673-01

TO: Lusardi Construction Company
54-000 Highway 111
P. O. Box 936
Coachella, California 92236

ATTENTION: Mr. Robert Napoli

SUBJECT: Geotechnical Study for Planning Purposes for Proposed Rancho Coachella Commercial, Industrial, and Residential Development Located Around the Area of Avenue 54 and Highway 111, Coachella, California

Introduction

In accordance with your authorization, we have conducted a planning level geotechnical study of the subject site. We have investigated the site with regard to the six units of development planned at this time. The purpose of this investigation was to identify geological and geotechnical concerns and potential constraints on development at the sites. These concerns should be addressed in detail with further, more specific studies once specific plans for development have been prepared. The scope of this investigation included:

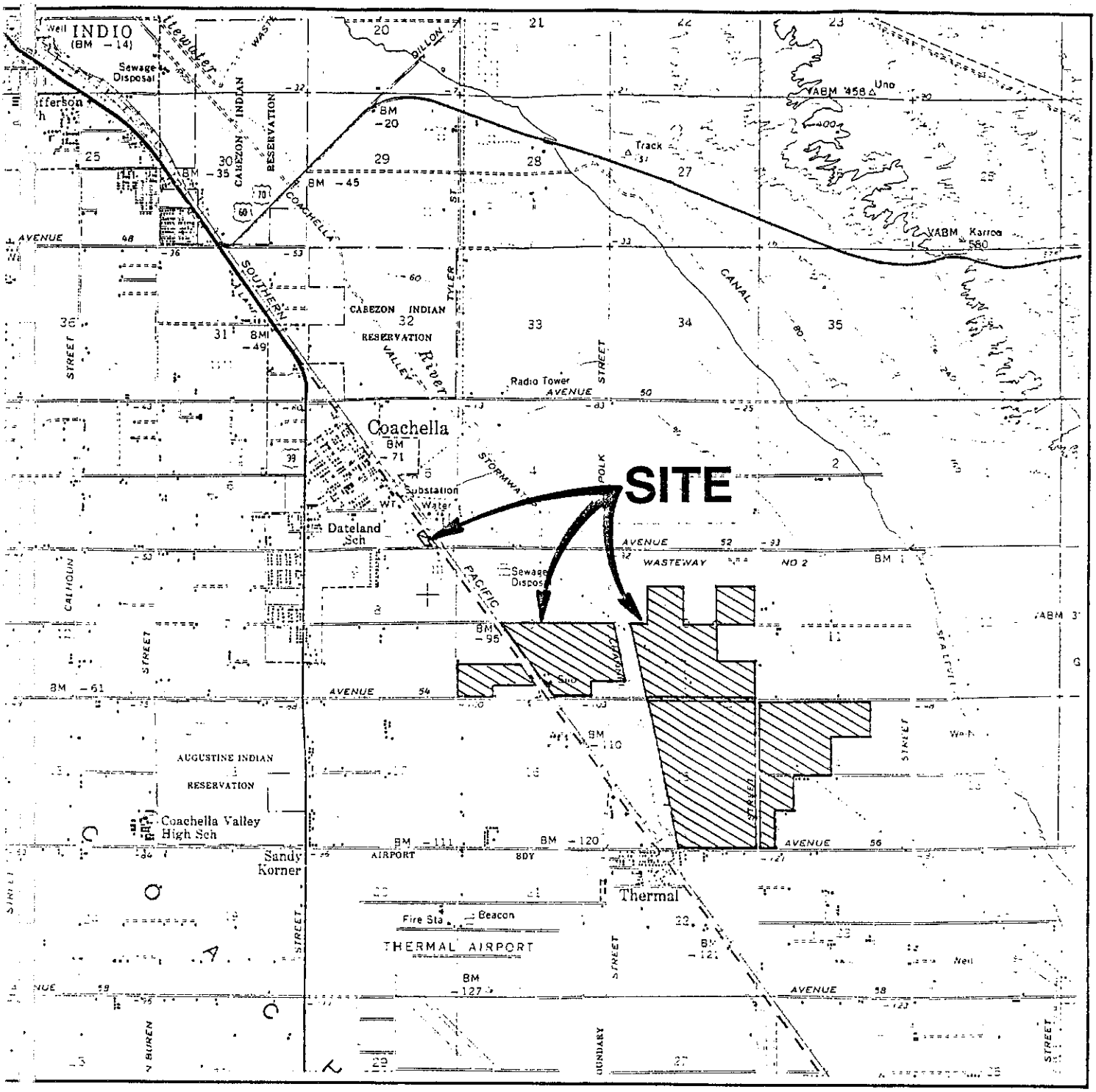
- A review of pertinent published geotechnical reports and maps, including the Seismic Safety Element of the Riverside County General Plan, recent and historical aerial photos, and data in our files.
- Field reconnaissance of the site.
- Subsurface exploration of the site by 9 drilled borings to depths of 30 to 40 feet using an eight-inch continuous flight auger and 13 backhoe trenches excavated to depths of 11 to 13 feet. The exploration was supervised by our field geologist who logged the holes, conducted field testing, and collected soil samples for laboratory testing.
- Laboratory testing to evaluate engineering properties of the site soils including the following tests: moisture content and density of undisturbed soil samples, maximum-dry density, gradation, plasticity, sand equivalent, and corrosivity.

74-240 HIGHWAY 111, PALM DESERT, CALIFORNIA 92260
(619) 568-0993
FAX (619) 341-7490

- Preparation of this report which includes an outline of anticipated geological and geotechnical constraints for planning including a general evaluation of liquefaction potential and other geotechnical concerns.

The approximate location of the exploratory borings and trenches are shown on the drawing titled "Location of Borings and Trenches", which is based on a map provided to us by Lusardi Construction Company.

Site Location Map - Page 3
Figure 1 - Location of Borings and Trenches - Rear of Text
Figure 2 - Chart for Evaluation of Liquefaction Potential
Appendix A - Sampling and Testing Procedures
Appendix B - Logs of Exploratory Borings and Trenches
Appendix C - Laboratory Test Results
Appendix D - Liquefaction Evaluation/Analysis
Appendix E - References



BASE MAP: USGS 15' QUADRANGLE
"COACHELLA, CALIFORNIA" 1956

PROPOSED RANCHO COACHELLA COMMERCIAL, INDUSTRIAL AND RESIDENTIAL DEVELOPMENT
COACHELLA, CALIFORNIA

SITE LOCATION MAP

Project No. 5880673-01

1 2
miles

SITE CONDITIONS AND EXISTING LAND USE

The site is located in an agricultural area in Coachella, California. Most of the site has been used for agricultural purposes in the past. Irrigation standpipes were observed in some areas at the site and it is likely that at least portions of the site contain a system of subsurface irrigation-drainage lines. The Coachella Valley Water District Stormwater Channel traverses the site area from northwest to southeast. The site conditions and existing land use of the specific areas of proposed development are discussed below:

- Area A This L-shaped, approximately 56-acre area is located at the northeast corner of Avenue 54 at Tyler Street. The northern portion of Area A extends east to Highway 111, with the Desert Cottonseed Products processing facility occupying the northwest corner of Avenue 54 at Highway 111. Area A is bordered on the north by existing residences at west end and the Maxco Grape Box Plant at the east end. The area is essentially flat and level, with a disturbed soil surface indicating previous agricultural use. Vegetation consists of sparse weeds and small palm trees. Piles of dead vegetation and trash were observed at the northwest corner of Area A.

- Area B This approxiamtely 226-acre area is located north of Avenue 54 between Highway 111 and the Coachella Valley Stormwater Channel. The Southern Pacific Railroad Right of Way runs parallel to Highway 111 along the western border of Area B. Agricultural land borders Area B to the north. Based on conversations with you and our review of aerial photographs, we understand that portions of Area B have been utilized as a livestock feedlot in the past. It is our understanding that some buried concrete structures may be present at the site. No concentrations of buried manure or other organic matter were found in our exploratory borings or trenches, but due to the past use of the site, it is possible that they may be present at other locations in Area B. A brown organic staining was observed at the surface in a number of locations in the area. (One exploratory trench was excavated in one of these stained spots, and native soils were found below.) Area B is apparently barren of vegetation with the exception of very scattered weeds.

  Existing development in Area B consists of the Lusardi offices and several warehouses at the southwest corner, and an abandoned house with several concrete pads in the southeast corner. Polk Street runs north-south through the eastern portion of the area.

- Area E This approximately 510-acre area is located between the Coachella Valley Stormwater Channel and Fillmore Street. We understand that the portion of Area E to the south of Avenue 54 will be developed along with Areas L, M, and K, while the northern portion will be developed separately. Most of Area E is currently being used for agriculture. Other portions have been previously cleared and now support scattered weeds and brush.

  The existing development in area E consists of several houses, trailers, and an abandoned feedlot. The feedlot is located about halfway between the Coachella Valley Stormwater Channel and Fillmore Street, just to the north of Avenue 54. This lot contains concrete troughs and slabs. Just to the north of this lot are several trailers and one single-family home. An approximately 150 feet by 300 feet covered storage structure is located just to the west of the feedlot. Several single-family homes are located near the southwest corner of Fillmore Street and Avenue 54.

- Area F This approximately 200-acre area was once utilized for agriculture and is now unused, with scattered weeds and brush. It is located between Avenue 54 and Avenue 55, east of Fillmore Street. Agricultural land borders the site on the east. A single-family and a maintenance shed currently occupy the southeast corner of Avenue 55 and Fillmore Street.

- Area G This 40-acre area is located to the south of Avenue 55 and to the east of Fillmore Street. It is bordered by agricultural land to the east and Parcel H to the south. The area has previously been used for agricultural purposes but is now cleared of vegetation.

- Area H This area currently has three occupied single-family homes and several house trailers about 400 feet north of Avenue 56 along Fillmore Street. The rest of the 18-acre area is vacant with scattered small tamarisk and palm trees. The surface soils in this area have been disturbed, indicating past agricultural use.

- Area I This 3-acre area is located just to the north and west of the existing Circle K building at the northwest corner of Avenue 52 and Highway 111. It is a flat vacant lot with grass, weeds, small tamarisk trees and several small palm trees. This area has also apparently been used for agriculture in the past.

- Area K This area is flat and has been cleared of vegetation in the past. Only scattered weeds are currently present. No structures exist in the area at this time. It is located at the northwest corner of Avenue 56 and Fillmore Street, and is bordered on the north by Area L and on the west by Area M.

- Area M This area consists of about 48 acres of flat, cleared land, It is vegetated only with scattered weeds. It is bordered on the west by the Coachella Valley Stormwater Channel, to the south by Avenue 56, to the east by Area K and to the north by Area L.

- Area L This 100-acre area is flat and currently has abundant three foot high weeds and scattered tamarisk trees. No structures are present at the site at this time. The site extends from the Coachella Valley Stormwater Channel to Fillmore Street, and is bordered by Area E to the north, and Areas K and M to the south.

PROPOSED DEVELOPMENT

Our understanding of the proposed development is that the site is divided into several development areas as outlined below:

- Area A
- Area B
- Area E (northern portion)
- Area I
- Areas L, M, K, and E (southern portion)
- Areas F, G, H

These sites are shown on Figure 1, "Location of Borings and Trenches" which was prepared based on a site map supplied by Lusardi Construction. The proposed uses of the areas range from heavy manufacturing to manufacturing service to commercial and residential. Detailed information on the proposed uses in most of the areas were not available at the time of this report. Structural loads, final grade elevations, etc. are expected to be determined for individual projects as plans for them are developed.

FIELD AND LABORATORY INVESTIGATIONS

Subsurface Investigation

The subsurface soils at the site were examined by means of nine borings drilled to depths of 30 to 40 feet, and 13 backhoe trenches excavated to depths at 11 to 13 feet. The borings and trenches were continuously logged by our field geologist, who collected representative samples of soils encountered for further classification and testing. Sampling procedures are described in Appendix A. Approximate locations of the borings and trenches are shown on Figure 1. Descriptive logs of the borings and trenches are presented in Appendix B.

Laboratory Testing

Samples of soils encountered in our exploratory borings and trenches were returned to our laboratory for further testing. Moisture contents and soil densities are presented in the boring logs of Appendix B. Maximum density, Atterberg Limits, direct shear, grain size distribution, sulfate content and corrosivity testing was performed on representative samples and the results are presented in Appendix C.

GEOTECHNICAL CONDITIONS AND CONSTRAINTS ON DEVELOPMENT

Geologic Setting

The site area is in the lower portion of the Coachella Valley, at elevations ranging from approximately 80 to 130 feet below sea level. The valley is part of a structurally downdropped block known as the Salton Trough which is controlled by the active San Andreas Fault system, located about 1.2 miles northeast of the site at its nearest approach. This system generally delineates the northeast side of the trough and valley which contains accummulations of sediments thousands of feet thick. The San Jacinto Fault zone is located about 18 miles southwest of the site at its nearest approach. Both the San Andreas and San Jacinto Faults trend northwest-southeast near the site area. As recently as approximately 1600 years ago, the lower portion of the valley was covered by a huge inland lake known as Lake Cahuilla.

Alluvial and lake deposits underlie the site. The actual depth of these surficial deposits in unknown. Pleistocene-aged older alluvial deposits, and sandstones and conglomerates of the Ocotillo conglomerate typically underlie the recent sediments in the site area.

Earth Materials

Lake deposits from the ancient Lake Cahuilla intermixed with recent alluvium has been mapped in the site region by the California Division of Mines and Geology (Rogers, 1965). Our subsurface investigation confirms this finding at the site. The soils encountered in our borings and trenches consisted of interlayered fine grained silty sand, sandy silt, silty clay and clayey silt. The sandy soils were generally loose to moderately dense, moist to wet, and brown in color. The fine grained soils (silts and clays) were generally soft to medium stiff, moist to wet and brown in color. The clayey soils were found to be moderately plastic to plastic. Based on the soil classification and the results of the Atterberg Limits tests, the soils encountered in our exploratory borings and trenches would be expected to generally have a low expansion potential. Gradation testing of four samples indicated from 0 to 54 percent passing the #200 sieve.

Ground Water

Ground water levels at the site were measured during the drilling and trenching operations. The water levels varied considerably, across the site, probably due to the interlayered nature of the soils beneath the site which may trap water between relatively impermeable layers. The depths to water ranged from 6 to 15 feet below the ground surface as measured during drilling and trenching. Perforated PVC pipes were installed vertically to 10 feet in depth in trenches T-1, T-4, T-7, T-8, T-10, and T-12 in order to measure stabilized ground water levels. After 12 days, the water levels in these pipes were measured. The levels were 7.1 feet in T-1 and 5.6 feet in T-4. The water level was below the 10 foot depth of the perforated pipe in the other four trenches.

High ground water conditions created difficulties during construction of the Coachella waste water treatment ponds just to the southeast of Area B. The need for dewatering can be assessed and difficulties can be mitigated on an individual case basis once development plans are known in a specific area.

Faulting

There are no major active or potentially active faults known to transect the subject property, or are suspected to be present from our investigation and data review, therefore, the ground rupture hazard from fault movement within the site is considered to be negligible. The site is not within a Special Studies Zone (Alquist-Priolo Act) and therefore, special geologic investigation of potential ground rupture hazards associated with active faults should not be required.

The nearest active fault to the site is the San Andreas fault zone which approaches within about 1.2 miles of the site at its nearest approach. The next closest active fault is the San Jacinto, about 18 miles to the southwest. Another regional fault of significance in terms of the potential for generating large earthquakes is the Elsinore Fault Zone, located approximately 35 miles away at its closest approach. Considering fault-site distance and respective magnitudes, the San Andreas system would more likely be the source of strongest potential ground motions during the life of the project.

Seismicity

The subject site is located in a region with a high level of seismic activity. To aid in the evaluation of possible future seismic activity the State of California (CDMG, Note 43) has adopted a system of classifying possible seismic events. The maximum credible earthquake is the maximum earthquake that a fault appears capable of producing. The maximum probable earthquake is the maximum earthquake that is likely to occur along a fault during a 100-year interval. The maximum credible earthquake for the San Andreas Fault zone is considered to be an 8.5 event. A Richter Magnitude 8.3 event is considered to be the maximum probable (design) event for the San Andreas. A maximum peak ground acceleration of 0.68g could occur at the site should a magnitude 8.3 earthquake occur along the San Andreas Fault near the site. Due to thick deposits of alluvium underlying the site, a local maximum ground acceleration of 0.52 could be expected. (Seed and Idriss, 1982). The repeatable ground acceleration (Ploessel and Slosson, 1974) for such an event is expected to be 0.34 (65 percent of the peak ground acceleration). Ground shaking originating from earthquakes along other active faults in the region is expected to be less due to smaller anticipated earthquake magnitudes and/or greater distances to these other faults.

An alternate approach for determining seismic relationships is presented in the Riverside County General Plan (County of Riverside, 1984). The plan report indicates that structures should be designed according to land use standards for the seismic zone in which they are to be located. Using this method, the site is located in Groundshaking Zone V due to the proximity of the San Andreas Fault System. This seismic zone is classified as one which could expect very strong to severe ground shaking.

In addition to defining ground shaking zones, this method considers the classification and thickness of earth materials underlying a site, the level of risk according to the type of intended structure(s), and the expected levels of ground shaking based on a comparison of the design levels defined in the Uniform Building Code. Depending on the type and use of the proposed structure these levels may range from equal to or less than Uniform Building Code levels of groundshaking for small-scale commercial uses, small hotels or motels, to more than five times, for large hotels and office buildings.

Secondary Seismic Hazards

- Liquefaction

  Liquefaction, a phenomenum involving total or substantial loss of shear strength in saturated soil, is caused by the buildup of excess hydrostatic pressure in saturated cohesionless soils as a result of cyclic stresses generated by ground motions. The Riverside County Seismicity and Safety Element (1976) indicates that the site is within an area of potential liquefaction. Our investigation confirms that the site is underlain by zones of loose to medium dense, saturated fine sands and silty sands (cohesionless soils) and has a potential to liquefy under certain conditions.

Procedures presented by Seed and Idriss (1982) were used to evaluate the liquefaction potential at the site. The basic procedure utilized is outlined below:

- Ground shaking potential is evaluated for the site, and dynamically induced stress ratio is determined.
- Site soil and ground water conditions are evaluated and Standard Penetration Test (SPT) blow count N values are converted to Modified N values (N') by standard procedures.
- Liquefaction potential is assessed using empirical formulas.

For the subject site, the following seismic parameters were used:

Maximum Expected Earthquake Magnitude: Richter 8.3 (from San Andreas fault)

Peak Rock Acceleration: 0.68g

The cyclic stress ratio developed in the field due to earthquake shaking can be computed form an equation presented by Seed and Idriss (1982):

$$\left(\frac{\tau_{ave}}{\sigma'_o}\right) = 0.65 \left(\frac{\sigma_o}{\sigma'_o}\right)(a_{max})(r_d)$$

Where:

σ_o = Total overburden pressure

σ'_o = Initial effective overburden pressure

τ_{ave} = Average peak shear stress

a_{max} = Maximum acceleration at the ground surface

r_d = Stress reduction factor (varies from 1.0 at the surface to 0.86 at 30 feet below ground surface)

$\left(\frac{\tau_{ave}}{\sigma'_o}\right)$ = Average cyclic shear stress developed on horizontal surface due to cyclic (earthquake) loading

Once these values have been calculated for each potentially liquefiable layer at the site, a plot such as that shown in Figure 2 is used to evaluate the liquefaction potential of the site. For the given site and design earthquake which is being evaluated, the values of N' are determined for the sand layers involved and compared to the lower bound values of τ_{ave}/σ'_o for sites where some evidence of liquefaction is known to have occurred for soils with those N' values (Figure 2). This procedure has been widely used to evaluate the liquefaction potential of soil deposits, and it is recommended in the Tentative Provisions for the Development of Seismic Regulations for Buildings (Applied Technology Council, 1979). The data and calculations for evaluating the liquefaction potential are summarized in Appendix D.

- Seismic-Induced Settlement

  Due to the presence of loose soils beneath the site, seismic induced settlement may be possible if strong ground shaking occurs. In addition, ground settlement is commonly associated with liquefaction which may occur during strong ground shaking, as discussed above. It is expected that the effects of seismic induced settlement may be reduced by compaction of surface soils during site grading.

o Lurching

Lurching is considered a secondary seismic hazard by which ground cracking or secondary faulting is induced in surface sediments from the effects of seismic shaking. Due to the localized presence of some moderately cohesive soils, the hazard due to lurching should be considered to be low to moderate. Compaction of a zone of surface soils should help reduce the effects of lurching.

o Flooding, Seiches, Tsunamis

The hazard due to tsunamis (giant sea waves) is considered to be nil. The closest significant body of water is the Salton Sea, approximately 12 miles to the southeast. Due to the distance to this body of water, the hazard due to seiches is also considered to be low. Seismically induced flooding is unlikely since there are no bodies of impounded water nearby.

CONCLUSIONS AND RECOMMENDATIONS

In our opinion, the site is expected in general to be suitable for development if measures are undertaken to reduce the liquefaction potential and the possible effects of liquefaction on the proposed facilities.

Earthwork at the site would be expected to be accomplished with conventional earthmoving equipment. Excavations for utility trenches, footings, etc. may be expected to be subject to caving, and deep excavations for utilities, etc. may be expected to encounter very moist or wet soils, and dewatering may be necessary in deeper excavations at the site. Free ground water would be expected to be encountered ranging from 5 to 10 feet below the existing ground surface. The ground water levels vary across the site and may change rapidly through time as a result of agricultural irrigation.

The soils at the site may have a moderate to high corrosivity to construction materials. Once the location of the proposed facilities around the site have been determined, tests should be performed on the soils in these areas and those exposed in utility trenches, footing excavations, and slab subgrades to determine the degree of potential corrosivity in those specific areas. We understand that the city of Coachella requires Type V cement in concrete in contact with the ground. Consideration should be given to having a corrosion engineer evaluate the service life of metal pipes in contact with the ground, as well as related corrosion concerns.

The onsite soils are expected to be suitable for use as compacted fill if cleaned of any organic materials, trash or debris. Blending of silty or clayey soils with sandier material would facilitate their moisture conditioning and compaction during earthwork construction, as well as providing increased shear strength for the support of structure's, pavements, etc. Due to the past agricultural and feedlot uses around the site, overexcavation and recompaction of the surface soils to depths of at least about 3 feet below the existing ground surface should be expected in areas to support structures. Based upon the classification and test results of the soils encountered during this phase of work, the onsite soils are generally expected to have a low expansion potential. Some layers or lenses of moderately expansive soils may exist in portions of the site, however, expansion potential should be further evaluated in each area planned for development in future investigations.

Our preliminary studies indicate that liquefaction of the loose to medium dense granular soils below the shallow water table is a definite possibility in all or portions of the site during a strong earthquake (magnitude of about 6 or greater). Silt or clay soils would be resistant to liquefaction, as would soils which are not saturated. Due to the variable nature of the subsurface conditions across the site some mitigating measures should be implemented prior to development of the areas to reduce the potential for damage arising from liquefaction of the soils underlying structure areas. Liquefaction of soils at the site might be expected to cause adverse amounts of ground settlement and the formation of sand boils.

One approach to reducing the effects of liquefaction would be to density the near-surface soils to increase their resistance to deformation. This procedure has been used on similar projects in the area to mitigate the possible distress to structures due to liquefaction. The procedures involve the densification of the soils supporting the building foundations and floor slabs. While a mat of compacted fill or gravel will help to reduce distress, it should not be construed to be totally adequate for ground accelerations generated by the maximum credible earthquake. The intent of this mat of compacted material below the structure is to increase the confining pressures and shear strength of the soils and to resist the propagation of sand boils to the ground surface.

Alternatives procedures to mitigate liquefaction could also be considered. These might include the use of mat foundations, grouting or chemical stabilization of the soils, use of relief wells (stone columns). More detailed specific recommendations on these alternatives can be provided based on the type of structure and loading, however, the densification of foundation soils is expected to be a more economically feasible option where feasible, such as for light commercial and residential structures. Specific recommendations for mitigating liquefaction hazards should be developed based on the type of facility, structure loads, etc., as specific plans are developed.

Other considerations for construction at the site include the use of:

- flexible utility connections: to allow for settlements and differential movements between soils and structures.
- structural floor slabs: suitable for injection grouting (mudjacking) to relevel structures in the event of adverse settlements due to liquefaction.
- buried tanks with reduced bouyancy: septic tanks or other buried structures may be constructed of concrete and/or provided with supplemental anchorages to reduce the tendency for bouyant rise of tanks in the event the surrounding soil liquefies in areas where the ground water is near the surface.

In general seismic considerations for structures in the southern California area are critical because of high regional seismic activity. Seismic design should be in accordance with the provisions of the current Uniform Building Code and the seismic design parameters of the Structural Engineers Association of California.

Further Geotechnical Investigations

The conclusions and recommendations provided in this report are intended for preliminary planning purposes and are based on limited information on the subsurface conditions in the exploratory borings and trenches. Further, site-specific geotechnical investigations should be performed for each project at the site. These investigations should evaluate site-specific geotechnical conditions with respect to the details of these future projects. Specific recommendations for mitigating geotechnical concerns, as well as foundation design and related items should be addressed in these investigation reports. In addition, field review during site grading should be performed to evaluate the exposed soil conditions and confirm the assumptions made in formulating the design recommendations. Final soil engineering reports should be prepared upon completion of the construction, summarizing the compliance with the recommendations of the report and geotechnical observations during the grading work.

If you have any questions regarding our report, please do not hesitate to contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

David Goodrich
Staff Geologist

Brent J. Inghram, RCE 40264
Chief Engineer/Manager

DG/BJI/cwm

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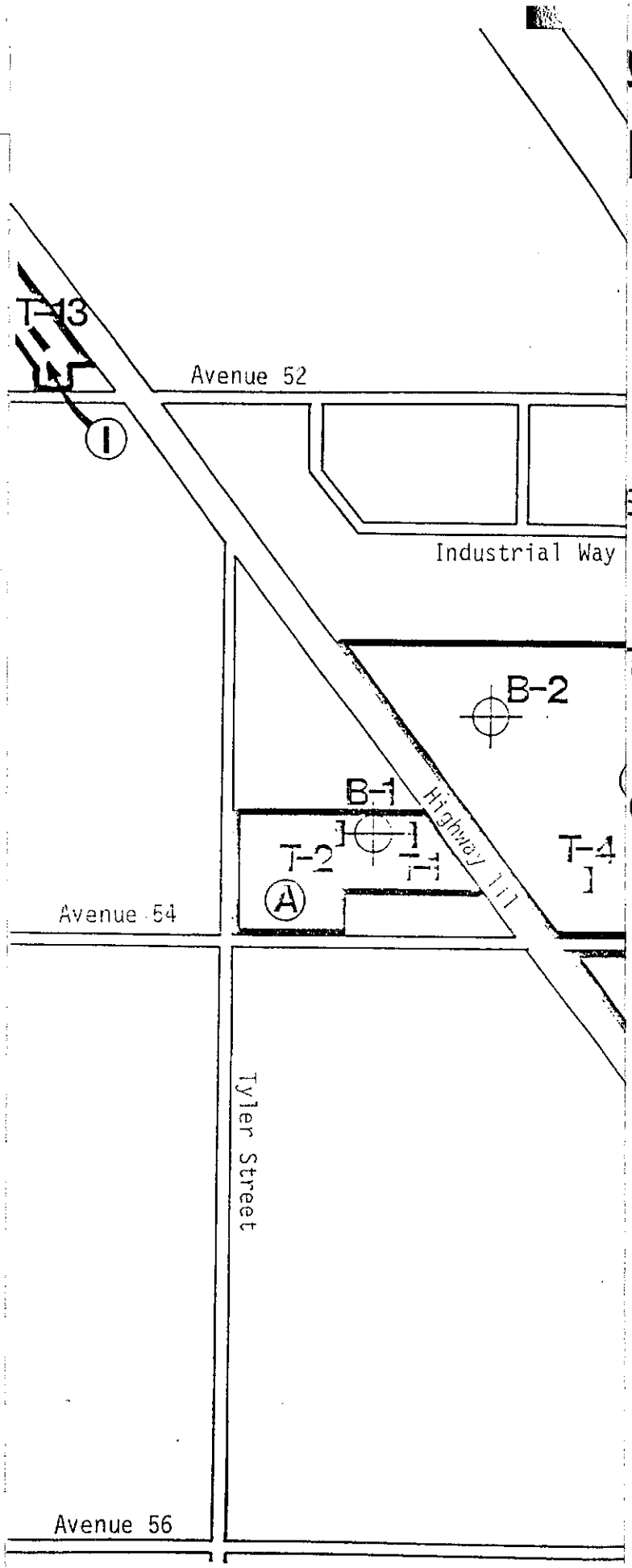
ATION OF BORINGS
ND TRENCHES



KEY

B-1 etc. — Indicates Number and Approximate Location of Exploratory Boring

T-1 etc. — Indicates Number and Approximate Location of Exploratory Trench

A etc. — Indicates Specific Area of Proposed Development

N

This map is based on a map provided by Rancho Coachella Properties.

5880673-01	Scale: NTS	Date: 11-15-88
eer/Geologist: BJI/DG		Drafting By: DG

EIGHTSON AND ASSOCIATES, INC.

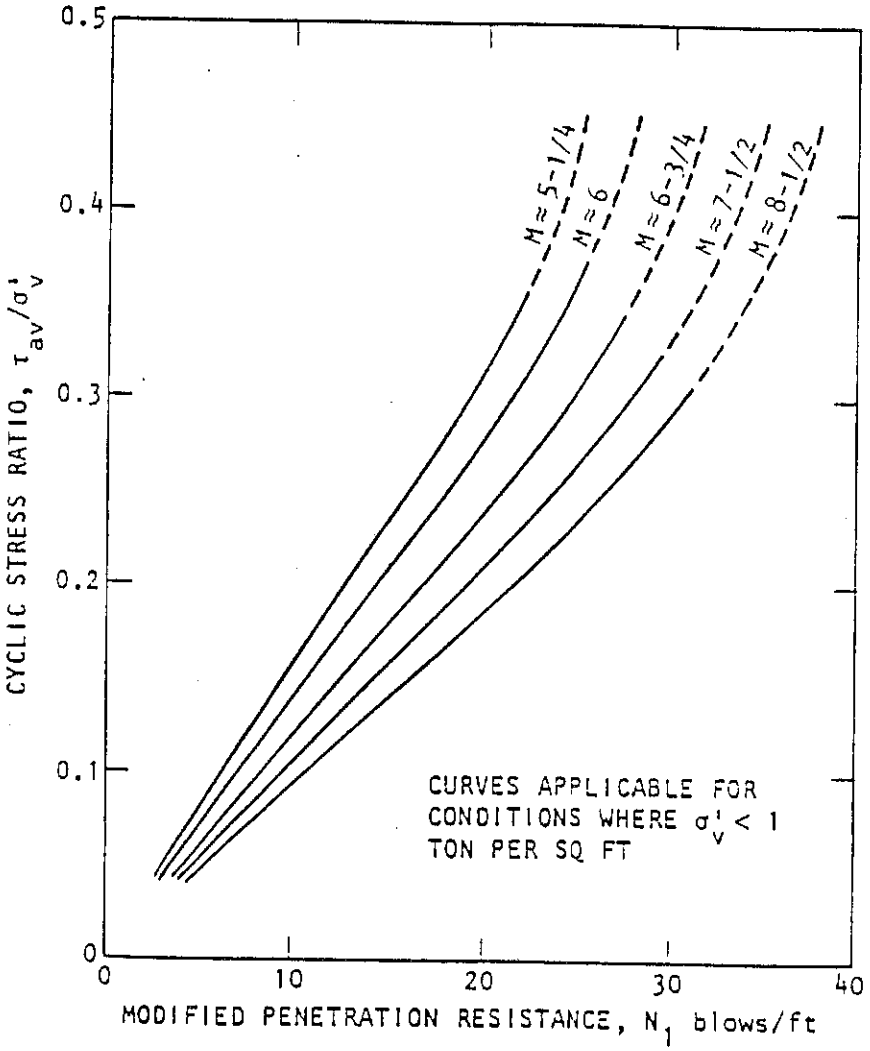


Figure 2: Chart for evaluation of liquefaction potential in sandy soils for different magnitude earthquakes.

Source: Seed and Idriss (1982)

APPENDIX A

APPENDIX A

SAMPLING AND TESTING PROCEDURES

Sampling Procedures

Drilled Borings

Undisturbed Samples: Samples of the subsurface materials are obtained from the exploratory borings as nearly as possible in an undisturbed state. The depth at which each undisturbed sample is obtained is shown on the Boring Logs. The sampler used to obtain undisturbed samples is a drive sampler with an outside diameter of 3.0 inches which was lined with 1-inch long, thin brass rings with an inside diameter of 2.4 inches. The sample barrel is driven into the ground by a 140-pound drive weight falling 30 inches. The number of blows per foot of penetration is noted and recorded on the Boring Log. The blow count serves as an index to the relative resistance of the sampled materials. The ring samples are removed from the sample barrel, sealed and returned to the laboratory.

Representative Samples: Standard Penetration Tests (SPT) are also performed in the borings. The split-barrel Standard Penetration sampler has an inside diameter of 1.4 inches and an outside diameter of 2 inches. The number of blows required to drive the sampler 12 inches, with the 140-pound hammer dropped 30 inches, is identified as the Standard Penetration Resistance N-value. Many correlations have been made beatween SPT values and soil properties. Empirical correlations also permit the blows of different energy of sampler sizes, such as ring samples, to be converted into SPT values.

Backhoe Trenches:

Bulk samples were obtained from the trenches and returned to our laboratory for testing. In-place density and moisture tests were performed at various depths in the trenches as well as selected locations outside the trenches on the existing ground surface. In-place densities and moisture contents were determined in accordance with the sand cone method, ASTM D1556 and/or nuclear densometer method, ASTM D2922. The exploratory trenches were logged by our field representative concurrent with their excavation. Representative samples were bagged and transported to our laboratory for testing.

Sampling and Testing Procedures (Continued)

Laboratory Testing Procedures

Moisture and Density Tests: Moisture content and dry density determinations are performed on relatively undisturbed samples obtained from the test borings. The results of these tests are presented in the boring logs.

Classification Tests: Typical materials were subjected to mechanical grain-size analysis by set sieving with U. S. Standard brass screens. The data is evaluated in determining the classification of the materials. A graphical presentation of the grain-size distribution is presented in the test data and the Unified Soil Classification is presented in both the test data and the Boring Logs.

Maximum Density Tests: The maximum dry density and optimum moisture content of typical materials are determined in accordance with ASTM D1557-78.

Corrosivity: Tests were performed to evaluate the pH, resistivity and sulfate content of a representative sample of the near surface soils.

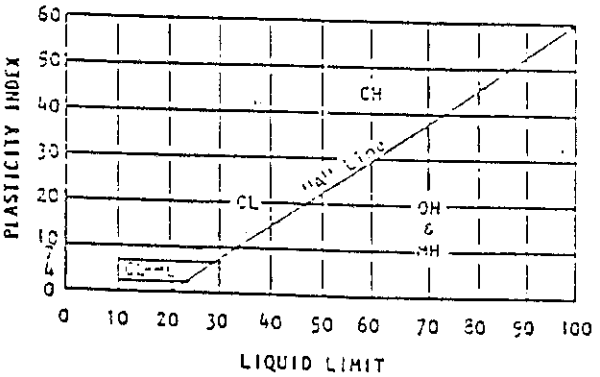
	MAJOR DIVISIONS	SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than ½ of soil > no. 2 sieve size)	GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction < no. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS (More than ½ of soil < no. 200 sieve)	SILTS & CLAYS LL < 50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL > 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

CLASSIFICATION CHART

(Unified Soil Classification System)

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U. S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 75.2
GRAVEL	3" to No. 4	76.2 to 4.76
COARSE	3" to 3/4"	76.2 to 19.1
FINE	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to 200	4.76 to 0.074
COARSE	No. 4 to 10	4.76 to 2.00
MEDIUM	No. 10 to 40	2.00 to 0.420
FINE	No. 40 to 200	0.420 to 0.074
SILT & CLAY	Below No. 420	Below 0.074

GRAIN SIZE CHART



PLASTICITY CHART

METHOD OF SOIL CLASSIFICATION

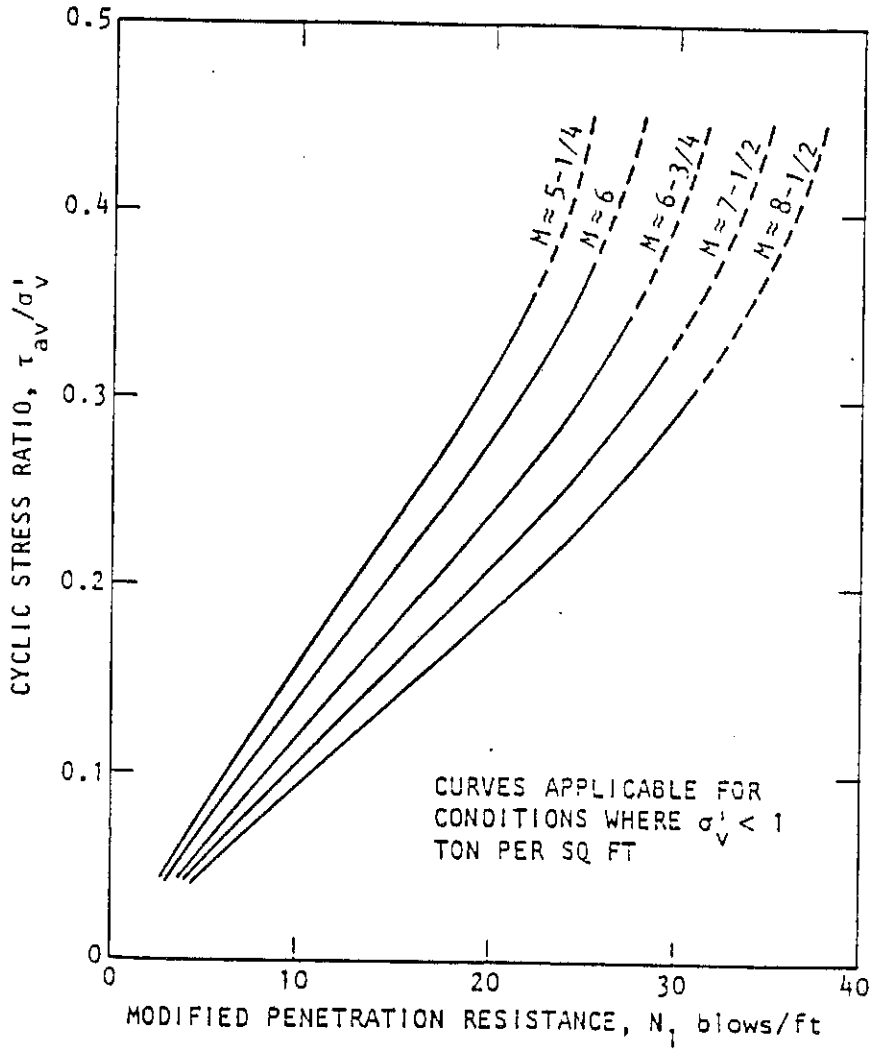


Figure 2: Chart for evaluation of liquefaction potential in sandy soils for different magnitude earthquakes.

Source: Seed and Idriss (1982)

APPENDIX A

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SAMPLING AND TESTING PROCEDURES

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Sampling and Testing Procedures (Continued)

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		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
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		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL > 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
	HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

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(Unified Soil Classification System)

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	U. S. Standard Sieve Size	Grain Size in Millimeters
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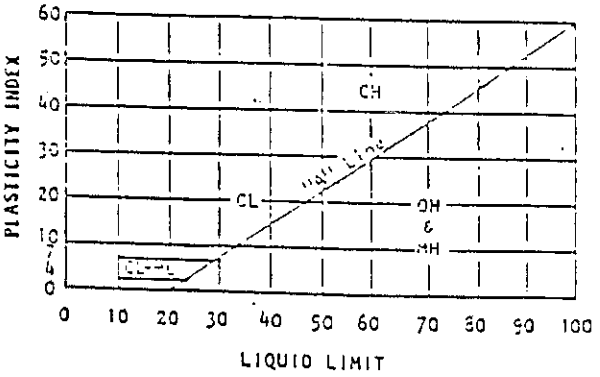
SAND	No. 4 to 200	4.76 to 0.074
COARSE	No. 4 to 10	4.76 to 2.00
MEDIUM	No. 10 to 40	2.00 to 0.420
FINE	No. 40 to 200	0.420 to 0.074
SILT & CLAY	BELOW NO. 420	BELOW 0.074

GRAIN SIZE CHART



PLASTICITY CHART

METHOD OF SOIL CLASSIFICATION

APPENDIX B

GEOTECHNICAL BORING LOG

e: 9-28-88 Boring No. B-1 Sheet 1 of 1

je t: Lusardi Job No. 5880673-02

il ing Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

/e Weight: 140 lbs. Average Drop 30"

/a ion: -100' Ref. or Datum: Tent. Parcel Map No. 23859 Field Engineer: DG

Feet	Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
	1	SPT-1	3½'	N=6			ML	Sandy Silt: Very fine grained, loose, dry, gray
		*R-1	5'	26		10.2	SM	Silty Sand: Fine grained, loose, moist, brown Becomes medium dense, micaceous
		SPT-2	7½'	N=8			CL	Sandy Silty Clay: Very fine grained, medium stiff, moist, brown, plastic with 1/8" gastropod shells, thinly laminated
		R-2	10'	14		28.8	ML	Clayey Sandy Silt: Very fine grained, medium stiff, very moist, brown, slightly plastic with 1/8" gastropod shells, thinly laminated
		SPT-3	15½'	N=11				Thin layers of silty fine grained sand
		R-3	20'	26		30.0		
		SPT-4	25½'	N=20			SP	Sand: Fine grained, medium dense, wet, gray
		R-4	30'	12				End of Boring at 30' Free Ground Water Encountered at 12'

* R-1, etc. indicates number and depth of ring samples.
SPT-1, etc. indicates number and depth of Standard Penetration Tests

GEOTECHNICAL BORING LOG

9-28-88 Boring No. B-2 Sheet 1 of 1

ect: Lusardi Job No. 5880673-01

ing Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

e Weight: 140 lbs. Average Drop 30"

ition: -97' ± Ref. or Datum: USGS 7½' Quadrangle Indio, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
						ML	Sandy Silt: Very fine grained, soft, moist, brown; micaceous
1	SPT-1	3½'	N=9				
	*R-1	5'	28	107.5	10.9	SP/SM	Sand/Silty Sand: Fine to medium grained, medium dense, moist, brown; micaceous
					▽	SM	Silty Sand: Fine grained, medium dense, wet, brown; micaceous
	SPT-2	7½'	N=16				
							Sand Equivalent = 54
	R-2	10'	16	101.7	21.8		
							* R-1, etc. indicates number and depth of ring samples. SPT-1, etc. indicates number and depth of Standard Penetration Tests
	SPT-3	15½'	N=16			ML	Clayey Sandy Silt: Very fine grained, medium stiff, very moist, brown
	R-3	20'	17	94.5	27.3	CL	Silty Clay: Very stiff, very moist, brown, gastropod shells to ⅛" diameter; moderately plastic
						SP/SM	Sand/Silty Sand: Very fine to fine grained, medium dense, wet, dark gray; micaceous
	SPT-4	25½'	N=14				
	R-4	30'	16	98.7	25.4		End of Boring at 30' Depth Free Ground Water Encountered at 6' Depth

GEOTECHNICAL BORING LOG

: 9-28-88 Boring No. B-3 Sheet 1 of 2

ec : Lusardi Job No. 5880673-01

ling Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

e eight: 140 lbs. Average Drop 30"

at on: -103' ± Ref. or Datum: USGS 7½' Quadrangle Indio, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
1	R-1	3'	12	93.2	14.1	SP	Sand: Fine grained, medium dense, slightly moist; brown
						ML	Sandy Silt: Very fine grained, medium stiff, moist, brown; micaceous
	SPT-1	5½'	N=9			SM	Silty Sand: Fine grained, loose, moist, gray-brown; micaceous
	R-2	7'	12	90.8	▽ 31.5		Becomes wet at ≈6' depth Sand Equivalent = 15
	SPT-2	10½'	N=10			ML	Sandy Silt w/clay: Very fine grained, medium stiff, wet, brown, gastropod shells to 1/8" diameter, slightly plastic
	R-3	15'	41	92.1	24.8		
	SPT-3	20½'	N=20			SM	Silty Sand: Fine grained, medium dense, wet, brown; micaceous
	R-4	25'	20	102.7	25.4		
	SPT-4	30½'	N=26			ML	Sandy Silt: Very fine grained, medium stiff, wet, brown; micaceous
						SM	Silty Sand: Fine grained, medium dense, wet, brown, with layers of thinly laminated brown silt

(Continues next page)

GEOTECHNICAL BORING LOG

9-28-88 Boring No. B-3 Sheet 2 of 2

ct: Lusardi Job No. 5880673-01

ing Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

Weight: 140 lbs. Average Drop 30"

tion: -103' ± Ref. or Datum: USGS 7½' Quadrangle Indio, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
						SM	Silty Sand: (continues)
						SP/SM	Sand/Silty Sand: Fine grained, medium dense, very wet, gray; micaceous
	R-5	40'	18	(disturbed)			End of Boring at 40' Depth Free Ground Water Encountered at 6' Depth

GEOTECHNICAL BORING LOG

: 9-28-88 Boring No. B-4 Sheet 1 of 1

e( ): Lusardi Job No. 5880673-01

ling Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

e eight: 140 lbs. Average Drop 30"

ation: ~109' ± Ref. or Datum: USGS 7½' Quadrangle Indio, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
1	SPT-1	3½'	N=21			ML	Sandy Silt: Very fine grained, medium stiff, very slightly moist, brown; thinly laminated Sand Equivalent = 2
	R-1	5'	45	100.6	2.8		
					▽	SP	Sand: Fine grained, medium dense, very slightly moist, gray Becomes very moist at ≈ 6½'
	SPT-2	7½'	N=6			ML	Clayey Sandy Silt: Very fine grained, soft, very moist, brown; micaceous
	R-2	10'	16	95.4	27.0	CL	Silty Clay: Medium stiff, wet, brown, porous, plastic
						ML	Clayey Sandy Silt: Very fine grained, soft, wet, brown; micaceous
	SPT-3	15½'	N=24			SP	Sand: Fine grained, medium dense, wet, dark gray; micaceous, gastropod shells to ⅛" diameter
	R-3	20'	20	92.0	29.8	CL	Silty Clay: Soft, wet, brown with interlayers of silty fine sand
	SPT-4	25½'	N=34			SM	Silty Sand: Fine grained, medium dense, wet, brown; micaceous
	R-4	30'	16			CL + SM	Interlayered Silty Clay + Silty Sand: Medium dense, wet, brown

End of Boring at 30' Depth

GEOTECHNICAL BORING LOG

9-28-88 Boring No. B-5 Sheet 1 of 1

ect: Lusardi Job No. 5880673-01

ing Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

Weight: 140 lbs. Average Drop 30"

tion: -102' ± Ref. or Datum: USGS 7½' Quadrangle India, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
						ML	Silt: Medium stiff, moist, brown
	R-1	3'	24			SM	Silty Sand: Fine grained, medium dense, slightly moist, brown; micaceous
	SPT-1	5½'	N=15				
	R-2	7'	13	90.7	26.4		
	SPT-2	10½'	N=11				
						ML	Sandy Silt: Very fine to fine grained, stiff, wet, brown; micaceous, slight clay content
	R-3	15'	12	95.1	25.3		
						SM	Silty Sand: Fine grained, medium dense, wet, brown; micaceous
	SPT-3	20½'	N=25				
						ML	Sandy Silt: Very fine grained, stiff, wet, brown with interlayered clayey silt and silty sand
	R-4	25'	45	(disturbed)			
						SP	Sand: Medium to coarse grained, dense, wet, gray-brown
	SPT-4	30'	N=47				

End of Boring at 30' Depth
Free Ground Water Encountered at 11'

GEOTECHNICAL BORING LOG

9-29-88 Boring No. B-6 Sheet 1 of 1

ect: Lusardi Job No. 5880673-01

ing Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

e Weight: 140 lbs. Average Drop 30"

on: ~110' ± Ref. or Datum: USGS 7½' Quadrangle Indio, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
1	SPT-1	3½'	N=18			SM	Silty Sand: Very fine grained, medium dense, slightly moist, brown Sand Equivalent = 11
	R-1	5'	12	99.8	19.9	ML	Sandy Silt: Very fine grained, medium stiff, very moist, brown
	SPT-2	7½'	N=7				
	R-2	10'	15	92.5	30.6 ▽	ML	Clayey Sandy Silt: Very fine grained, medium stiff, very moist, gray; gastropod shells to ⅛" diameter
						SM	Silty Sand: Fine grained, medium dense, wet, brown
						ML	Clayey Sandy Silt: Very fine grained, medium stiff, wet, gray; gastropod shells to ⅛" diameter
	SPT-3	15½'	N=15				
	R-3	20'	17	90.0	29.4		
	SPT-4	25½'	N=26			SP	Sand: Medium grained, medium dense, wet, dark gray
	R-4	30'	19				End of Boring at 30' Depth Free Ground Water Encountered at 10' Depth

GEOTECHNICAL BORING LOG

: 9-29-88 Boring No. B-7 Sheet 1 of 1

ect: Lusardi Job No. 5880673-01

ing Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

e Weight: 140 lbs. Average Drop 30"

ition: ~117'± Ref. or Datum: USGS 7½' Quadrangle India, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
						ML	Sandy Silt: Very fine grained, medium stiff, very slightly moist, light brown
	R-1	3'	18				
							Becomes moist
	SPT-1	5½'	N=10				
	R-2	7'	8	88.3	19.7		
						CL	Silty Clay: Soft, very moist, brown
	SPT-2	10½'	N=5				
	R-3	15	9	91.1	30.9 ▽	ML	Sandy Silt: Very fine grained, medium stiff, wet, brown
	SPT-3	20½'	N=12				
							with interbedded Silty Clay: Soft, wet, brown
	R-4	25'	9	86.8	35.0		
						SP/SM	Sand/Silty Sand: Fine grained, medium dense, wet, gray; micaceous
	SPT-4	30'	N=18				End of Boring at 30' Depth Free Ground Water Encountered at 15' Depth

GEOTECHNICAL BORING LOG

e 9-29-88 Boring No. B-8 Sheet 1 of 2

ject: Lusardi Job No. 5880673-01

l ng Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

ve Weight: 140 lbs. Average Drop 30"

va tion: ~113' ± Ref. or Datum: USGS 7½' Quadrangle India, CA (1972) Field Engineer: DG

Feet	Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0		R-1	3'	15			ML	Clayey Sandy Silt: Very fine grained, medium stiff, very moist, brown
5		SPT-1	5½'	N=9				
		R-2	7'	19	95.5	27.3	ML	Sandy Silt: Very fine grained, medium stiff, wet, brown; micaceous
							SM	Silty Sand: Fine grained, medium dense, wet, brown, micaceous
							ML	Clayey Sandy Silt: Fine grained, soft, wet, brown
10		SPT-2	10½'	N=10			CL & SM	Thinly interbedded Clayey Silt: medium stiff, wet, brown & Silty Sand: Very fine grained, medium dense, wet, brown; micaceous
		R-3	15'	13	88.2	28.0 ▽		
							ML	Sandy Silt: Very fine to fine grained, medium stiff, wet, brown
20		SPT-3	20½'	N=12				
							CL & SM	Thinly interbedded Clayey Silt: medium stiff, wet, brown & Silty Sand: Very fine grained, medium dense, wet, brown; micaceous
25		R-4	25'	14	87.4	33.0		
							SP/SM	Sand/Silty Sand: Fine to medium grained, medium dense, wet, brown; micaceous
30		SPT-4	30½'	N=13				

(Continues next page)

GEOTECHNICAL BORING LOG

9-29-88 Boring No. B-8 Sheet 2 of 2

ct: Lusardi Job No. 5880673-01

ing Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

Weight: 140 lbs. Average Drop 30"

tion: -113'± Ref. or Datum: USGS 7½' Quadrangle Indio, CA (1972) Field Engineer: DG

Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
						SP/SM	Sand/Silty Sand : (continues)
	R-5	35'	11	104.5	21.1		
	SPT-5	40'	N=18				End of Boring at 40' Depth Free Ground Water Encountered at 15' Depth

GEOTECHNICAL BORING LOG

t 9-29-88 Boring No. B-9 Sheet 1 of 1

oject: Lusardi Job No. 5880673-01

i ling Method & Diameter: 8" Hollow Stem Auger Equipment Co. Datum Exploration

ive Weight: 140 lbs. Average Drop 30"

e ation: ~95'± Ref. or Datum: USGS 7½' Quadrangle Thermal Canyon, CA (1972) Field Engineer: DG

Depth Feet	Bulk Sample Depth & No.	Type of Sample	Sample Depth	Blow Count	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
	1	SPT-1	3½'	N=12			ML	Sandy Silt: Very fine grained, medium stiff, moist, brown; micaceous Sand Equivalent = 4
5		R-1	5'	22				
		SPT-2	7½'	N=30			SP/SM	Sand/Silty Sand: Very fine to fine grained, medium dense, moist, light brown
		R-2	10'	27	101.3	20.4	ML	Sandy Silt: Very fine grained, medium stiff, wet, brown
							ML	Clayey Silt: Medium stiff, wet, gray-brown, with gastropod shells up to ⅛" diameter
							ML	Sandy Silt: Very fine grained, medium stiff, wet, brown; micaceous
		SPT-3	15½'	N=20			SP	Sand: Fine to medium grained, medium dense, wet, brown
20		R	20'	38			ML	Sandy Silt: Very fine grained, medium stiff, wet, brown; micaceous
							SP	Sand: Fine to medium grained w/minor coarse, medium dense, wet, light brown
25		SPT-4	25½'	N=13			ML	Sandy Silt: Very fine grained, medium stiff, wet, brown; micaceous
							SP	Sand: Fine to medium grained, minor coarse, medium dense, wet, light brown
30		R-3	30'	37	99.4	24.7	ML	Sandy Silt: Very fine grained, medium stiff, wet, brown; micaceous

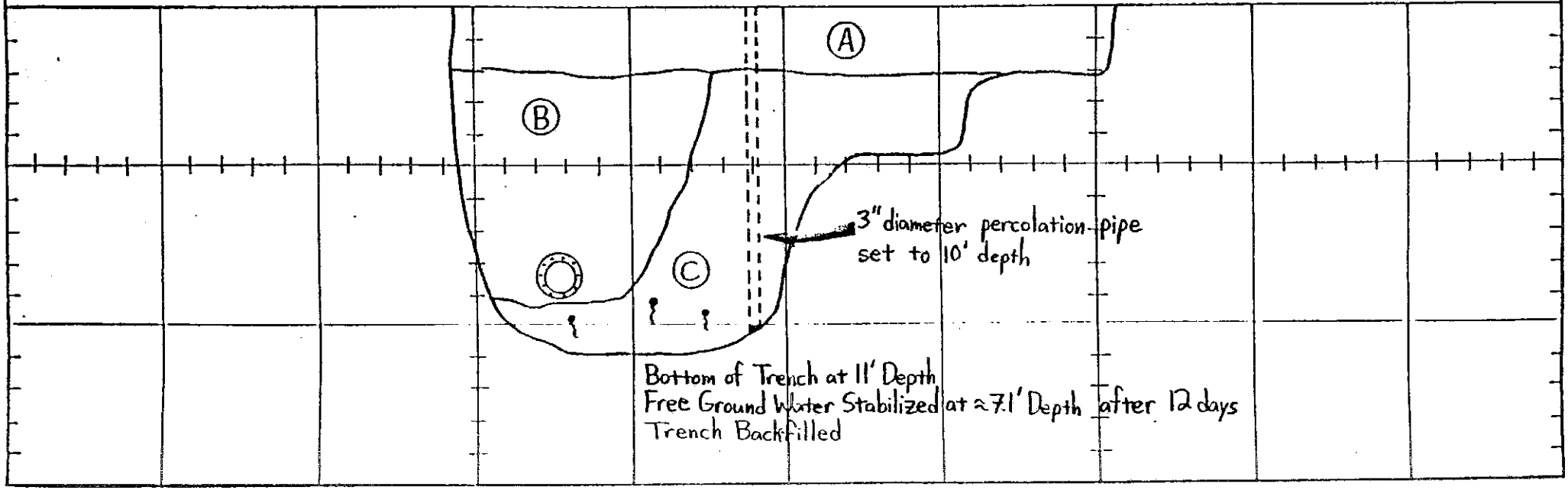
End of Boring at 30' Depth
Free Ground Water Encountered at 14'

Project Number: 5880673-0 Elevation: -100' TRENCH NO. T-1

Equipment: Caterpillar 416 Backhoe Location: Tent. Parcel Map No. 238589

GEOLOGIC ATTITUDES	DATE: 9-24-88 DESCRIPTION:	GEOLOGIC UNIT	U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	Surface disturbed by equipment operations					
	(A) Fill-Silty Sand: Fine grained, medium dense, dry, lt. brown, rootlets in top 4"		SM		3.6 @ 2'	88.4
	(B) Fill-Sand: Fine grained, medium dense, slightly moist, brown with minor amounts of silty sand and clayey silt		SP		18.3 @ 4'	88.7
	Dirt filled 8" diameter concrete pipe @ ≈ 8' depth running parallel to Highway 111					
	Seepage at 9' depth					
	Caving					
	(C) Sand/Silty Sand: Fine grained, medium dense, wet, brown		SP/SM			
	Free Ground Water Stabilized at ≈ 7.1' Depth					

GRAPHIC REPRESENTATION S. Wall SCALE: 1" = 5' SURFACE SLOPE: 0° TREND: E-W



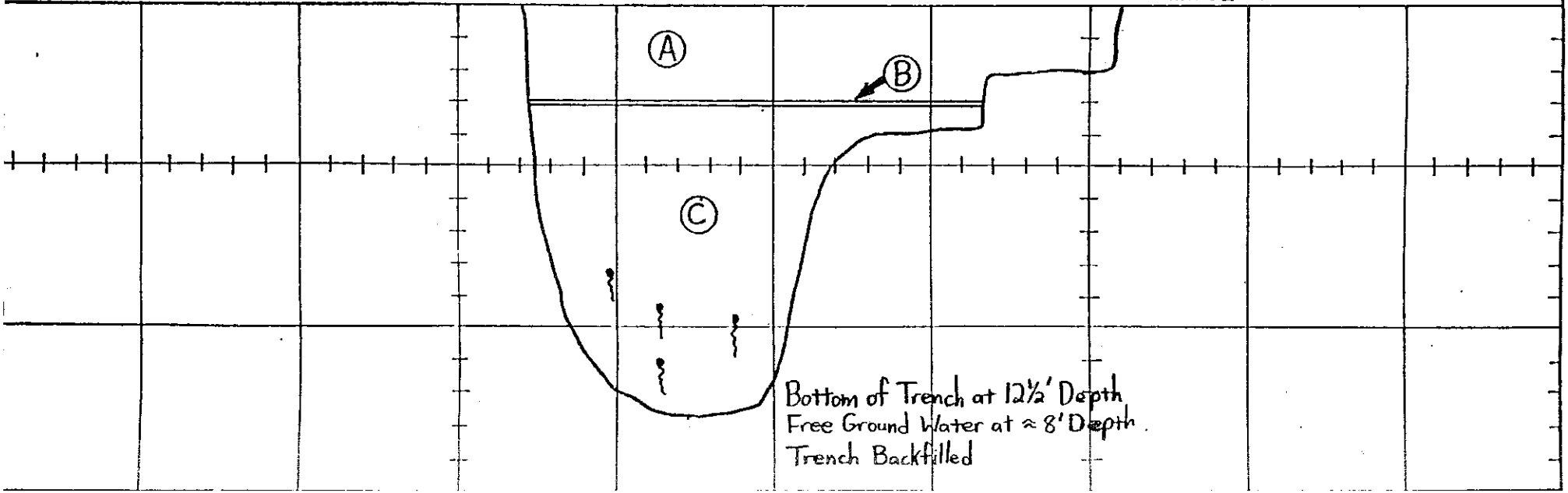
LOG OF TRENCH NO: T-1

Project Number: 588063-0 Elevation: -100 TRENCH NO. T-2

Equipment: Caterpillar 416 Backhoe Location: Tent. Parcel Map No. 23859

GEOLOGIC ATTITUDES	DATE: 9-24-88 DESCRIPTION:	GEOLOGIC UNIT	ENGINEERING PROPERTIES U.S.C.S.	Sample No.	Moisture (%)	Density (pcf)
	(A) Sandy Silt: Very fine grained, very moist, soft, brown		ML	Bulk-1 @ 3'-4'	22.2 @ 2'	88.6
	(B) Silty Sand: Very fine grained, wet, gray, 3" thick layer		ML		38.6 @ 4'	82.8
	(C) Silty Clay: Soft to medium stiff, wet, brown, moderately plastic, 1/8" dia. gastropod shells		CL			
	Seepage below 8' depth Caving					

GRAPHIC REPRESENTATION S.Wall SCALE: 1" = 5' SURFACE SLOPE: 0° TREND: E-W



LOG OF TRENCH NO.: T-2

GEOTECHNICAL TRENCH LOG

Trench No: T-3 Date: 9-24-88

ject: Lusardi Job No: 5880673-01

ipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

vation: -108' ± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA (1972) Logged By: DG

Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0						SM	Silty Sand: Fine grained, medium dense, slightly moist, brown
				94.9	3.6	SP	Sand: Fine grained, medium dense, dry, light gray
						SM	Silty Sand: Fine grained, medium dense, slightly moist, brown
				100.2	4.0		
5						ML	Sandy Silt: Very fine grained, medium dense, slightly moist, light brown Becomes moist
10						ML	Clayey Sandy Silt: Very fine grained, medium stiff, moist, brown, slightly porous, gastropod shells to ⅛" diameter
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
15							
20							

LEIGHTON & ASSOCIATES, INC.

GEOTECHNICAL TRENCH LOG

Trench No: T-4 Date: 9-24-88

Project: Lusardi Job No: 5880673-01

Equipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

Elevation: -100' ± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA. (1972) Logged By: DG

Depth Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0				100.5	15.4	SM	Silty Sand: Fine grained, medium dense, moist, brown
				91.9	28.8	ML	Clayey Sandy Silt: Very fine grained, soft, wet, gray-brown, porous
-5					▽	SM	Silty Sand: Very fine to fine grained, medium dense, wet, gray-brown, gastropod shells to ⅛" diameter Seepage Percolation Pipe Set To 9½' Depth
-10						ML	Sandy Silt: Very fine grained, medium stiff, wet, brown, gastropod shells to ⅛" diameter, slightly porous, slight clay content
-15							Bottom of Trench at 13' Depth Free Ground Water Stabilized at ≈ 5.6' Depth after 12 days Trench Backfilled
-20							

Trench No: T-5 Date: 9-24-88

ject: Lusardi Job No: 5880673-01

ipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

vation: -100'± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA (1972) Logged By: DG

Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0						SM	Silty Sand: Very fine grained, medium dense, slightly moist, brown
	1			97.9	2.7	SP/SM	Sand/Silty Sand: Fine grained, medium dense, slightly moist, gray
				94.1	7.4	ML	Sandy Silt: Very fine grained, medium stiff, moist, brown with layers of fine grained silty sand
5						SM	Silty Sand: Fine grained, medium dense, moist, brown
10						ML + SM	Interlayered Sandy Silt: Very fine grained, moist, brown with gastropod shells to ⅛" diameter Silty Sand: Fine grained, medium dense, moist, brown
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
15							
20							

Trench No: T-6 Date: 9-24-88

Project: Lusardi Job No: 5880673-01

Equipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

Elevation: -105' ± Ref. or Datum U.S.G.S. 7½' Quadrangle India, CA. (1972) Logged By: DG

Depth in Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
						SM	Silty Sand: Fine grained, medium dense, dry, gray, ⅛" diameter roots
						SP/SM	Sand/Silty Sand: Fine grained, medium dense, slightly moist, gray
	1			88.3	7.0	SM	Silty Sand: Fine grained, medium dense, slightly moist, brown
						ML	Sandy Silt: Very fine grained, medium stiff, very moist, brown
				84.8	23.3	SM	Silty Sand: Fine grained, medium dense, moist, brown
						ML	Silt: Medium stiff, moist, brown, thinly laminated
						ML	Clayey Sandy Silt: Very fine grained, soft, very moist, brown, slightly micaceous, gastropod shells to ⅛" diameter
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled

GEOTECHNICAL TRENCH LOG

Trench No: T-7 Date: 9-24-88

Project: Lusardi Job No: 5880673-01

Equipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

Elevation: -100' ± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA. (1972) Logged By: DG

Depth in Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0						SM	Silty Sand: Fine grained, medium dense, dry, brown, slightly micaceous
				86.5	3.5	ML	Sandy Silt: Very fine grained, medium stiff, slightly moist, brown
						ML	Silt: Medium stiff, moist, brown
				85.8	17.1		
5						SM	Silty Sand: Fine grained, medium dense, slightly moist, brown
						ML	Silt: Medium stiff, moist, brown, slight micaceous, gastropod shells to ⅛" diameter, slight clay content
10							Percolation Pipe Set To 10' Depth
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
15							
20							

GEOTECHNICAL TRENCH LOG

Trench No: T-8 Date: 9-24-88

Project: Lusardi Job No: 5880673-01

Equipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

Elevation: -111' ± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA. (1972) Logged By: DG

Depth Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0				92.3	5.1	ML	Sandy Silt: Very fine grained, medium stiff, very slightly moist, light brown, gastropod shells 4 to 1/8" dia.
						SP	Sand: Fine grained, medium dense, slightly moist, light brown
5	1			104.6	5.5		
						ML	Sandy Silt: Very fine grained, medium stiff, moist, brown, slightly micaceous
10							Percolation Pipe Set To 10' Depth
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
15							
20							

Trench No: T-9 Date: 9-24-88

ject: Lusardi Job No: 5880673-01

ipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

vation: -110' ± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA. (1972) Logged By: DG

Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0				83.9	6.7	ML	Sandy Silt: Very fine grained, medium stiff, slightly moist, light brown
						SM	Silty Sand: Fine grained, medium dense, slightly moist, gray
				88.6	17.5	ML	Sandy Silt: Very fine grained, medium stiff, very moist, brown
5							
						ML	Clayey Sandy Silt: Very fine grained, soft to medium stiff, very moist, brown; slightly micaceous, gastropod shells to 1/8" diameter
10							
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
15							
20							

GEOTECHNICAL TRENCH LOG

Trench No: T-10 Date: 9-24-88

Project: Lusardi Job No: 5880673-01

Equipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

Elevation: -118' ± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA (1979) Logged By: DG

Depth in Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0						SM	Silty Sand: Fine grained, medium dense, very slightly moist, brown
	1			84.9	6.7	ML	Sandy Silt: Very fine grained, medium stiff, slightly moist, gray
						SM	Silty Sand: Fine grained, medium dense, slightly moist, brown
				98.4	6.6	SP	Sand: Fine grained, medium dense, slightly moist, brown
-5						SM	Silty Sand: Fine grained, medium dense, moist, brown
							Percolation Pipe Set To 10' Depth
-10						ML	Clayey Sandy Silt: Very fine grained, soft, wet, brown
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
-15							
-20							
-							

Trench No: T-11 Date: 9-24-88

Project: Lusardi Job No: 5880673-01

Equipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

Elevation: -117' ± Ref. or Datum U.S.G.S. 7½' Quadrangle Indio, CA (1972) Logged By: DG

Depth Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0				92.7	23.8	ML	Sandy Silt: Very fine grained, medium stiff, moist, brown; slightly micaceous 3" thick layer of silty sand at 2½' depth
	1			88.9	26.8	ML	Clayey Sandy Silt: Very fine grained, soft to medium stiff, wet brown
5						SP	Sand: Fine grained, medium dense, moist, gray
						ML	Sandy Silt: Very fine grained, medium stiff, wet, brown
10						SM	Silty Sand: Fine grained, medium dense, wet, brown; slight clay content, gastropod shells to ⅛" diameter Seepage at ≈11' Depth
							Bottom of Trench at 12' Depth Free Ground Water Encountered at 11' Depth Trench Backfilled
15							
20							

Trench No: T-12 Date: 9-24-88

oject: Lusardi Job No: 5880673-01

ipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

ation: -100'± Ref. or Datum U.S.G.S. 7½' Quadrangle Thermal Canyon, CA Logged By: DG

Depth in Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
				88.5	10.4	SM	Silty Sand: Fine grained, medium dense, slightly moist, brown; occasional zones of sandy silt
-5				105.9	6.1	SP/SM	Sand/Silty Sand: Very fine to fine grained, medium dense, slightly moist, gray; micaceous
						ML	Sandy Silt: Very fine grained, medium stiff, moist, brown; micaceous
-10						SM	Silty Sand: Fine grained, medium dense, very moist, brown; micaceous Percolation Pipe Set To 10' Depth
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
-15							
-20							

Trench No: T-13 Date: 9-24-88

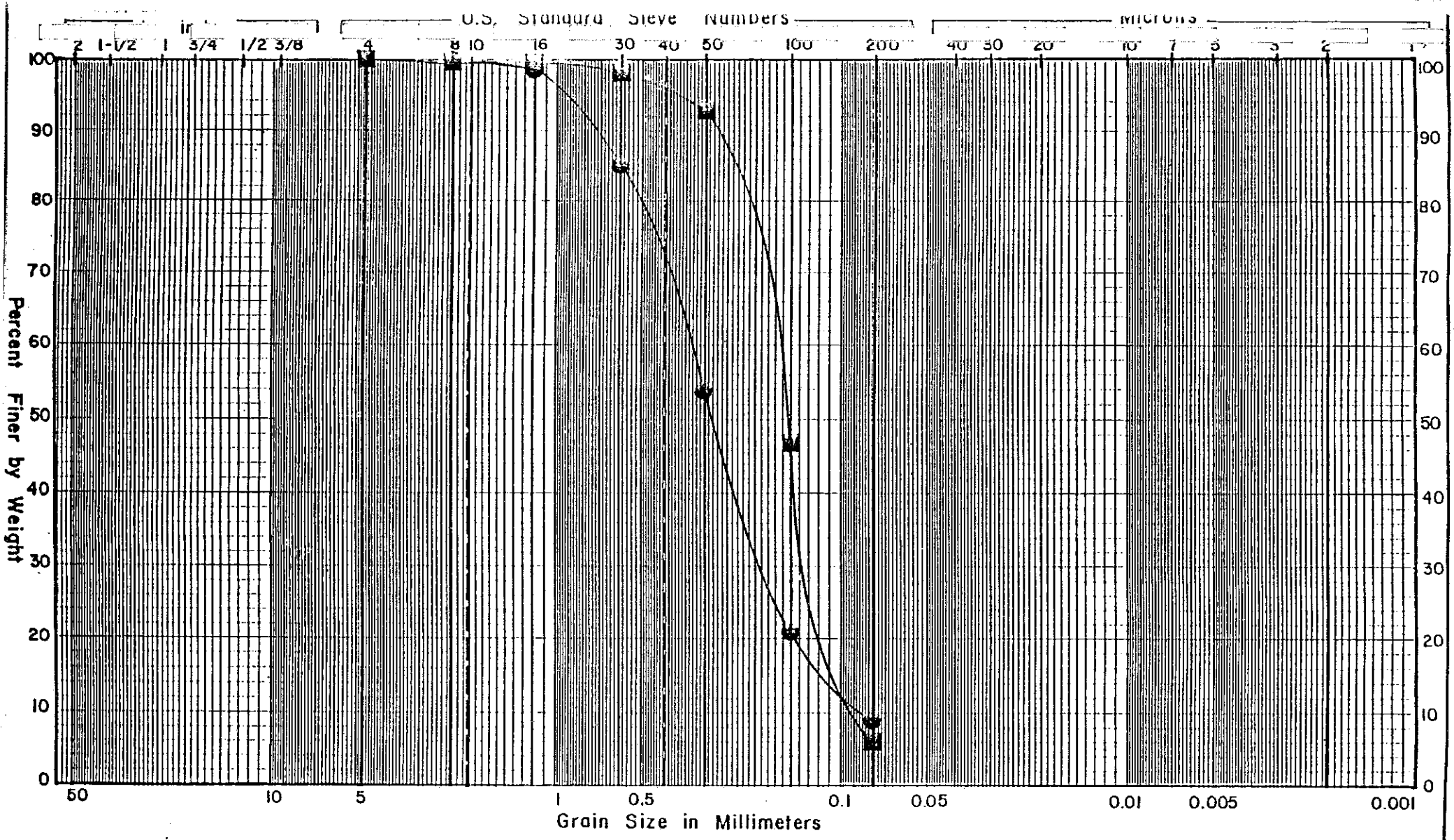
Project: Lusardi Job No: 5880673-01

Equipment Type: Caterpillar 416 Backhoe Equipment Company Dateland

Elevation: -85' ± Ref. or Datum U.S.G.S. 7½' Quadrangle, Indio, CA. (1972) Logged By: DG

Depth Feet	Bulk Sample Number	Sample Depth	Type of Test	Dry Density (pcf)	Moisture Content (%)	Soil Class. (USCS)	GEOTECHNICAL DESCRIPTION
0				87.2	20.7	ML	Sandy Silt: Very fine to fine grained, soft, very moist, brown, micaceous
				81.7	29.7		
-5						ML	Clayey Sandy Silt: Very fine grained, soft, wet, brown, small gastropod and bivalve shells
-10							
							Bottom of Trench at 12' Depth No Free Ground Water Encountered Trench Backfilled
-15							
-20							
-							

APPENDIX C

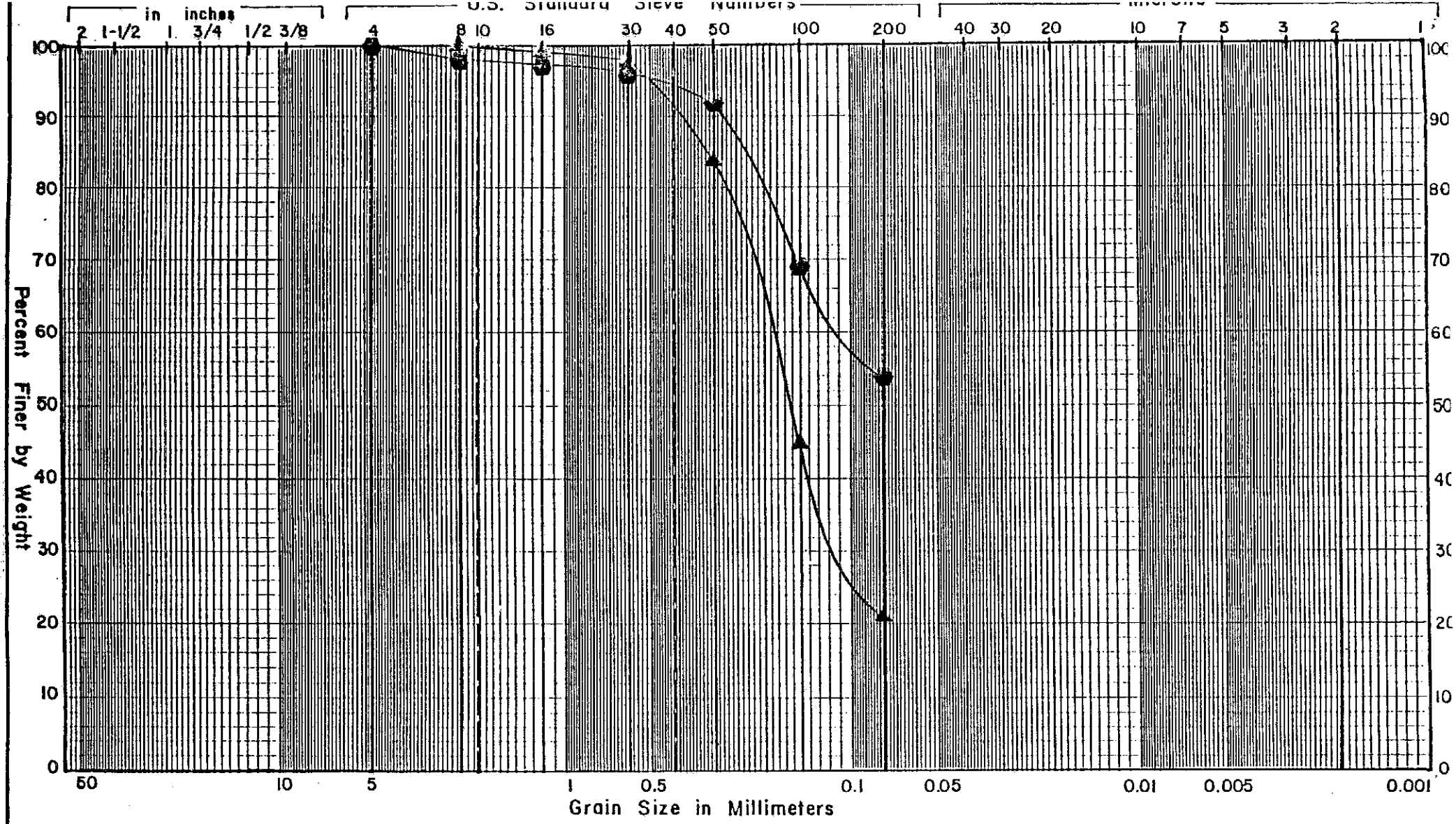


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Symbol	Hole No.	Sample No.	Depth or Elev.	Field Moisture (%)	LL (%)	PI (%)	Activity PI/-2u	Cu D_{60}/D_{10}	Cc $\frac{(D_{30})^2}{D_{10} \times D_{60}}$	Percent Passing No. 200	Percent Passing 2u	U.S.C.S.
●	B-2	R-1	-5'	—	—	—	—	3.8	1.3	9	—	SP/SM
■	B-3	R-1	-3'	—	—	—	—	2.0	1.5	6	—	SP/SM

GRADATION TEST RESULTS

Project No.: 5880673-01



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Symbol	Hole No.	Sample No.	Depth or Elev.	Field Moisture (%)	LL (%)	PI (%)	Activity PI/-2u	Cu D_{60}/D_{10}	Cc $\frac{(D_{30})^2}{D10 \times D60}$	Percent Passing No. 200	Percent Passing 2u	U.S.C.S.
▲	B-5	SPT-1	-55'	—	—	—	—	—	—	21	—	SM
⬢	B-6	R-1	-5'	—	—	—	—	—	—	54	—	ML

GRADATION TEST RESULTS

Plate No. C - 11

5880673-01

MAXIMUM DENSITY TEST RESULTS *

Sample Location	Soil Description	Optimum Moisture%	Maximum Dry Density(pcf)
B-6, Bulk 1 @ 1-4'	Silty/Sand: very fine grained, brown	12.4	115.6

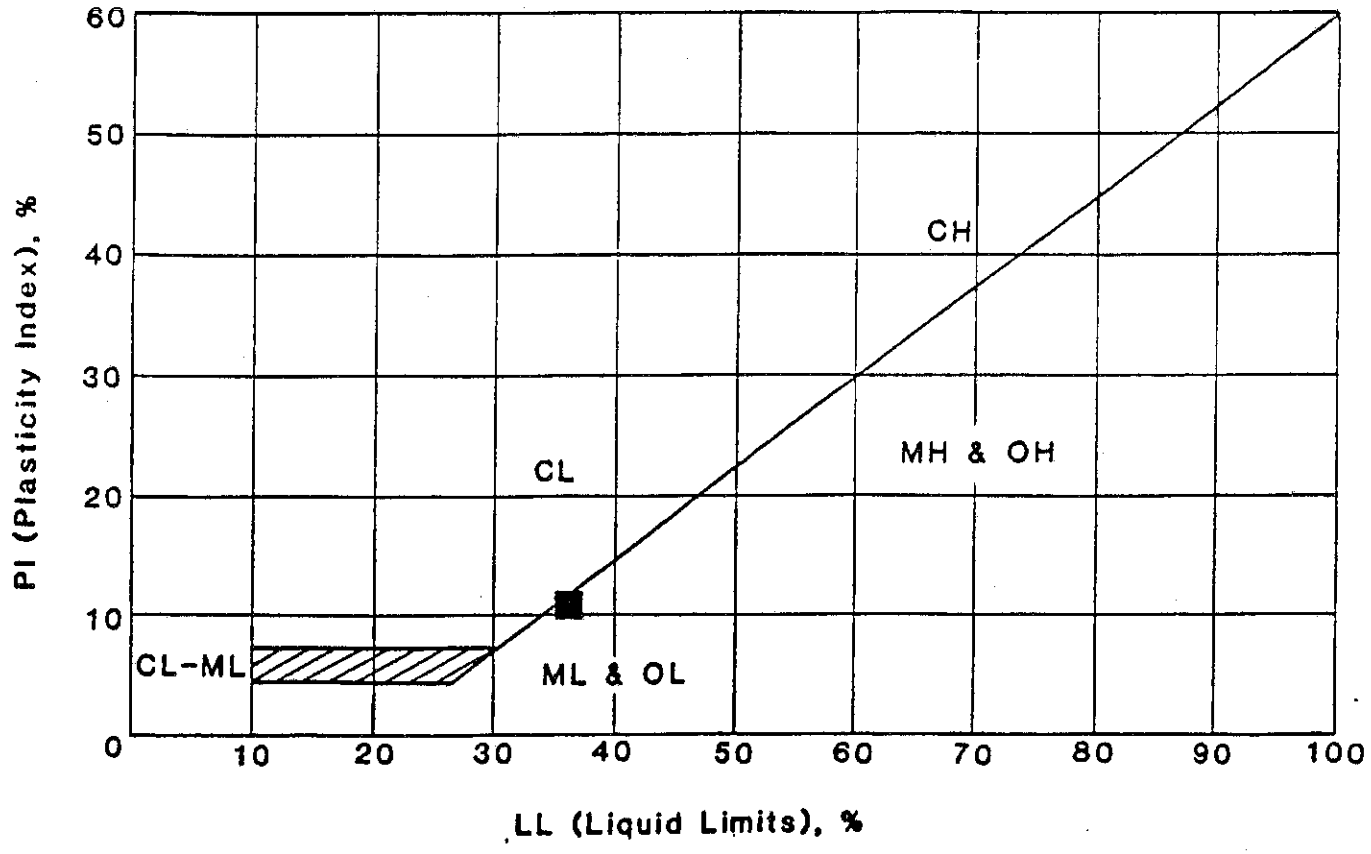
* In accordance with ASTM D1557-78.

SAND EQUIVALENT TEST RESULTS **

Sample Location	Soil Description	Sand Equivalent
B-2, R-2 @ 5'	Silty/Sand: fine grained, brown, micaceous	54
B-3, SPT-1 @ 3-1/2'	Silty/Sand: fine grained, gray-brown, micaceous	15
B-4, SPT-1 @ 3-1/2'	Sandy/Silt: very fine grained sand fraction, brown	2
B-6, SPT-1 @ 3-1/2'	Silty/Sand: very fine grained, brown	11
B-9, SPT-1 @ 3-1/2'	Sandy/Silt: very fine grained sand fraction, brown, micaceous	4

** In accordance with ASTM D2419-74.

SYMBOL	SAMPLE NO.	SAMPLE LOCATION	FIELD MOISTURE (%)	LL (%)	PL (%)	PI (%)	U.S.C.S.
●	SPT-1	B-2 @ 3-1/2'			(Not Plastic)		ML
■	SPT-2	B-3 @ 10-1/2'		36.2	25.2	11.0	ML
▲	R-1	B-7 @ 3'			(Not Plastic)		ML
⬢	R-2	B-4 @ 10'		50	(Not Plastic)		ML



ATTERBERG LIMITS TEST RESULTS

Project No. 5860673-01
Project Name Lusardi
Date 12/9/88 Figure No.

3005 688

ACTERIOLOGY
WATER TESTING
HAZARDOUS WASTE TESTING
ALIF. DHS CERTIFIED
HONE (714) 684-1881
LABORATORIES
215 CHICAGO AVE.

ESTABLISHED 1906
EDWARD S. BABCOCK & SONS, INC.
P.O. BOX 432
RIVERSIDE, CALIFORNIA 92502

10/19/88

To: Leighton & Associates, Inc.
74-240 Highway 111
Palm Desert, CA 92260
568-1338,0993

Lab No. 881011-297
Invoice No. 94380

Submitted	Sampled
By UPS	
Date 10/11/88	
Time 10:00	

Sample Marked: Proj.#5880673-01 Soil
B-4 R-1-5 Ft.

PARAMETER	RESULT
pH (Sat. Paste)	7.8
Saturated Resistivity	540 ohm-cm
Water Extractable:	
*Sulfate	380 ppm

*Expressed as ppm of air-dry soil

cc: Irvine

EDWARD S. BABCOCK & SONS, INC.

BACTERIOLOGY
WATER TESTING
HAZARDOUS WASTE TESTING
CALIF. DHS CERTIFIED
PHONE (714) 684-1881
LABORATORIES
3215 CHICAGO AVE.

ESTABLISHED 1906
EDWARD S. BABCOCK & SONS, INC.
P.O. BOX 432
RIVERSIDE, CALIFORNIA 92502

10/19/88

To: Leighton & Associates, Inc.
74-240 Highway 111
Palm Desert, CA 92260
568-1338,0993

Lab No. 881011-298
Invoice No. 94380

	Submitted	Sampled
By	UPS	
Date	10/11/88	
Time	10:00	

Sample Marked: Proj.#5880673-01 Soil
B-5 R-1-3 Ft.

PARAMETER	RESULT
pH (Sat. Paste)	8.2
Saturated Resistivity	190 ohm-cm
Water Extractable:	
*Sulfate	1800 ppm

*Expressed as ppm of air-dry soil

EDWARD S. BABCOCK & SONS, INC.

Laurence J Chrystal

ACTERIOLOGY
WATER TESTING
HAZARDOUS WASTE TESTING
ALIF. DHS CERTIFIED
HONE (714) 684-1881
LABORATORIES
215 CHICAGO AVE.

ESTABLISHED 1906
EDWARD S. BABCOCK & SONS, INC.
P.O. BOX 432
RIVERSIDE, CALIFORNIA 92502

10/19/88

To: Leighton & Associates, Inc.
74-240 Highway 111
Palm Desert, CA 92260
568-1338,0993

Lab No. 881011-299
Invoice No. 94380

Submitted Sampled

Sample Marked: Proj.#5880673-01 Soil
B-7 SPT-1 5 1/2 Ft.

By UPS
Date 10/11/88
Time 10:00

PARAMETER	RESULT
pH (Sat. Paste)	8.1
Saturated Resistivity	410 ohm-cm
Water Extractable:	
*Sulfate	350 ppm

*Expressed as ppm of air-dry soil

EDWARD S. BABCOCK & SONS, INC.

BACTERIOLOGY
WATER TESTING
HAZARDOUS WASTE TESTING
CALIF. DHS CERTIFIED
PHONE (714) 684-1881
LABORATORIES
3215 CHICAGO AVE.

ESTABLISHED 1906
EDWARD S. BABCOCK & SONS, INC.
P.O. BOX 432
RIVERSIDE, CALIFORNIA 92502

10/19/88

To: Leighton & Associates, Inc.
74-240 Highway 111
Palm Desert, CA 92260
568-1338,0993

Lab No. 881011-300
Invoice No. 94380

	Submitted	Sampled
By	UPS	
Date	10/11/88	
Time	10:00	

Sample Marked: Proj.#5880673-01 Soil
B-9 SPT-1 5 Ft.

PARAMETER	RESULT	
pH (Sat. Paste)	8.3	
Saturated Resistivity	1800	ohm-cm
Water Extractable:		
*Sulfate	50	ppm

*Expressed as ppm of air-dry soil

EDWARD S. BABCOCK & SONS, INC.

Laurence J. Chrystal

BACTERIOLOGY
WATER TESTING
HAZARDOUS WASTE TESTING
CALIF. DHS CERTIFIED
PHONE (714) 684-1881
LABORATORIES
215 CHICAGO AVE.

ESTABLISHED 1906
EDWARD S. BABCOCK & SONS, INC.
P.O. BOX 432
RIVERSIDE, CALIFORNIA 92502

10/19/88

To: Leighton & Associates, Inc.
74-240 Highway 111
Palm Desert, CA 92260
568-1338,0993

Lab No. 881011-301
Invoice No. 94380

Submitted Sampled

Sample Marked: Proj. #5880673-01 Soil
B-2 Bulk 1 4 Ft.

By UPS
Date 10/11/88
Time 10:00

PARAMETER	RESULT	
pH (Sat. Paste)	7.8	
Saturated Resistivity	80	ohm-cm
Water Extractable:		
*Sulfate	2400	ppm

*Expressed as ppm of air-dry soil

EDWARD S. BABCOCK & SONS, INC.

APPENDIX D

LUSARDI
5880673-01

SUMMARY OF BORINGS

LAB DATA:
DENSITY, $\gamma_{moist} = \gamma_d \times (1+w)$

FIELD DATA:
PENETRATION RESISTANCE

BORING	DEPTH	SOIL TYPE	DENSITY	DEPTH	SOIL TYPE	SPT DATA
B-1				3½'	SM	$N_{RAW} = 6$
				5'	SM	$R = 26$, $N_a \approx 10$
				7½'	CL	$N_a = 8$
				10'	ML	$R = 14$, $N_a \approx 5.5$
				15½'	ML	$N_a = 11$
				20'	ML	$R = 26$, $N_a \approx 10.1$
				25½'	SP	$N = 20$
				30'	SP	$R = 12$, $N_a \approx 4.7$
B-2				3½'	ML	$N_a = 9$
	5'	SP/SM	119 pcf	5'	SP/SM	$R = 28$, $N_a \approx 10.9$
	10'	SM	124	7½'	SM	$N_a = 16$
				10'	SM	$R = 16$, $N_a \approx 6.2$
				15½'	SM	$N_a = 16$
				20'	CL	$R = 17$, $N_a \approx 6.6$
				25½'	SP/SM	$N_a = 14$
	30'	SP/SM	124	30'	SP/SM	$R = 16$, $N_a \approx 6.2$
B-3	3'	SP/SM	106	3'	SP/SM	$R = 12$, $N_a \approx 4.7$
				5½'	SM	$N_a = 9$
	7'	SM	120	7'	SM	$R = 7$, $N_a \approx 2.7$
				10½'	ML	$N_a = 10$
	15'	ML	115	15'	ML	$R = 41$, $N_a \approx$
				20½'	SM	$N_a = 20$
	25'	SM & ML	129	25'	SM & ML	$R = 20$, $N_a \approx 7.8$
				30½'	SM	$N_a = 26$
				40'	SP/SM	$R = 18$, $N_a \approx 7.0$
B-4				3½'	ML	$N_a = 21$
	5'	SP & ML	103	5'	ML & SP	$R = 45$, $N_a \approx 17.6$
				7½'	SP & ML	$N_a = 6$
	10'	CL	121	10'	CL	$R = 16$, $N_a \approx 6.2$
				15½'	SP	$N_a = 24$
	20'	CL	119	20'	CL	$R = 20$, $N_a \approx 7.8$
				25½'	SM	$N_a = 34$
				30'	CL & SM	$R = 16$, $N_a \approx 6.2$

SUMMARY OF BORINGS - CONTINUED

BORING	DEPTH	SOIL TYPE	DENSITY	DEPTH	SOIL TYPE	SPT DATA
B-5				3'	ML & SM	R = 24, N_R = 9.4
				5½'	SM	N_R = 15
	7'	SM	115 pcf	7'	SM	R = 13, N_R = 5.1
				10½'	SM	N_R = 11
	15'	ML	119	15'	ML	R = 12, N_R = 4.7
				20½'	SM	N_R = 25
				25'	ML	R = 45, N_R = 17.6
				30'	SP	N = 47
B-6	5'	ML	120	3½'	SM	N_R = 18
				5'	ML	R = 12, N_R = 4.7
				7½'	ML	N_R = 7
	10'	ML & SM	105	10'	ML & SM	R = 15, N_R = 5.9
				15½'	ML	N_R = 15
	20'	ML	117	20'	ML	R = 17, N_R = 6.6
				25½'	SP	N_R = 26
				30'	SP	R = 19, N_R = 7.4
B-7				3'	ML	R = 18, N_R = 7
				5½'	ML	N_R = 10
	7'	ML	106	7'	ML	R = 8, N = 3.1
				10½'	CL	N_R = 5
	15'	CL & ML	119	15'	CL & ML	R = 9, N_R = 3.5
				20½'	ML	N_R = 12
	25'	ML	117	25'	ML	R = 9, N_R = 3.5
				30'	SP/SM	N = 18
B-8				3'	ML	R = 15, N_R = 5.9
				5½'	ML	N_R = 9
	7'	ML & SM	122	7'	ML & SM	R = 19, N_R = 7.4
				10½'	ML	N_R = 10
	15'	CL & SM	113	15'	CL & SM	R = 13, N_R = 5.1
				20½'	ML	N_R = 12
				25'	CL & SM	R = 14, N_R = 5.5
				30½'	SP/SM	N = 13
	35'	SP/SM	127	35'	SP/SM	R = 11, N_R = 4.3
				40'	SP/SM	N = 18
B-9				3½'	ML	N_R = 12
				5'	ML	R = 22, N_R = 8.6
				7½'	ML & SP/SM	N_R = 30
	10'	ML	122	10'	ML	R = 27, N_R = 10.5
				15½'	ML & SP	N_R = 20
				20'	ML	R = 38, N_R = 14.8
				25½'	SP & ML	N_R = 13
				30'	SP & ML	R = 27, N_R = 14.4

LUSARDI
5880673-01

SUMMARY OF BORINGS

DENSITIES: use $\gamma_{moist} \cong 110$ pcf for all soils
rough average value,
sl. conservative in some zones.

CONVERSION FROM RING SAMPLER TO SPT N-VALUES:

$$N_{RAW} = R(0.39)$$

ref: Boirrum & Gifford, 1986,
"Settlement of Light Buildings on Sand";
in ASCE Geotechnical Special Bulletin No. 5

Use $N' + 7.5$ for silty soils with $D_{50} < 0.15$ mm
(procedure per Seed & Idriss, 1982, p. 105)

$$N' = N_{RAW}\left(0.77 \log\left(\frac{20}{\sigma_o'}\right)\right)$$

BASED ON GRAIN SIZE DISTRIBUTIONS, USE N' FOR SP SOILS AND SP/SM SOILS;
$N' + 7.5$ for SM SOILS

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-1 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -100'± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: Buouk

DEPTH TO GWT: 5' ASSUMED MIN.

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o (~~TSF~~) KSF	σ_o' (~~TSF~~) KSF	C_N	N_1 (~~TSF~~)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3½	SM		6	.385	.385	2.3	+7.5=21.3 13.8	0.19	0.99	0.44	0.43
5	SM		10.1	.550	.550	1.9	+7.5=26.8 19.3	0.25	0.98	0.43	0.58
7½	CL		8	NON	LIQUEFIABLE		LAYER	- CLAY			
10	ML		5.5	NON	LIQUEFIABLE		LAYER	- SILT			
15½	ML		11	NON	LIQUEFIABLE		LAYER	- SILT			
20	ML		10.1	NON	LIQUEFIABLE		LAYER	- SILT			
25½	SP		20	2805	1525	1.14	22.8	0.22	0.94	0.76	0.29
30	SP		4.7	3300	1740	1.07	5	0.05	0.92	0.77	0.07

$C_N = \frac{0.77 \log(20/\sigma_o')}{(1/\sigma_o')^{\frac{1}{2}}}$ (in tsf) per Seed & Idriss, 1982

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ – CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ – CYCLIC STRESS INDUCED BY EARTHQUAKE $= 0.65\, r_d\, (\sigma_o/\sigma_o')\left(\frac{A_{max}}{g}\right)$

S.F. $= (\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-2 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -97'± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: RBrown

DEPTH TO GWT: 5' (ASSUMED MIN.)

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o ~~(TSF)~~ KSF	σ_o' ~~(TSF)~~ KSF	C_N	N_1 (~~TSF~~)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3½	ML		9	NON	LIQUEFIABLE LAYER - SILT				—	—	—
5	SP/SM	9	10.9	.550	.550	1.9	20.7	0.19	0.98	0.43	0.44
7½	SM		16	.825	.669	1.7	+7.5=35.2 27.7	0.39	0.98	0.53	0.74
10	SM		6.2	.1100	.790	1.6	+7.5=17.4 9.9	0.16	0.97	0.60	0.27
15½	SM		16	.1705	1.050	1.4	22.4	0.20	0.96	0.69	0.29
20	CL		6.6	NON	LIQUEFIABLE LAYER - CLAY				—	—	—
25½	SP/SM		14	2805	1525	1.14	16	0.15	0.94	0.76	0.20
30	SP/SM		6.2	3.300	1.740	1.07	6.6	0.06	0.92	0.77	0.08

$C_N = \sim\!\!0.77 \log(20/\sigma_o')\sim\!\!$ $(1/\sigma_o')^{\frac{1}{2}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ — CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ — CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. = $(\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-3 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -103' ± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: Bunt

DEPTH TO GWT: 5' ASSUMED MIN.

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o ~~(TSF)~~ KSF	σ_o' ~~(TSF)~~ KSF	C_N	N_1 ~~(1TSF)~~	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3	SP/SM	6	4.7	.330	.330	2.5	11.8	0.11	0.99	0.44	0.25
5½	SM		9	.605	.605	1.8	+7.5=23.7 16.2	0.23	0.98	0.43	0.53
7	SM		2.7	.770	.645	1.76	+7.5=12.3 4.8	0.12	0.98	0.52	0.23
10½	ML		10	NON	LIQUEFIABLE		LAYER	- SILT			
15	ML		16	NON	LIQUEFIABLE		LAYER	- SILT			
20½	SM		20	2255	1290	1.25	+7.5=32.4 24.9	0.33	0.95	0.73	0.45
25	SM&ML		7.8	2.750	1.500	1.15	+7.5=16.5 9	0.15	0.94	0.76	0.20
30½	SM		26	3.355	1.765	1.06	+7.5=35.2 27.7	0.37	0.92	0.77	0.48
40	SP/SM		7	4.400	2.215	0.95	6.7	0.07	0.85	0.75	0.09

$C_N = $ ~~$0.77 \log(20/\sigma_o')$~~ $(1/\sigma_o')^{\frac{1}{2}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ — CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ — CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. $= (\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-4 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -109' ± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: RBurnt

ASSUMED MIN.
DEPTH TO GWT: 5'

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o (~~TSF~~ KSF)	σ_o' (~~TSF~~ KSF)	C_N	N_1 (~~TSF~~)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3½	ML		21	NON LIQUEFIABLE			LAYER - SILT				
5	ML & SP		17.6	.550	.550	1.9	33.4	0.34	0.98	0.43	0.79
7½	SP & ML		6	.825	.669	1.7	10.2	0.09	0.98	0.53	0.17
10	CL		6.2	NON LIQUEFIABLE			LAYER - CLAY				
15½	SP		24	1.705	1.050	1.4	33.6	0.34	0.96	0.69	0.50
20	CL		7.8	NON LIQUEFIABLE			LAYER - CLAY				
25½	SM		34	2805	1525	1.14	+7.5 = 46.3 38.8	~0.60	0.94	0.76	0.79
30	CL & SM		6.2	3300	1.740	1.07	+7.5 = 14.1 6.6	0.13	0.92	0.77	0.17

$C_N = $ ~~$0.77 \log(20/\sigma_o')$~~ $(1/\sigma_o')^{\frac{1}{2}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ — CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ — CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. = $(\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-5 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -102'± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: Bennett

DEPTH TO GWT: 5' ASSUMED MIN.

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o (~~TSF~~ KSF)	σ_o' (~~TSF~~ KSF)	C_N	N_1 (~~TSF~~)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3	ML & SM		9.4	.330	.330	2.5	23.5	0.23	0.99	0.44	0.52
5½	SM	21	15	.605	.605	1.8	+7.5 = 34.5 27	0.36	0.98	0.43	0.84
7	SM		5.1	.770	.645	1.76	+7.5 = 16.5 9	0.15	0.98	0.52	0.29
10½	SM		11	1155	.812	1.57	+7.5 = 24.8 17.3	0.24	0.97	0.61	0.39
15	ML		4.7	NON	LIQUEFIABLE		LAYER - SILT	—	—	—	
20½	SM		25	2255	1.290	1.25	+7.5 = 38.8 31.3	0.45	0.95	0.73	0.61
25	ML		17.6	NON	LIQUEFIABLE		LAYER - SILT	—	—	—	
30	SP		47	3.300	1.740	1.07	50.3	~0.8	0.92	0.77	~>1

$C_N = \sim\!\!0.77 \log(20/\sigma_o')\sim\!\!$ $(1/\sigma_o')^{\frac{1}{2}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ — CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ — CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. = $(\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-6 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -110'± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: VBurnett

DEPTH TO GWT: 5' ASSUMED MIN.

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o (~~TSF~~ KSF)	σ_o' (~~TSF~~ KSF)	C_N	N_1 (~~1TSF~~)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3½	SM	·	18	.385	.385	2.3	+7.5=48.9 41.4	~0.60	0.99	0.44	~>1.3
5	ML	54	4.7	NON	LIQUEFIABLE		LAYER	- SILT			
7½	ML		7	NON	LIQUEFIABLE		LAYER	- SILT			
10	ML & SM		5.9	1.100	.790	1.6	+7.5=16.9 9.4	0.15	0.97	0.60	0.25
15½	ML		15	NON	LIQUEFIABLE		LAYER	- SILT			
20	ML		6.6	NON	LIQUEFIABLE		LAYER	- SILT			
25½	SP		26	2.805	1.525	1.14	29.6	0.29	0.94	0.76	0.38
30	SP		7.4	3.300	1.740	1.07	7.9	0.08	0.92	0.77	0.10

$C_N = \sim\!\!0.77 \log(20/\sigma_o')\ (1/\sigma_o')^{\frac{1}{2}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ – CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ – CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. = $(\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-7 FAULT SYSTEM: San Andreas So. DATE: 12-7-88

ELEVATION: -117'± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: Burnt

DEPTH TO GWT: 5' (Assumed Min.)

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o (~~TSF~~ KSF)	σ_o' (~~TSF~~ KSF)	C_N	N_1 (~~1TSF~~)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3	ML		7	Non	Liquefiable Layer -				Silt		
5½	ML		10	Non	Liquefiable Layer -				Silt		
7	ML		3.1	Non	Liquefiable Layer -				Silt		
10½	CL		5	Non	Liquefiable Layer -				Clay		
15	CL & ML		3.5	Non	Liquefiable Layer -				Clay & Silt		
20½	ML		12	Non	Liquefiable Layer -				Silt		
25	ML		3.5	Non	Liquefiable Layer -				Silt		
30	SP/SM		18	3300	1740	1.07	19.3	0.18	0.92	0.77	0.23

$C_N = \frac{0.77 \log(20/\sigma_o')}{(\sigma_o')^{\frac{1}{2}}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ – CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ – CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. = $(\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-8 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -113'± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: RBurnt

DEPTH TO GWT: 5' ASSUMED MIN.

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o (~~TSF~~ KSF)	σ_o' (~~TSF~~ KSF)	C_N	N_1 (~~1TSF~~ 1KSF)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3	ML		5.9	NON	LIQUEFIABLE		LAYER	-	SILT	—	—
5½	ML		9	NON	LIQUEFIABLE		LAYER	-	SILT	—	—
7	ML & SM		7.4	.770	.645	1.76	+7.5 = 20.5 13	0.20	0.98	0.52	0.39
10½	ML		10	NON	LIQUEFIABLE		LAYER	-	SILT	—	—
15	CL & SM		5.1	1.650	1.025	1.40	+7.5 = 14.6 7.1	0.13	0.96	0.68	0.19
20½	ML		12	NON	LIQUEFIABLE		LAYER	-	SILT	—	—
25	CL & SM		5.5	2.150	1.500	1.15	+7.5 = 13.9 6.4	0.13	0.94	0.76	0.17
30½	SP/SM		13	3.355	1.765	1.06	13.8	0.13	0.92	0.77	0.17
35	SP/SM		4.3	3.850	1.980	1.00	4.3	0.04	0.90	0.77	0.05
40	SP/SM		18	4.400	2.215	0.95	17.1	0.16	0.85	0.75	0.21

$C_N = \sim\!\!0.77 \log(20/\sigma_o')\sim\!\!$ $(1/\sigma_o')^{\frac{1}{2}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ – CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ – CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. = $(\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

SOIL LIQUEFACTION ANALYSIS

DRILL HOLE NO.: B-9 FAULT SYSTEM: SAN ANDREAS So. DATE: 12-7-88

ELEVATION: -95' ± MAX. GROUND ACCEL.: 0.68g CALCULATED BY: Bunt

DEPTH TO GWT: 5' ASSUMED MIN.

DEPTH (FEET)	USCS	% FINES	N (BLOWS/FT) FIELD	σ_o (~~TSF~~ KSF)	σ_o' (~~TSF~~ KSF)	C_N	N_1 (1~~TSF~~)	$(\tau/\sigma_o')_R$	r_d	$(\tau/\sigma_o')_C$	S.F.
3½	ML		12	NON LIQUEFIABLE LAYER - SILT							
5	ML		8.6	NON LIQUEFIABLE LAYER - SILT							
7½	ML & SP/SM		30	.825	.669	1.7	51	~0.8	0.98	0.53	~1.5
10	ML		10.5	NON LIQUEFIABLE LAYER - SILT							
15½	ML & SP		20	1.705	1.050	1.4	28	0.27	0.96	0.69	0.40
20	ML		14.8	NON LIQUEFIABLE LAYER - SILT							
25½	SP & ML		13	2.805	1.525	1.14	14.8	0.14	0.94	0.76	0.18
30	SP & ML		14.4	3.300	1.740	1.07	15.4	0.14	0.92	0.77	0.18

$C_N = \frac{0.77 \log(20/\sigma_o')}{(\sigma_o')^{\frac{1}{2}}}$

$N_1 = C_N \cdot N$

$(\tau/\sigma_o')_R$ — CYCLIC STRESS RATIO REQUIRED TO CAUSE LIQUEFACTION

$(\tau/\sigma_o')_C$ — CYCLIC STRESS INDUCED BY EARTHQUAKE

S.F. = $(\tau/\sigma_o')_R / (\tau/\sigma_o')_C$

APPENDIX E

APPENDIX E

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APPENDIX D

AIR QUALITY CALCULATIONS

APPENDIX D

EMISSIONS CALCULATIONS

STATIONARY SOURCES

Average Monthly Consumption of Natural Gas:

SF - 815 units x 6,665 cf/mo = 5,431,975 cf/mo
MF - 270 units x 3,918 cf/mo = 1,057,860 cf/mo
Commerical - 450,846 SF* x 2.9 cf/mo = 1,307,453 cf/mo
Office - 150,282 SF* x 2.0 cf/mo = 300,564 cf/mo

Natural Gas Emission Factors (Lbs. per 10^6 Cubic Foot):

	CO	NOx		SOx	Part	ROG
	20	80	120	NEGL	.15	5.3
SF	109		435	NEGL	.81	28.8
MF	21		81	NEGL	.16	5.4
COM	26		156	NEGL	.2	6.9
OFFICE	6		36	NEGL	.05	1.6
TOTAL	162		708	NEGL	1.22	42.7

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* Estimated Square Footage

NEGL = Negligible

Appendix E

CITY OF COACHELLA

PROJECTED FISCAL IMPACTS

RANCHO COACHELLA VINEYARDS

Prepared for:

The Keith Companies
151 Kalmus, Building B-101
Costa Mesa, California 92626

July 25, 1989

STANLEY R. HOFFMAN ASSOCIATES

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CHAPTER 1

INTRODUCTION

This report presents an analysis of fiscal impacts to the City of Coachella projected to result from the development of the proposed Rancho Coachella Vineyards project. Recurring revenues projected and analyzed include property tax, real property transfer tax, sales tax, business license tax, franchise fees, revenues from other agencies, charges for current services and other revenues. Recurring costs projected include police protection, engineering/ public works, fire protection, recreation and citywide overhead costs.

The Rancho Coachella Vineyards project is proposed for 1,085 dwelling units and 46 acres of commercial land uses on 260 acres located in the southeastern portion of the City of Coachella, east of Fillmore Street and north of Avenue 56. Figure 1-1 shows the location of Rancho Coachella Vineyards.

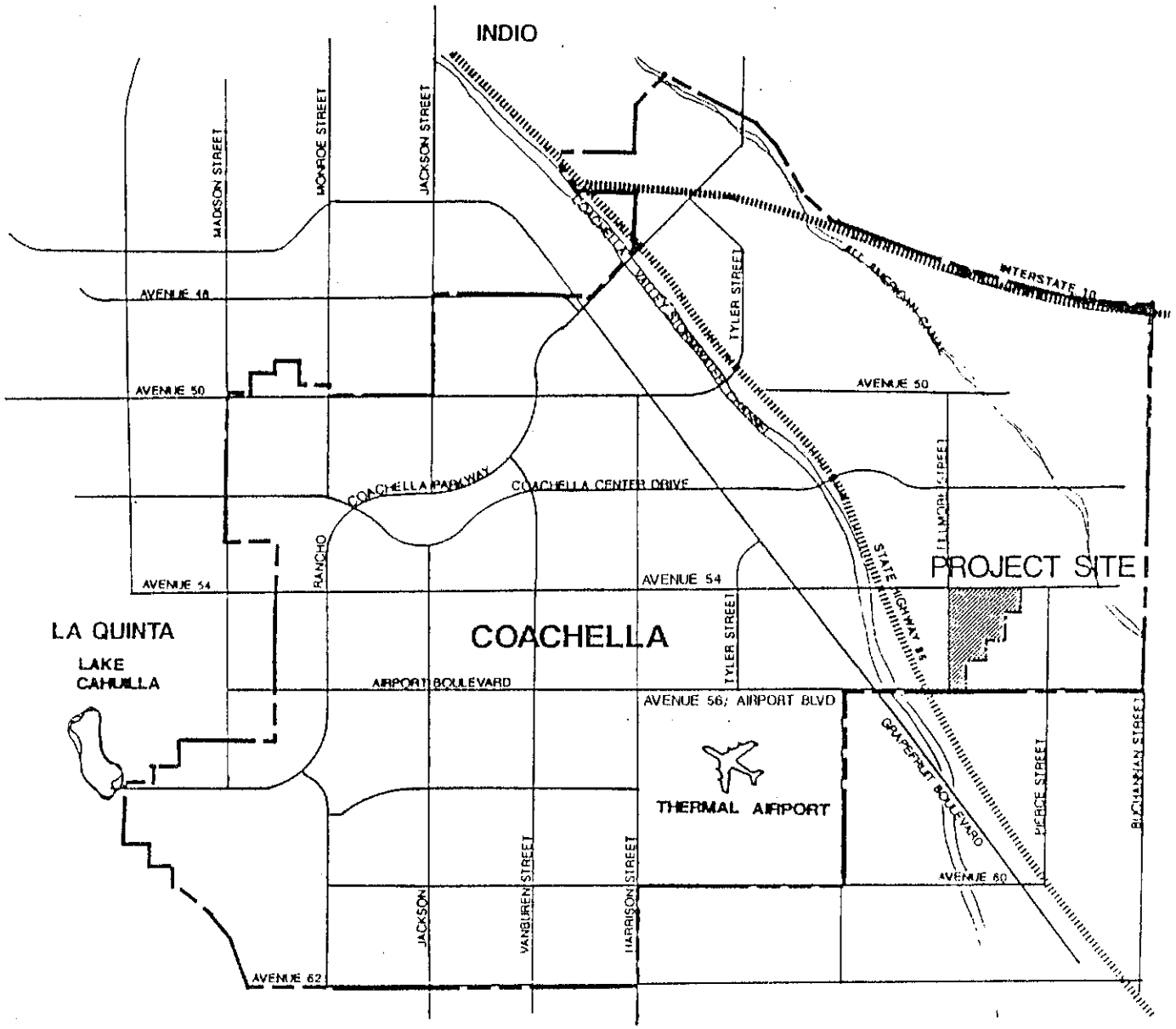
1.1 Methodology

This study uses the following information sources for the projection of City of Coachella costs and revenues:

1. Housing type and valuation data based on comparable developments in the area.
2. Nonresidential valuation data based on comparable developments in the area.
3. Revenue and cost figures from the City's 1988-89 Annual Budget.
4. Interviews with key City staff.

Under a modified projection, presented in Appendix C, housing values are taken directly from a report by The Meyers Group, City of Coachella Market Study, September 1988.

RANCHO COACHELLA VINEYARDS



VICINITY MAP

FIGURE 1-1

All analyses have been prepared assuming buildout of the project area. After project buildout, it is assumed that the projected levels of recurring revenues and costs would continue if major land use, market and fiscal assumptions remain valid.

1.2 Overview of the Report

Chapter 2 presents the project description and the analysis of recurring fiscal impacts to the City of Coachella at project buildout. Chapter 3 presents the major assumptions used in preparation of the fiscal analysis. Appendix A presents the market and land use assumptions, while Appendix B presents the fiscal revenue and cost assumptions. Finally, Appendix C presents the fiscal analysis under modified market assumptions.

CHAPTER 2

FISCAL IMPACT ANALYSIS

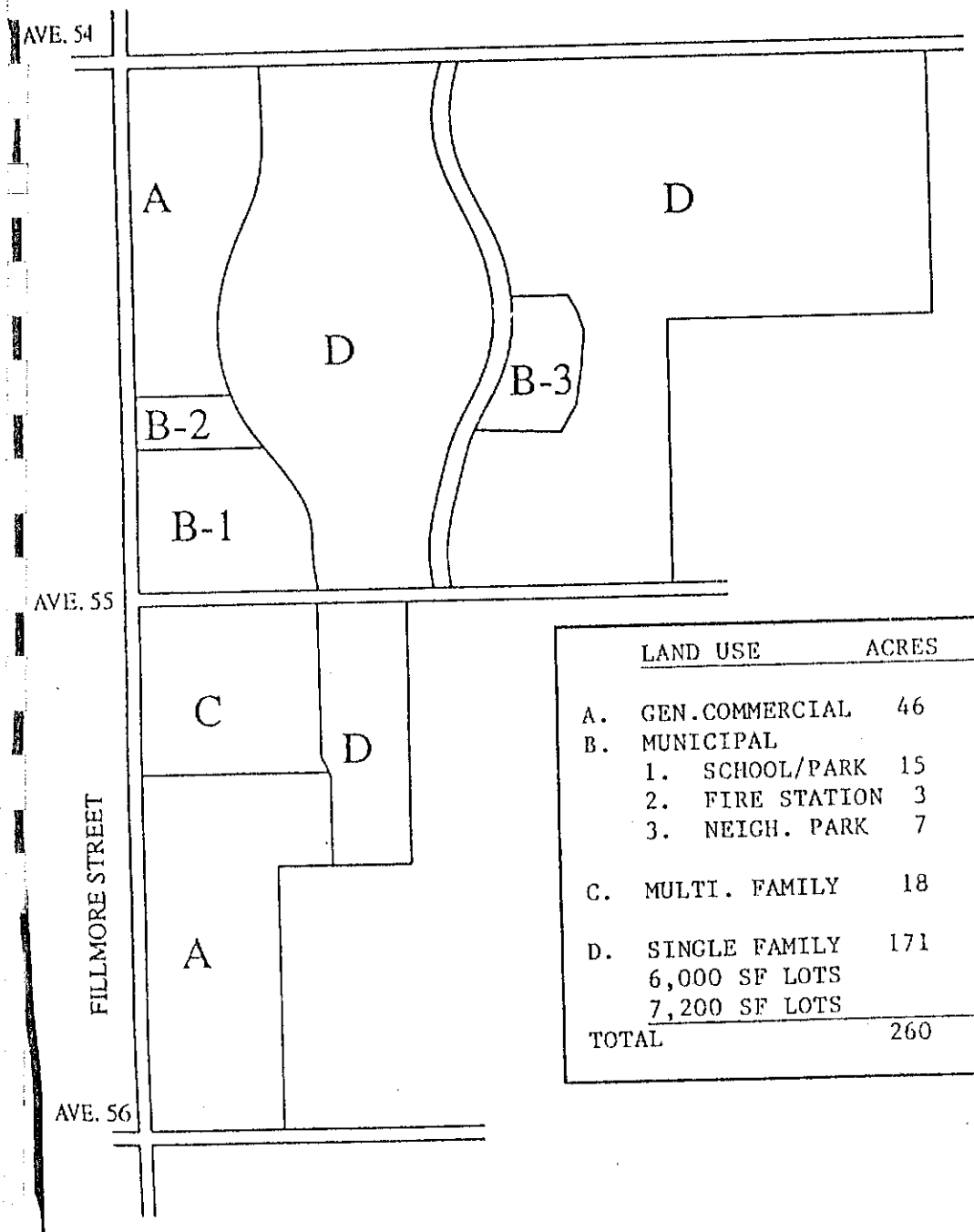
This chapter presents a summary of the analysis of fiscal impacts to the City of Coachella projected to result from the development of the proposed Rancho Coachella Vineyards project. Recurring revenues projected and analyzed include property tax, real property transfer tax, sales tax, business license tax, franchise tax, revenue from other agencies, charges for current services and other revenues. Recurring costs projected include police protection, engineering/public works, fire protection, recreation and citywide overhead.

2.1 Project Description

Land Uses. The Rancho Coachella Vineyards project is proposed for commercial, municipal and residential land uses on about 260 acres located in the southeastern portion of the City of Coachella, directly east of Fillmore Street and north of Avenue 56. Figure 2-1 presents a land use diagram of the proposed project.

Table 2-1 presents the land use description at project buildout. As shown in Table 2-1, commercial land uses are proposed for 46 acres of the proposed project. These are all assumed to be retail uses, serving either neighborhood, community or tourism levels of demand. Municipal land uses include a 15-acre school/park site, a 3-acre fire station and a 7-acre neighborhood park site. As also shown in Table 2-1, residential land uses include 171 acres of single-family dwellings and 18 acres of multi-family dwellings. This project is estimated to have an employment count of 852 and a residential population of 4,774 at project buildout.

RANCHO COACHELLA VINEYARDS



	LAND USE	ACRES	UNITS	DENSITY
A.	GEN. COMMERCIAL	46	---	---
B.	MUNICIPAL			
	1. SCHOOL/PARK	15	---	---
	2. FIRE STATION	3	---	---
	3. NEIGH. PARK	7	---	---
C.	MULTI. FAMILY	18	270	15.0
D.	SINGLE FAMILY	171		4.7
	6,000 SF LOTS		586	
	7,200 SF LOTS		229	
TOTAL		260	1,085	4.2

LAND USE DEVELOPMENT PLAN

FIGURE 2-1

TABLE 2-1

RANCHO COACHELLA VINEYARDS

CITY OF COACHELLA

LAND USE DESCRIPTION

	Acres
Commercial	46
Municipal	
School/park	15
Fire station	3
Park	7
Residential	
Single-family homes	171
Multi-family homes	18
	260

Source: Stanley R. Hoffman Associates, Inc.
The Keith Companies
Lusardi Construction Company

Infrastructure. Proposed infrastructure improvements include the improvement of Avenue 54 between Fillmore Street and the eastern project boundary, the widening of Fillmore Street between Avenue 54 and Avenue 56, and the construction of Avenue 55 between Fillmore Street and the eastern project boundary. Improvements to the arterial and collector roads are estimated at 3.27 lane miles. An additional 11.96 lane miles of local streets are also proposed for the project. The project will also be served by the interchange of the future Highway 86 Freeway and Avenue 56. However, this interchange will be maintained by the state, and not by the City.

2.2 Projected Fiscal Impacts to the City of Coachella at Project Buildout

Table 2-2 presents the projected fiscal impact to the City of Coachella at project buildout. The fiscal impact is estimated at a surplus of $593.4 thousand at buildout. This surplus is based on projected recurring revenues of $1.34 million and projected recurring costs of $746.7 thousand. The revenue/expenditure ratio at project buildout is estimated at 1.79.

Of projected recurring revenues at project buildout, sales tax is the most significant, at $638.7 thousand--47.7 percent of total recurring revenues. This sales tax figure is based on a sales generation assumption of $150 per square foot. This sales generation assumption is not based on a market analysis; but is representative of comparable retail developments. This projection has not included a feasibility analysis regarding the potential absorption of 46 acres of retail development on the site.

Revenue from other agencies are projected at $249.9 thousand--18.6 percent of the total. General fund property taxes account for 13.9 percent of total

TABLE 2-2

RANCHO COACHELLA VINEYARDS

CITY OF COACHELLA

SUMMARY OF RECURRING COSTS AND REVENUES AT PROJECT BUILDOUT

(In Constant 1989 Dollars)

	Buildout	Percentage of total
Recurring Revenues		
City property tax	$186,795	13.9%
Fire District property tax	78,170	5.8%
Real property transfer tax	5,462	0.4%
Sales tax	638,699	47.7%
Transient occupancy tax	0	0.0%
Business license tax	21,538	1.6%
Franchises	36,289	2.7%
Revenue from other agencies	249,867	18.6%
Charges for current services	7,542	0.6%
Other revenues	115,765	8.6%
Total Revenues	$1,340,128	100.0%
Recurring Costs		
Police	$333,388	44.6%
Engineering/Public Works	150,482	20.2%
Fire	112,171	15.0%
Recreation	24,656	3.3%
Planning	0	0.0%
Citywide overhead	125,984	16.9%
Total Costs	$746,681	100.0%
Net Recurring Fiscal Impact	$593,447	
Recurring Revenue/Expenditure Ratio	1.79	

Source: Stanley R. Hoffman Associates, Inc.

recurring revenues. Other revenues of $115.8 thousand and fire district property tax revenues of $78.2 thousand are also projected--8.6 percent and 5.8 percent of the total, respectively. The remaining 5.3 percent of revenues are accounted for by franchise fees, business license tax revenues, charges for current services and real property transfer tax.

Of projected recurring costs at project buildout, police protection is the most significant, at $333.4 thousand--44.6 percent of the total. Engineering/Public Works costs, including street and park maintenance, are projected at $150.5 thousand--20.2 percent of the total. Citywide overhead costs of $126.0 thousand and fire protection costs of $112.2 thousand are also projected--16.9 percent and 15.0 percent of the total, respectively. Additional costs of $24.7 thousand at buildout--3.3 percent of the total--are projected for recreation services.

CHAPTER 3

MAJOR ASSUMPTIONS

This chapter presents the major assumptions that are used in preparing the fiscal impact analysis of the proposed Rancho Coachella Vineyards project.

3.1 General Assumptions

1. City service costs are projected under the assumption that current City service levels, will be maintained through project buildout. It is recognized, however, that service levels may change in the future and that fiscal impacts may be affected accordingly.

2. Existing tax and fee rates are assumed to remain unchanged through project buildout.

3. Revenue and cost factors have been developed based on interviews with City staff and analysis of the City of Coachella 1988-1989 Fiscal Year Annual Budget.

3.2 Land Use and Market Assumptions

1. The project will consist of 1,085 dwelling units and 46 acres of commercial land uses. The average value of the dwelling units is estimated to range from $58.7 thousand for the apartments to $108.9 thousand for a single family home.

   Commercial land uses are valued at $3.50 land and site improvement value per site square foot, $80 building valuation per building square foot and $20 unsecured valuation per building square foot. These valuation estimates are presented for purposes of this fiscal analysis only.

2. For calculating property transfer taxes, houses are assumed to change owners once every ten years, on average, and to have a consideration ratio (the financed portion of the housing cost) of 0.8. Commercial land uses are assumed to change hands once every twenty years, on average.

3.3 Revenue Assumptions

Recurring revenues to the City of Coachella projected for the Rancho Coachella Vineyards project include property tax, property transfer tax, sales tax revenues, business license tax, franchise fees, revenue from other agencies, charges for current services, court and vehicle fines, administrative service charges and miscellaneous revenues.

1. Property tax revenues to the City of Coachella are projected based on the residential and commercial valuation of the proposed project. The basic property tax levy is equal to 1 percent of assessed valuation and the City of Coachella is estimated to receive 12.24 percent of the basic levy for the project area. The Fire District is also estimated to receive 5.12 percent of the basic levy of the project area.

2. The real property transfer tax is a tax levied upon the value of a property at the time of transfer of property from one owner to another. The City is assumed to receive $0.55 per $1,000 of the taxable portion of the transaction. Residential properties are assumed to turn over once every ten years, on average. The taxable portion of the property valuation is assumed to be 80 percent of the market value.

3. Sales tax revenues for the project are estimated on a sales per square foot basis. According to The Urban Land Institute, Dollars and Cents of Shopping Centers, 1987, median sales generation of community-level shopping centers in the Far West is $176.38 per square foot. Under the base projection, an estimate of $150 per square foot is used, to reflect lower sales generation potential. Under the modified projection, presented in Appendix C, a sales generation rate of $137.40 is used. This reflects a reduction of The ULI figure of $176.38 by applying a factor of 0.779. This factor is the ratio of 1980 household income for Coachella ($15,767) to household income for Riverside County ($20,238).

4. Business license tax revenues are projected according to City Ordinance 519 and estimated gross taxable sales. These revenues are estimated at $0.05 per square foot of commercial space.

5. The City of Coachella receives franchise fee revenues from gas and cable television receipts. Gas franchise revenues are estimated at $13.95 per dwelling unit and $0.03 per square foot of retail space. Cable television franchise revenues are projected at $9.30 per dwelling unit.

6. State subventions, including vehicle license fees, cigarette taxes, Section 2106 and Section 2107 gasoline taxes, are projected on a per capita basis, using estimates from the California State Controller. Vehicle license fees are projected at $35.88 per capita; cigarette taxes at $1.98; and Section 2106 and Section 2107 gasoline taxes are projected at $5.03 and $8.92, respectively. Revenues from other agencies include these state subventions and P.O.S.T. reimbursement of $0.53 per capita.

7. Charges for current services include recreation program fees and park rental fees. These revenues are estimated at $1.54 per capita and $0.04 per capita, respectively.

8. General fines and motor vehicle code fines are projected on a per capita and per employee basis, based on 1988 population and employment estimates, and revenues received. General fines are projected at $1.53 per resident and per employee, while vehicle code fines are projected at $4.89 per resident and per employee.

9. Other revenues include administrative service charges and miscellaneous revenues. Administrative service charges are projected at $12.40 per capita. Miscellaneous revenues are projected at $4.29 per capita and include animal license fees, off highway motor vehicle in-lieu fees, maps and publications, special police services, miscellaneous rentals, sale of unclaimed property and other miscellaneous revenues.

3.4 Cost Assumptions

Recurring costs projected to be incurred by the development of the proposed Rancho Coachella Vineyards project include police services, engineering/public works, fire protection, recreation services and Citywide overhead costs.

1. Police costs are projected on police coverage of 1.5 sworn officers per 1,000 population and police compensation rates from the City's Police Department. Based on the project population of 4,774 at buildout, seven additional patrolmen are assumed to be required in order to provide quality police protection for the proposed project, including the commercial development. These additional personnel are assumed to be incorporated within the existing Department structure, with no new

supervisory nor support personnel required. Police costs, including supplies and services and salaries and benefits, are estimated at $69.83 per capita.

2. The projected engineering/public works costs include street and park maintenance costs attributed to the proposed project. Street maintenance costs are projected on a per lane mile basis, based on data from the City's 1988-89 budget and interviews with engineering staff. Comprehensive maintenance of collector/arterial roads and local streets, including highways, streets, roadways, paved streets, sidewalks, curbs and gutters, street cleaning, street lights and weed control, are projected at $5,23 per lane mile.

   Park maintenance costs are projected on a per acre basis, based on data from the City's 1988-89 budget and interviews with engineering staff. Total park maintenance cost of $5,899 per acre are projected for the proposed project.

3. Fire protection is provided to the project by the Coachella Fire Protection District. A 3-acre fire station site is proposed for the project. Salaries and benefits and additional operations and maintenance costs are projected to total $339.9 thousand annually. These costs have been derived through interviews with Fire Department staff and analysis of the City's 1988-89 budget. A 33 percent pro rata share has been applied to the total cost of operating the substation to yield a police protection cost of $112.2 thousand at project buildout.

4. Recreation costs are projected on a per capita basis, based on data from the City's 1988-89 budget and interviews with Recreation Department staff. Recreation programs, including pool maintenance, swim programs, recreation service, recreation programs, and senior services, are projected to cost $5.16 per capita.

5. Citywide overhead costs include citywide overhead not taken into account through citywide administrative support for the above line departments. This factor is derived from the City 1988-89 annual budget and is estimated at 20.3 percent of other departmental costs.

TABLE A-1

RANCHO COACHELLA VINEYARDS

CITY OF COACHELLA

MARKET AND LAND USE ASSUMPTIONS

VALUE	EXPLANATION
** RESIDENTIAL 1 - 7,200 SQ FT LOT SFD **	
4.19	DWELLING UNITS PER ACRE
$108,873	SECURED VALUATION PER UNIT
4.4	POPULATION PER UNIT
** RESIDENTIAL 2 - 6,000 SQ FT LOT SFD **	
5.03	DWELLING UNITS PER ACRE
$108,076	SECURED VALUATION PER UNIT
4.4	POPULATION PER UNIT
** RESIDENTIAL 3 - APARTMENTS **	
15.00	DWELLING UNITS PER ACRE
$58,700	SECURED VALUATION PER UNIT
4.4	POPULATION PER UNIT
** COMMUNITY RETAIL **	
0.25	FLOOR AREA RATIO
$3.50	LAND AND SITE IMPROVEMENT VALUE PER SITE SQ FT
$80	BUILDING VALUATION PER BLDG SQ FT
$20	UNSECURED VALUATION PER BLDG SQ FT
$150	TAXABLE SALES PER SQ FT
500	SQ FT PER EMPLOYEE

Source: Stanley R. Hoffman Associates, Inc.

TABLE B-1

RANCHO COACHELLA VINEYARDS

CITY OF COACHELLA

FISCAL REVENUE ASSUMPTIONS

VALUE	EXPLANATION
GENERAL	
14,115	COACHELLA POPULATION FOR CALCULATING MULTIPLIERS
2,250	COACHELLA EMPLOYMENT FOR CALCULATING MULTIPLIERS
LOCAL TAXES	
1.00%	PROPERTY TAX RATE, TOTAL
0.1224%	PROPERTY TAX ALLOCATION, CITY OF COACHELLA
0.0512%	PROPERTY TAX ALLOCATION, COACHELLA FIRE DISTRICT
0.00055	PROPERTY TRANSFER TAX RATE
0.80	CONSIDERATION RATE (for transfer tax)
0.10	TURNOVER RATES--RESIDENTIAL
0.05	--HOTEL
0.05	--OFFICE
0.05	--RETAIL
0.05	--INDUSTRIAL & other non-residential
0.05	BUSINESS LICENSE TAX PER RETAIL SQUARE FOOT
FRANCHISE FEES	
$0.03	GAS FRANCHISE--RETAIL PER SQ. FT.
13.95	--RESIDENTIAL PER DWELLING UNIT
9.30	CABLE TELEVISION FRANCHISE PER DWELLING UNIT
REVENUE FROM OTHER AGENCIES	
$8.92	STATE GASOLINE TAX-2107 PER CAPITA
5.03	STATE GASOLINE TAX-2106 PER CAPITA
35.88	MOTOR VEHICLE LICENSE FEES PER CAPITA
1.98	CIGARETTE TAX PER CAPITA
0.53	P.O.S.T. REIMBURSEMENT PER CAPITA
CHARGES FOR CURRENT SERVICES	
$1.54	RECREATION PROGRAM FEES PER CAPITA
0.04	PARK RENTALS PER CAPITA
OTHER REVENUES	
$4.89	MOTOR VEHICLE CODE FINES--PER RESIDENT AND PER EMPLOYEE
1.53	GENERAL FINES--PER RESIDENT AND PER EMPLOYEE
12.40	ADMINISTRATIVE SERVICE CHARGES PER CAPITA
4.29	MISCELLANEOUS REVENUES--PER CAPITA
0.00%	INTEREST FACTOR

Source: Stanley R. Hoffman Associates, Inc.

TABLE B-2

RANCHO COACHELLA VINEYARDS

CITY OF COACHELLA

FISCAL COST ASSUMPTIONS

VALUE	EXPLANATION
POLICE DEPARTMENT	
$69.83	POLICE PERSONNEL COSTS PER CAPITA
ENGINEERING/PUBLIC WORKS	
5,235	ARTERIAL AND COLLECTOR TOTAL STREET MAINTENANCE PER LANE MILE
5,235	LOCAL TOTAL STREET MAINTENANCE PER LANE MILE
5,899	TOTAL PARK MAINTENANCE PER ACRE
OTHER DEPARTMENTS & CITYWIDE	
5.16	RECREATION PROGRAM COSTS PER CAPITA
20.30%	CITYWIDE OVERHEAD COSTS as percent of departmental costs

Source: Stanley R. Hoffman Associates, Inc.

APPENDIX C

FISCAL ANALYSIS UNDER MODIFIED MARKET ASSUMPTIONS

This appendix presents the fiscal analysis for the Rancho Coachella Vineyards project under modified market assumptions. Residential valuations and taxable sales generation factors have been modified for this analysis.

Table C-1 presents the modified projected fiscal impact to the City of Coachella at project buildout. The fiscal impact is estimated at a surplus of $523.7 thousand at buildout. This surplus is based on projected recurring revenues of 1.27 million and projected recurring costs of $746.7 thousand. The revenue/expenditure ratio at project buildout is estimated at 1.70.

Projected recurring costs have remained the same as the base analysis, while the projected recurring revenues have decreased by about $70.0 thousand. This decrease in projected revenues is due to the lowered residential valuations and lowered sales generation factor. Property taxes are projected at $171.1 thousand, compared to $187.0 thousand in the base analysis. Sales tax revenues are projected at $585.0 thousand, compared to $638.7 thousand in the base analysis.

Under this analysis the 7,200 square foot lot, single-family dwelling unit is estimated to be valued at $106,667, while the single-family home on the 6,000 square foot lot is estimated to be priced at $90,500. The apartments are estimated to be valued at $51,250 per unit. These values are derived from a report by The Meyers Group, City of Coachella Market Study, September 1988.

TABLE C-1

RANCHO COACHELLA VINEYARDS

CITY OF COACHELLA

SUMMARY OF RECURRING COSTS AND REVENUES AT PROJECT BUILDOUT
UNDER MODIFIED MARKET ASSUMPTIONS

(In Constant 1989 Dollars)

	Buildout	Percentage of Total
Recurring Revenues		
City property tax	$171,113	13.5%
Fire District property tax	71,607	5.6%
Real property transfer tax	4,898	0.4%
Sales tax	585,048	46.1%
Transient occupancy tax	0	0.0%
Business license tax	21,538	1.7%
Franchises	42,972	3.4%
Revenue from other agencies	249,867	19.7%
Charges for current services	7,542	0.6%
Other revenues	115,765	9.1%
Total Revenues	$1,270,351	100.0%
Recurring Costs		
Police	$333,388	44.6%
Engineering/Public Works	150,482	20.2%
Fire	112,171	15.0%
Recreation	24,656	3.3%
Planning	0	0.0%
Citywide overhead	125,984	16.9%
Total Costs	$746,681	100.0%
Net Recurring Fiscal Impact	**$523,670**	
Recurring Revenue/Expenditure Ratio	1.70	

Source: Stanley R. Hoffman Associates, Inc.

According to The Urban Land Institute, Dollars and Cents of Shopping Centers, 1987, median sales generation of community-level shopping centers in the Far West is $176.38 per square foot. Under the base projection, an estimate of $150 per square foot is used, to felect lower sales generation potential. Under this modified projection, a sales generation rate of $137.40 is used. This reflects a reduction of The Urban Land Institute figure of $176.38 by applying a factor of 0.779. This factor is the ratio of 1980 household income for Coachella ($15,767) to household income for Riverside County (20,238).

Appendix F

RANCHO COACHELLA VINEYARDS EIR ADDENDUM (FINAL EIR)

1.0 INTRODUCTION

2.0 COMMENTS ON DRAFT EIR AND RESPONSES

A. List of letters received (Chronological by Source)
B. Letters (1 through 6)
C. Responses to Comments

3.0 CORRESPONDENCE

1.0 INTRODUCTION

This document is the EIR Addendum to the Draft Rancho Coachella Vineyards EIR and as such comprises a part of the Final Rancho Coachella Vineyards EIR. The EIR Addendum includes Comments on the Draft EIR and responses to the comments received.

The following section presents the comments received on the Draft Environmental Impact Report (DEIR) during the 45 day public review period between April 4, 1989 and May 19, 1989. Each communication has been assigned a letter number and each substantive comment has also been assigned a comment number. Letter numbers for the written communications are found in the upper right corner of the first page of each written communication as listed on the following communications list. Comment numbers are found in the right margin of each letter. Responses to each are numbered to correspond to the letter and comment which is addressed. For example, "Response to Comment 1-1" indicates a response to comment number 1 of letter number 1.

The response "comment noted" is often used in cases where the comment does not raise a substantive issue relevant to the review of the environmental analysis. Such points are usually statements of opinion or preference regarding a project's design or its presence as opposed to points within the purview of an EIR: environmental impact and mitigation. These points are relevant for consideration in the subsequent project approval process. The use of "comment noted" as a response acknowledges that a comment has been made.

2.0 COMMENTS ON DRAFT EIR AND RESPONSES

A. LIST OF LETTERS RECEIVED

Letter 1: Coachella Valley Resource Conservation District
Marty Walton, President of the Board

Letter 2: Coachella Valley Unified School District
Jorge B. Gutierrez, Director of Facilities
Planning and Development.

Letter 3: County of Riverside, Department of Health
H.R. Luchs, Land Use Supervisor
Environmental Health Services

Letter 4: Department of Transportation, District 11
James T. Cheshire, Chief,
Environmental Planning Branch

Letter 5: Department of Conservation
Dennis J. O'Bryant,
Environmental Program Coordinator

Letter 6: Department of Water Resources
Charles R. White, Chief, Planning Branch,
Southern District

B. LETTERS

Coachella Valley Resource Conservation District

80-975 Indio Blvd., Suite B-11
Indio, CA 92201
Phone: 619-347-7658

April 12, 1989

Richard P. Douglas
Principal Planner
City of Coachella
1515 Sixth Street
Coachella, CA 92236

Subject: E.I.R. Rancho Coachella Vineyards

Hi,

Our staff, after reviewing section 3.4 Geology and Soils of the E.I.R. and the Soil Survey of Riverside County, California, Coachella Valley area; have the following observations and questions:

1. Soil Survey map of the area covered by the E.I.R. of Rancho Coachella Vineyards is attached.

2. Soil Summary Data of the Soils within the mapped boundary is attached.

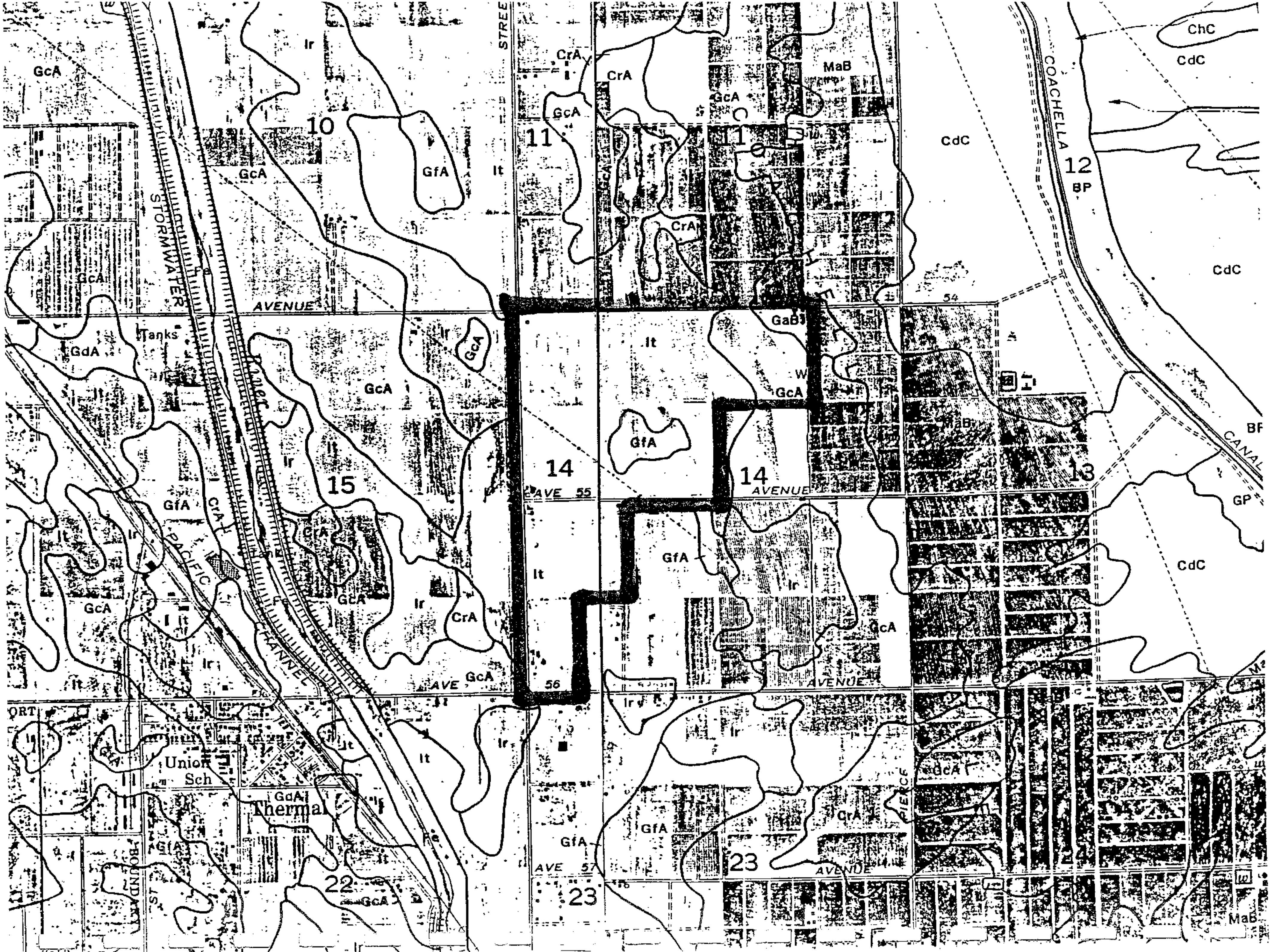
3. Engineering Data of the Soils within the mapped boundary is attached.

4. On Page 40 of the E.I.R. mitigation measure number six (#6) talks about that after the building is built to keep water away from the foundations to avoid settling and cracking of the cement. RECOMMEND that the soils of the building sites be compacted prior to beginning construction. 1-

5. On Page 41 of the E.I.R. mitigation measure number seventeen (#17) is about Septic Tanks. Both the soils of the majority of the project area (Indio very fine sandy loam, wet and Gilman fine sandy loam, wet) present severe problems due to soil wetness and potential perched water table problems. Therefore Septic Systems on these soils is not recommended. 1-

If our staff can be of further assistance on the E.I.R., please contact them.

Marty Walton,
President of the Board
Coachella Valley RCD


COACHELLA
CANAL
STORMWATER
CHANNEL
PACIFIC
AVENUE
AVE 55
AVE 56
AVE 57
STREET
PIERCE
BOUNDARY ST
Tanks
Union Sch
Thermal
10
11
12
13
14
15
22
23
ChC
CdC
BP
GP
MaB
GcA
CrA
GfA
GaB
GdA
It
Ir

SOI_ _ND C_ _BIL_ _ MAP _ _MAR_

Cooperator _____

U.S. Department of Agriculture
Soil Conservation Service

Land Cap. Unit	Map Symbol	Soil Name	AWC Inches For Profile	Permeability	Effective Depth	Profile Texture		Ave. Slope %	Erosion Hazard	Recommended Land Use
						Surface	Subsoil			
IIw2	It	Indio very fine sandy loam, wet	7.5" or more	Mod.	40"-60"	very fine sandy loam	very fine sandy loam w/silt loam and silt plates	2 or less	slight (slight)	This soil is used for truck crops, alfalfa hay, cotton, dates, and irrigated pasture.
IIw1	GcA	Gilman fine sandy loam, wet	5"-8"	Mod.	40"-60"	fine sandy loam	Stratified loamy fine and very fine sand w/silt or silty clay loam lenses	2 or less	slight (mod.)	The soil is used for truck crops, citrus, dates, cotton, and alfalfa hay.
IIw2	GfA	Gilman silt loam, wet	7.5" or more	Mod.	40"-60"	silt loam	Statified loamy fine and very fine sand w/silt or silty clay loam lenses	2 or less	slight (none)	This soil is used for dates, cotton, alfalfa hay, and recreation.
IIIe1	GaB	Gilman loamy fine sand	6" - 8"	Mod.	60"+	loamy fine sand	loamy fine and very fine sand w/silt or silty clay loam lenses	5 or less	slight (high)	This soil is used for truck crops, citrus, dates, grapes and alfalfa hay.

Rancho Coachella Vineyards E.I.R. Soils Engineering Data from the published Soil Survey of Riverside County, California, Coachella Valley Area.

A. Indio very fine sandy loam, wet

1) Potential high water table each month of the year.
2) Low Shrink-Swell potential.
3) High potential for corrosion on uncoated steel.
4) Low potential for corrosion on concrete.
5) AASHITO classification is A-4.
6) UNIFIED classification is ML.
7) Permeability is 0.6 to 2.0 inches per hour.
8) Septic Tanks have potential for Severe Problems due to water tables.

B. Gilman fine sandy loam, wet

1) Potential for high water table in April through October.
2) Four Shrink-Swell potential.
3) High potential for corrosion on ucoated steel.
4) Low potential for corrosion on concrete.
5) AASHITO classification is A-4.
6) UNIFIED classification is ML.
7) Permeability is 0.6 to 2.0 inches per hour.
8) Septic Tanks have potential for Severe Problems due to water tables.

COACHELLA VALLEY UNIFIED SCHOOL DISTRICT

POST OFFICE BOX 847 THERMAL, CALIFORNIA 92274 (619) 399-5137

May 2, 1989

Mr. Richard P. Douglass
Principal Planner
City of Coachella
1515 Sixth Street
Coachella, CA 92236

Dear Mr. Douglass:

Subject: EIR For Rancho Coachella Vineyards
Specific Plan 88-2

We have completed our review of the Environmental Impact Report for the Rancho Coachella Vineyards Specific Plan. The proposed scope of the project would significantly impact the School District. The estimated number of students generated by this project would create overcrowding conditions at our present schools.

Based on the buildout of the proposed 1,317 residential units, the projected school population will be as follows:

1,317	Elementary Students, K-6
527	Middle School Students, 7-8
790	High School Students, 9-12

The project will generate up to 2,634 students. 2-1

We did not agree that 15 acres for one school site be devoted as stated in the Specific Plan. Additional acreage is needed to construct schools that will address the projected student population. As a mitigation measure, the Specific Plan should reserve up to two elementary school sites and one middle school site. Therefore, 40 acres instead of 15 acres should be considered for dedication of school sites within the project area.

If the cost of the new elementary school is between $4,000,000 and $5,000,000, the middle school between $9,000,000 and $10,000,000, the funding needed for construction, excuding land acquisition costs and furniture, is as follows:

2 Elementary Schools	$9,000,000
1 Middle School	9,500,000
	$18,500,000

We disagree with the analysis included in the Impact on Educational Facilities, Section 3.10.2 on page 63. It states that "because of Developer Fees being collected, the District does not project any real hardships on the District other than the normal delays of construction of new school sites."

Currently, the School District levies a Developer Fee at 1.53 per square foot for all residential construction as a mitigation measure to help resolve the school housing problem. However, we anticipate that there will be an insufficient amount of revenue generated from Developer Fees to adequately fund the construction of new schools. The School District cannot rely on Developer Fees or the State School Construction Program to resolve the student housing problem related to this type of development. 2-1

As a mitigation measure, we recommend the Developer provides the infrastructure for the construction of the schools. This will be arranged through an Agreement between the School District and the Developer. Also, a recommended mitigation measure to sufficiently finance the construction of the new school is the formation of a Mello Roos District within the project area.

In regards to short term impact, we anticipate that the new students generated due to the project would be housed in a portable classroom until the new schools be built.

At this time we do not have any other comments. We would be interested in meeting with representation of the Developer and the City of Coachella to discuss our concerns and mitigation measures to address the student housing program. Please contact me at (619) 399-5137, extension 253. 2-2

Very truly yours,

Jorge B. Gutierrez
Director of Facilities
Planning & Development

JBG/dpa

cc: David Alvarez, Superintendent

LETTER 3

County of Riverside

DEPARTMENT OF HEALTH

TO: CITY OF COACHELLA
ATTN: Richard Douglass

DATE: 05-10-89

FROM: H. R. LUCHS, Land Use Supervisor Environmental Health Svcs.

RE: RANCHO COACHELLA VINEYARDS SPECIFIC PLAN

Environmental Health Services has received and reviewed the above referenced documents and have the following comments.

SEWER (John Silva, Sr. Public Health Engineer)

The document alludes to a flow of 627,500 gallons per day of sanitary waste emanating from the project. A key statement with the document, on Page 71, advises that "The treatment plant is presently using 1.6 g.p.d. of its 3.0 g.p.d. capacity and would be able to sufficiently handle the waste from the Rancho Coachella Vineyards.; . . .at full build-out, the increased flow . . . will not exceed the maximum capacity of the existing sewer treatment plant". 3-1

It is unknown per all the language within the document as to whether the City of Coachella or the Coachella County Water District will be the lead agency with reference to servicing domestic water and providing sanitary sewer service to the project.

These agencies need to be identified and will-serve letters provided.

SOLID WASTE (Bill Prinz, Environmental Health Spec. III)

Solid waste disposal impacts have not been addressed in this Specific Plan. The proposed development will increase the daily tonnage at the Coachella Valley Landfill by approximately 3%. Contact the Riverside County Department of Waste Management to determine if this increase will have a significant impact on the longevity of this site. 3-2

The Specific Plan should address the impact, proper handling and recycling of construction waste generated during and after development of the project. 3-3

SOLID WASTE (CONT.)

Solid waste bin enclosures should be addressed for the commercial areas and multi-family dwelling units. An adequate number of permanent waste storage enclosures are recommended. 3-3

Waste bin enclosures should provide adequate space for storage of recyclable materials.

If you should have any further questions regarding this Specific Plan response, please call this office at (714) 787-6543.

rk

HRL:tac

LETTER 4

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 11, P.O. BOX 85406, SAN DIEGO 92138-5406

May 15, 1989

11-RIV-111
25.0

Richard P. Douglass
City of Coachella
Planning Division
1515 Sixth Street
Coachella, CA 92236

Dear Mr. Douglass:

DEIR for Rancho Coachella
Vineyards, SP 88-2, SCH 88051622

The significant direct and cumulative adverse impacts of this project (pages 83, 84) include impacts to State Route 111. Those impacts should be identified and proportional mitigations provided. Our initial contact person for information on that highway as well as State 86 and Interstate 10 in the City of Coachella is Mike McManus, District Local Funded Projects Engineer, (619) 237-7491. 4-1

Sincerely,

JESUS M. GARCIA
District Director

By
James T. Cheshire
JAMES T. CHESHIRE, Chief
Environmental Planning Branch

MO:yg

Grate of California

LETTER 5

Memorandum

To : Dr. Gordon F. Snow
Assistant Secretary for Resources

Mr. Richard P. Douglas
City of Coachella
1515 Sixth Street
Coachella, CA 92236

From : Department of Conservation—Office of the Director

Date : May 15, 1989

Subject: Draft Environmental Impact Report (EIR) for the Rancho Coachella Vineyards Specific Plan, **SCH# 88051622**

The Department of Conservation has reviewed the Draft EIR for the City of Coachella's Rancho Coachella Vineyards Specific Plan project. We have the following comments on geotechnical and agricultural impacts associated with the project.

GEOTECHNICAL

The primary geologic hazards at the proposed project site are:

- Very strong ground shaking associated with a large earthquake on the adjacent San Andreas fault; and,
- Liquefaction and settlement of site soils during such an event on the San Andreas fault.

5

In general, the Draft EIR and the Geotechnical Report by Leighton and Associates have adequately identified the geologic hazards and impacts potentially affecting the project. However, the proposed mitigations may not be sufficient to reduce the potential impacts from strong ground shaking and liquefaction to a level of insignificance. This is discussed in more detail below.

VERY STRONG GROUND SHAKING - Geologic studies indicate that the segment of the San Andreas fault near the site (the Coachella Valley segment) last experienced a large earthquake approximately 300 years ago. Stress has continued to build up within the materials along the fault since that time, and some earth scientists believe that a large earthquake will occur on this segment relatively soon. The Coachella Valley segment of the fault is judged to have the highest potential for producing a large earthquake of any portion of the San Andreas fault in Southern California during the next 30 years (U.S. Geological Survey, 1988). The Riverside County Environmental Hazards and Resources Element indicates that the site is within Riverside County Ground shaking Zone V(C). Typical single-family wood frame residential structures (Normal-Low Risk Land Uses) are generally suitable for this Zone; however, larger structures, such as multi-family residences (Normal-High Risk Land Uses), are only provisionally suitable. Expected levels of shaking are indicated to generally exceed Uniform Building Code (UBC) design levels for the multi-family residences, and moderate damage may

5-2

be expected. The Draft EIR indicates that mitigation for ground shaking will be to design structures by UBC standards, which may not be adequate. The Draft EIR should discuss the adequacy of proposed mitigation for strong ground shaking in more detail. Structural seismic design by dynamic analysis should be considered for certain project buildings, such as schools and fire stations. 5-2

LIQUEFACTION - The site is shown on the Seismic-Geologic Hazards Map of the Riverside County Environmental Hazards and Resources Element to be within Liquefaction Hazard Zone C-LL, which represents "very high" hazard. The liquefaction analysis conducted by Leighton and Associates confirms that the hazard of liquefaction on the site is very high.

Typical mitigation measures for liquefaction include:

- Removal and recompaction of the liquefiable soils, if such soils do not extend so deep as to make this method infeasible;
- Densification/stabilization of the liquefiable soils by methods such as relief wells (stone columns), grouting, and other techniques, as mentioned in the Leighton report; and,
- Structure foundation support on piles driven to firm material underlying the liquefiable soils. 5-

If the hazard of liquefaction cannot be mitigated by the methods above, either the hazard area should be avoided, or engineering techniques which provide a potentially-lower level of protection against liquefaction may have to be used. Although compacted soil mats and structural mat foundations have been used to reduce the effects of liquefaction, we are not familiar with any instances of their having been tested under actual earthquake conditions. Their performance during an earthquake and the level of protection they provide from liquefaction impacts are unknown. Given the site soil conditions, i.e., liquefiable soils to such depth that it is impractical to remove all liquefiable soils or to drive piles through them, some form of mat foundation may be the most economical means of mitigating liquefaction impacts. However, it should be realized that these forms of mitigation are likely to only reduce the liquefaction effects, not eliminate them, and their use may not reduce the impacts of liquefaction to an insignificant level. The Draft EIR should address this issue and present a thorough discussion of the various mitigation measures and the level of protection expected from each one. One mitigation for the impacts of liquefaction, which was recommended in the Geotechnical Report, but not included in the Draft EIR, is that foundations for project structures include structural floor slabs, so that structures can be releveled in the event of adverse settlements due to liquefaction. This mitigation measure should be included in the Draft EIR.

AGRICULTURAL

The proposed development is situated on 260 acres of Prime and Locally Important Farmland, according to the Department of Conservation's Important Farmland Series map for Riverside County. While there are no Williamson Act contracts on the site, the Department is, nevertheless, concerned with the cumulative loss of agricultural land (especially prime agricultural land) which is occurring statewide through such projects as Rancho Coachella Vineyards.

The California Department of Food and Agriculture (CDFA) reports that since July 1, 1987, they have reviewed environmental impact reports for developments which will convert approximately 36,764 acres of agricultural land in Riverside County to urban use. The loss of 260 acres of prime and locally important farmland from the agricultural base of Riverside County should be treated as a significant environmental impact (see California Administrative Code Section 15000 et seq., Appendix G (y)) in the Final EIR. 5

The cumulative and growth-inducing impacts of this Specific Plan project should be assessed in the Final EIR, with special emphasis on the impacts to farmland in the project and surrounding areas.

In addition, there are mitigation measures and alternatives that would lessen the farmland conversion impact of the plan. Various land-use planning tools such as clustering, purchase of conservation easements and development rights, and establishment of farmland trusts to protect farmland from premature development should be considered and discussed in the Final EIR. Also, in the event of development, measures to lessen the impact on adjacent farmland could include the use of buffers, such as setbacks, berms, greenbelts and open-space areas to separate farmland from urban uses. Many communities have considered 300 feet as a sufficient buffer for impacts such as pesticide spraying, noise and dust.

The Department appreciates the opportunity to comment on the Draft EIR. We hope that the impacts discussed above are given adequate consideration in the Final EIR. If I can be of further assistance, please feel free to call me at (916) 322-5873.

Dennis J. O'Bryant

Dennis J. O'Bryant
Environmental Program Coordinator

DJO:efh

cc: Stephen Oliva, Chief
Office of Land Conservation
Zoe McCrea, Division of Mines and Geology

REFERENCE:

U.S. Geological Survey, 1988, Probabilities of large earthquakes occurring in California on the San Andreas fault, U.S.G.S. Open-File Report 88-398.

'ATE OF CALIFORNIA—OFFICE OF THE GOVERNOR GEORGE DEUKMEJIAN, *Governor*

)FFICE OF PLANNING AND RESEARCH
,00 TENTH STREET
\CRAMENTO, CA 95814

May 19, 1989

Richard P. Douglas
City of Coachella
1515 Sixth Street
Coachella, CA 92236

Subject: Rancho Coachella Vineyards Specific Plan
SCH# 89051622

Dear Mr. Douglas:

The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code requires that:

> "a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation.

These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact John Keene at 916/445-0613 if you have any questions regarding the environmental review process.

Sincerely,

David C. Nunenkamp
Chief
Office of Permit Assistance

Enclosures

cc: Resources Agency

Mail to: State Clearinghouse, 1400 Tenth St, Rm 121, Sacramento, CA 95814—916/445-0613

see NOTE below
SCH # 88051622

NOTICE OF COMPLETION AND ENVIRONMENTAL DOCUMENT TRANSMITTAL FORM

1. Project Title: Rancho Coachella Vineyards Specific Plan
2. Lead Agency: City of Coachella 3. Contact Person: Richard P. Douglas
3a. Street Address: 1515 Sixth Street 3b. City: Coachella
3c. County: Riverside 3d. Zip: 92236 3e. Phone: 619-398-3202
PROJECT LOCATION 4. County: Riverside 4a. City/Community: Coachella
4b. Assessor's Parcel No. 4c. Section Twp. Range
5a. Cross Streets: Ave. 54 + Fillmore St. 5b. For Rural, Nearest Community:
6. Within 2 miles: a. State Hwy # 10, 111, 86 b. Air-ports Thermal Airport F. Rail-ways c. Water-ways

7. DOCUMENT TYPE

CEQA
01. ___ NOP 06. ___ NOE
02. ___ Early Cons 07. ___ NOC
03. ___ Neg Dec 08. ___ NOD
04. X Draft EIR
05. ___ Supplement/Subsequent EIR (Prior SCH No.:)

NEPA
09. ___ NOI 11. ___ Draft EIS
10. ___ FONSI 12. ___ EA

OTHER
13. ___ Joint Document
14. ___ Final Document
15. ___ Other

8. LOCAL ACTION TYPE
01. ___ General Plan Update
02. ___ New Element
03. ___ General Plan Amendment
04. ___ Master Plan
05. ___ Annexation
06. X Specific Plan
07. ___ Community Plan
08. ___ Redevelopment
09. ___ Rezone
10. ___ Land Division (Subdivision, Parcel Map, Tract Map, etc.)
11. ___ Use Permit
12. ___ Waste Mgmt Plan
13. ___ Cancel Ag Preserve
14. ___ Other

9. DEVELOPMENT TYPE
01. X Residential: Units 1085 Acres
02. ___ Office: Sq. Ft. Acres Employees
03. X Shopping/Commercial: Sq. Ft. Acres 46 Employees
04. X Industrial: Sq. Ft. Acres Employees
05. ___ Water Facilities: MGD
06. ___ Transportation: Type
07. ___ Mining: Mineral
08. ___ Power: Type Watts
09. ___ Waste Treatment: Type
10. ___ OCS Related
11. ___ Other:

10. TOTAL ACRES: 260 11. TOTAL JOBS CREATED:

12. PROJECT ISSUES DISCUSSED IN DOCUMENT

01. ___ Aesthetic/Visual	08. X Flooding/Drainage	15. ___ Septic Systems	23. ___ Water Quality
02. ___ Agricultural Land	09. X Geologic/Seismic	16. ___ Sewer Capacity	24. ___ Water Supply
03. X Air Quality	10. ___ Jobs/Housing Balance	17. ___ Social	25. ___ Wetland/Riparian
04. ___ Archaeological/Historical	11. ___ Minerals	18. X Soil Erosion	26. ___ Wildlife
05. ___ Coastal Zone	12. ___ Noise	19. ___ Solid Waste	27. ___ Growth Inducing
06. ___ Economic	13. X Public Services	20. ___ Toxic/Hazardous	28. ___ Incompatible Landuse
07. ___ Fire Hazard	14. ___ Schools	21. X Traffic/Circulation	29. ___ Cumulative Effects
		22. ___ Vegetation	30. ___ Other

13. FUNDING (approx) Federal $ State $ Total $

14. PRESENT LAND USE AND ZONING:

15. PROJECT DESCRIPTION:

The proposed 260.0 acre development concept includes 1,085 dwelling units of both single and multi-family orientations. Subsidiary commercial, industrial and municipal land uses are also a part of the proposed project. An illustration of the design concept is provided in Exhibit 3 of the DEIR. The specific plan land use development plan shows the proposed breakdown of land uses which essentially yield 46 acres of general commercial land uses, 15 acres for a municipal school/park site, a 3 acre site for a fire substation, a 7 acre municipal park site, 18 acres of multi-family land uses with an overall density of 15.0 units per acre, and 171 acres devoted to single family land uses with an overall density of 4.7 d.u./acre.

16. SIGNATURE

CLEARINGHOUSE CONTACT: JOHN KEENE
916-445-0613

STATE REVIEW BEGAN: 4-4-89

DEPT REV TO AGENCY: 5-12

AGENCY REV TO SCH: 5-17

SCH COMPLIANCE : 5-19

PLEASE RETURN NOC WITH ALL COMMENTS

AQMD/APCD: 33 (File Date: 4/18)

FAX TELEPHONE: 916-323-3749

W/C N/C
- Resources
- Conservation
- Fish & Game
- DWR
- Parks & Rec/OHP
- ARB

W/C N/C
- RWQCB# 7
- Caltrans# 11
- Health

State of California

The Resources Agency

Memorandum

Date : APR 14 1989

To : 1. Gordon F. Snow, Ph.D.
Assistant Secretary for Resources
2. City of Coachella
1515 Sixth St.
Coachella, CA 92236
Attention: Richard P. Douglas

From : Department of Water Resources
Los Angeles, CA 90055

Subject : EIR for Rancho Coachella Vineyards Specific Plan, SCH 88051622

Your subject document has been reviewed by our Department of Water Resources staff. Recommendations, as they relate to water conservation and flood damage prevention, are attached.

After reviewing your report, we also would like to recommend that you further consider implementing a comprehensive program to use reclaimed water for irrigation purposes in order to free fresh water supplies for beneficial uses requiring high quality water supplies. 6-1

For further information, you may wish to contact John Pariewski at (213) 620-3951. Thank you for the opportunity to review and comment on this report.

Sincerely,

Jay Federman
for Charles White

Charles R. White, Chief
Planning Branch
Southern District

Attachments

DEPARTMENT OF WATER RESOURCES RECOMMENDATIONS FOR WATER CONSERVATION AND WATER RECLAMATION

To reduce water demand, implement the water conservation measures described here.

Required

The following State laws require water-efficient plumbing fixtures in structures:

- Health and Safety Code Section 17921.3 requires low-flush toilets and urinals in virtually all buildings as follows:

  "After January 1, 1983, all new buildings constructed in this state shall use water closets and associated flushometer valves, if any, which are water-conservation water closets as defined by American National Standards Institute Standard A112.19.2, and urinals and associated flushometer valves, if any, that use less than an average of 1-1/2 gallons per flush. Blowout water closets and associated flushometer valves are exempt from the requirements of this section."

- Title 20, California Administrative Code Section 1604(f) (Appliance Efficiency Standards) establishes efficiency standards that give the maximum flow rate of all new showerheads, lavatory faucets, and sink faucets, as specified in the standard approved by the American National Standards Institute on November 16, 1979, and known as ANSI A112.18.1M-1979.

- Title 20, California Administrative Code Section 1606(b) (Appliance Efficiency Standards) prohibits the sale of fixtures that do not comply with regulations. No new appliance may be sold or offered for sale in California that is not certified by its manufacturer to be in compliance with the provisions of the regulations establishing applicable efficiency standards.

- Title 24 of the California Administrative Code Section 2-5307(b) (California Energy Conservation Standards for New Buildings) prohibits the installation of fixtures unless the manufacturer has certified to the CEC compliance with the flow rate standards.

- Title 24, California Administrative Code Sections 2-5352(i) and (j) address pipe insulation requirements, which can reduce water used before hot water reaches equipment or fixtures. These requirements apply to steam and steam-condensate return piping and recirculating hot water piping in attics, garages, crawl spaces, or unheated spaces other than between floors or in interior walls. Insulation of water-heating systems is also required.

- Health and Safety Code Section 4047 prohibits installation of residential water softening or conditioning appliances unless certain conditions are satisfied. Included is the requirement that, in most instances, the installation of the appliance must be accompanied by water conservation devices on fixtures using softened or conditioned water.

- Government Code Section 7800 specifies that lavatories in all public facilities constructed after January 1, 1985, be equipped with self-closing faucets that limit flow of hot water.

To be implemented where applicable

Interior:

1. Supply line pressure: Water pressure greater than 50 pounds per square inch (psi) be reduced to 50 psi or less by means of a pressure-reducing valve.

2. Drinking fountains: Drinking fountains be equipped with self-closing valves.

3. Hotel rooms: Conservation reminders be posted in rooms and restrooms.* Thermostatically controlled mixing valve be installed for bath/shower.

4. Laundry facilities: Water-conserving models of washers be used.

5. Restaurants: Water-conserving models of dishwashers be used or spray emitters that have been retrofitted for reduced flow. Drinking water be served upon request only.*

6. Ultra-low-flush toilets: 1-1/2-gallon per flush toilets be installed in all new construction.

Exterior:*

1. Landscape with low water-using plants wherever feasible.

2. Minimize use of lawn by limiting it to lawn-dependent uses, such as playing fields. When lawn is used, require warm season grasses.

3. Group plants of similar water use to reduce overirrigation of low-water-using plants.
4. Provide information to occupants regarding benefits of low-water-using landscaping and sources of additional assistance.

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*The Department of Water Resources or local water district may aid in developing these materials or providing other information.

5. Use mulch extensively in all landscaped areas. Mulch applied on top of soil will improve the water-holding capacity of the soil by reducing evaporation and soil compaction.

6. Preserve and protect existing trees and shrubs. Established plants are often adapted to low-water-using conditions and their use saves water needed to establish replacement vegetation.

7. Install efficient irrigation systems that minimize runoff and evaporation and maximize the water that will reach the plant roots. Drip irrigation, soil moisture sensors, and automatic irrigation systems are a few methods of increasing irrigation efficiency.

8. Use pervious paving material whenever feasible to reduce surface water runoff and to aid in ground water recharge.

9. Grade slopes so that runoff of surface water is minimized.

10. Investigate the feasibility of using reclaimed waste water, stored rainwater, or grey water for irrigation.

11. Encourage cluster development, which can reduce the amount of land being converted to urban use. This will reduce the amount of impervious paving created and thereby aid in ground water recharge.

12. Preserve existing natural drainage areas and encourage the incorporation of natural drainage systems in new developments. This aids ground water recharge.

13. To aid in ground water recharge, preserve flood plains and aquifer recharge areas as open space.

FLOOD DAMAGE PREVENTION

In flood-prone areas, flood damage prevention measures required to protect a proposed development should be based on the following guidelines:

1. It is the State's policy to conserve water; any potential loss to ground water should be mitigated.

2. All building structures should be protected against a 100-year flood.

3. In those areas not covered by a Flood Insurance Rate Map or Flood Boundary and Floodway Map, issued by the Federal Emergency Management Agency, the 100-year flood elevation and boundary should be shown in the Environmental Impact Report.

4. At least one route of ingress and egress to the development should be available during a 100-year flood.

5. The slope and foundation designs for all structures should be based on detailed soils and engineering studies, especially for hillside developments.

6. Revegetation of disturbed or newly constructed slopes should be done as soon as possible (utilizing native or low-water-using plant material).

7. The potential damage to the proposed development by mudflow should be assessed and mitigated as required.

8. Grading should be limited to dry months to minimize problems associated with sediment transport during construction.

C. RESPONSES TO COMMENTS

LETTER 1
COACHELLA VALLEY RESOURCE CONSERVATION DISTRICT

Response 1-1. Soils of the building sites will be compacted prior to building construction as noted in mitigation measures #2 and #13 on pages 40 and 41 of the Draft EIR.

Response 1-2. Comments noted. Septic tanks will not be utilized unless approved by the Riverside County Health Department.

LETTER 2
COACHELLA VALLEY UNIFIED SCHOOL DISTRICT

Response 2-1. Comments noted. As stated on page 63 of the Draft EIR, the district recommends a minimum of 3-4 schools per square mile of residential land uses. The project includes a residential development of 171 acres which is equivalent to approximately 27 percent of a square mile. Using the district's recommendation of 3-4 schools per square mile, the project would require .8-1.1 schools. The project includes dedication of a 15-acre school site. In addition, the project site is surrounded by open space which may allow for the dedication of future school sites if required. As stated on page 64 in the Draft EIR, a new elementary school located northeast of the Van Buren/50th Avenue intersection will absorb children from the proposed project for grades K-5. A new junior high school (grades 7 through 9) is planned for a site at Avenue 51 and Jackson Street and will relieve pressure on the high school. As noted in the EIR, the builder will be required to reach an agreement with the school district on the provision of school facilities. Measures #4 and #5 on pages 72 and 74 of the Draft EIR adequately mitigate project effects on school facilities.

Response 2-2. Comment noted.

LETTER 3
COUNTY OF RIVERSIDE, DEPARTMENT OF HEALTH

Response 3-1. Comments noted. At this time, the City of Coachella will be the lead agency with reference to servicing domestic water and providing sanitary sewer service to the project. The City has been informed of the project's needs for water and sewer service.

Response 3-2. Comments noted. As stated on page 72 of the Draft EIR, Western Waste will provide solid waste pick-up services to the project site and does not anticipate any problems in providing adequate solid waste pick-up service. According to Robert Nelson, Director of the County of Riverside Department of Waste Management, the Coachella Sanitary Landfill receives approximately 4 percent more solid waste each year. The project will generate 5,800 tons annually, or an approximate increase of 1.5 percent each year. This project would decrease the life of the landfill by approximately 167 days. The project will impact the landfill and solid waste services on both a project-specific and cumulative basis. Project-specific impacts can be mitigated to a level of insignificance by the measures on page 76 of the Draft EIR. The cumulative impact upon solid waste services and utilities is considered an unavoidable adverse impact of the project.

Response 3-3. Western Waste under contract to the City of Coachella will handle the recycling of constructionn waste generated during and after development of the project. As stated on page 76 of the Draft EIR, provisions for trash enclosures shall be made in conformance with adopted City standards and design criteria developed by Western Waste.

LETTER 4
DEPARTMENT OF TRANSPORTATION

Response 4-1. Project-specific and cumulative impacts resulting from the project were analyzed. Refer to pages 18-33 of the Draft EIR. Impacts to State Route 111 were included in the analysis. Existing, existing plus project, and future daily traffic volumes were analyzed for State Route 111. Refer to Exhibits 7, 10,and 11 of the Draft EIR. As stated in the EIR, traffic signals should be added at the intersections of State Route 111 and 50th Avenue and 54th Avenue. For future cumulative condition, arterials should be upgraded at 54th Avenue and 56th Avenue. The Route 86 extension will significantly help to alleviate traffic volumes on State Route 111. Volumes are currently within capacity along Route 111. With the projects generated traffic, volumes will increase but will remain within capacity provided the Route 86 extension is constructed before buildout of the project. If the State Route 86 extension is not built before buildout of the project, then significant improvements will be necessary along SR 111.

LETTER 5
DEPARTMENT OF CONSERVATION

Response 5-1. Comments noted.

Response 5-2. Design of critical structures could be performed in accordance with the seismic design parameters of the Structural Engineers Associations of California. Use of this design method/criteria are currently considered to provide a suitable level of protection for critical facilities.

Response 5-3. The liquefaction hazard zone identified by the County covers essentially the entire lower Coachella Valley, from Indio south. Avoiding the hazard zone would effectively preclude any development in the lower Coachella Valley. The geotechnical planning report describes several possible methods to mitigate the liquefaction potential in the site area. (Whatever method of mitigation may be employed, there is no assurance that the direct or secondary effects of liquefaction would be completely eliminated.) The most common engineering techniques to provide reasonable and appropriate levels of protection against liquefaction are mentioned in pages 10-14 of Appendix C and mitigation measures on pages 39-41 of the Draft EIR.

The report indicates that specific recommendations for mitigation measures should be developed based on the type of facility planned on a specific location, the structural loads, etc., once these are known.

The performance of any of these mitigation measures would depend on the specific subsurface characteristics of each structure location, the nature of the structure and its foundations, magnitude of causative seismic event, distance from epicenter to the site, etc.

The standard practice at the present time in the lower Coachella Valley for residential and light commercial structures is to provide a mat of compacted soil in the areas beneath the buildings. This approach has been accepted by city and county agencies and private engineers as a viable and appropriate method of providing a suitable degree of liquefaction protection.

Response 5-4. Comments noted. The draft EIR addresses the impacts to farmland in the project and surrounding areas on pages 15 - 17. Conflicts with agricultural uses are considered cumulatively significant for the proposed project in conjunction with other approved, proposed and pending developments in Coachella's East Valley area. Development of the property with urban uses could potentially hasten the conversion of any adjacent agricultural areas to urban uses by creating economic pressures and increasing land value for development. However, any subsequent development proposal on this adjacent farmland would be subject to review and consideration by the City and would either be approved or denied based on its own merits. The entire project site (ie. 260 acres) is designated Specific Plan. This designation was created with the anticipation of a range of residential uses with public facilities and supporting commercial uses. The project is in agreement with the General Plan. The project is not converting land currently in agricultural use. The specific plan will include clustering of residential units. In addition, the project includes provisions for appropriate edge treatments to separate and buffer proposed residential uses from agricultural lands to the north and east (see mitigation #1 on page 17 of the Draft EIR) .

LETTER 6
DEPARTMENT OF WATER RESOURCES

Response 6-1. Comment noted. Specific Plan design and landscaping concepts encourage low water using plant species and drip irrigation techniques. Development projects proposed within the specific plan boundaries will be subject to individual review and associated conditions of approval at the time of development. Conditions of approval are anticipated to include any state mandated water conservation measures, including those measures specified in this comment.

3.0 CORRESPONDFENCE

THE KEITH COMPANIES
Coachella Valley
Planning · Civil Engineering · Environmental Services · Architecture · Landscape Architecture · Land Surveying

June 6, 1989

Mr. Lance Freeman
Associate Planner
City of Coachella
1515 Sixth Street
Coachella, California 92236

Dear Mr. Freeman:

In response to your letter dated June 6, we are pleased to provide the following clarifications regarding utility facility sizing.

1. Water distribution facilities will be laid out according to the proposed development and then checked by means of a detailed Hardy-Cross Analysis. These steps will be taken during the final design of those improvements. At that time we will have sufficient detailed information to use in our analysis (i.e, precise densities, interior street layouts, fire flows, etc). The design of these facilities will be engineered so future master plan facilities are able to connect on to the Specific Plan project.

2. At the time of final engineering, sewer collection facilities will be sized in accordance with the proposed development and checked using Standard Open Flow Hydraulic calculations.

3. We will engineer the Rancho Coachella Vineyards water and sewer systems, so the future master plan may be easily implemented into the final design. The "Final Engineering" stage occurs after the Specific Plan and Tentative Mapping processes. This is the point when all detailed engineering will happen.

Should you have any questions, or require additional information, please do not hesitate to call.

Very truly yours,

Brett McCully
Director of Engineering Services

BM:gb
LFre0606

cc: Robert Napoli, Lusardi Compnies
Dan Berge, Wildan
Wendy Matsuda, TKC Engineers

CITY OF COACHELLA
CALIFORNIA

Administration.....398-3502
Building.....398-3002
City Clerk.....398-3403
Code Enforcement..398-3002
Community Dev.....398-3202
Engineering.....398-5744
Finance.....398-2702

Fire.....398-8895
Recreation.....398-1124
Planning.....398-3102
Police.....398-0101
Public Works.....398-4202
Sanitary.....398-1182

June 6, 1989

Brett McCully
Engineer
Keith Companies
5225 Canyon Crest Drive, Suite 307
Riverside, CA 92507
RE: Lusardi Specific Plan- water & sewer review

Dear Brett:

I have recently spoken to Don Bergh since he received the letter dated June 1, 1989. His comments have not been requested by the City for the EIR. However, the FEIR and the final specific plan should include additional language about the water delivery system and the sewer system.

Specifically, you will need to name the specific studies that you propose to use and the timing of their implementation. As much as possible of this project's studies should be coordinated with the City's ensuing Master Plan for water and sewer systems.

It seems that you have been able to resolve questions about average sewage generation, peaking factor, and existing treatment plant capacity. The major questions that remain pertain to the timing of the necessary studies that must be completed before a final network can be designed.

Sincerely yours,

Lansingh S. Freeman
Associate Planner

cc: Principal Planner Douglass
File

R.S.V.P.

CITY OF COACHELLA
CALIFORNIA
INCORPORATED 1946

Administration.....398-3502
Building.....398-3002
City Clerk.....398-3403
Code Enforcement..398-3002
Community Dev.....398-3202
Engineering.....398-5744
Finance.....398-2702

Fire.....398-8895
Recreation.....398-1124
Planning.....398-3102
Police.....398-0101
Public Works.....398-4202
Sanitary.....398-1102

June 1, 1989

Don Bergh
Division Manager
Willdan Associates
155 Hospitality Lane, Suite 110
San Bernardino, CA 92408

RE: Lusardi Specific Plan- water & sewer review

Dear Don:

The City of Coachella requests that you respond to the letter sent to you by Brett McCully of the Keith Companies on November 22, 1988. This letter was written in response to your letter. The specific items discussed were analysis of the water delivery system, criteria for sewer design and analysis of existing treatment plant capacity.

Please respond to Mr. McCully by June 6, 1989, so your comments can be included with the Final EIR. Mention will need to made as to the appropriate timing of specific studies for the water system, exact criteria to be used in designing the sewer system and appropriate studies to determine the capacity of the existing sewer treatment plant.

If you have any questions, please call me at (619) 398-3102.

Sincerely yours,

Lansingh S. Freeman
Associate Planner

cc: Brett McCully
Principal Planner Douglass
DCD&R Fissori
File

Subsequent phone call
No action necessary by Willdan

1515 SIXTH STREET • COACHELLA, CALIFORNIA 92236 • A.C. (619) 398-3502
Telecopier (619) 398-8117

THE KEITH COMPANIES
Inland Empire, Inc.
Planning · Civil Engineering · Environmental Services · Architecture · Landscape Architecture · Land Surveying

November 22, 1988

725-001

Mr. Donald Bergh
Willdan Associates
155 Hospitality Lane, Suite 110
San Bernardino, California 92408

Re: Lusardi Specific Plan
City of Coachella

Dear Don:

I am responding to your letter dated October 17th regarding your review of the water and sewer infrastructure sizing proposed for Lusardi's Specific Plan.

For the water system, we have proposed various line sizes and a well location. The intent of the supply system is to provide the necessary flows and pressures from the well site to fulfill the requirements of the development through the master plan sized lines.

We feel that the preliminary nature of this sizing is appropriate since neither demands nor precise details of supply facilities have been determined.

With regards to the sewer sizing, we have no problems with either basis of trunk sizing as long as a consistent method is identified for future precise sizings and designs.

Sewer treatment plant capacity was discussed with Bill Kurstiner of the City of Coachella who said that capacity should be available upon final development.

We suggest that after your review of this correspondence, the affected parties meet to discuss these details and establish a procedure by which we can proceed.

WILLDAN ASSOCIATES ☐ ENGINEERS & PLANNERS

725-001
3 copies to Brett

RECEIVED
OCT 28 1988
KEITH COMPANIES

October 17, 1988

Mr. Brett McCully
The Keith Companies
5225 Canyon Crest Drive, Suite 307
Riverside, CA 92507

Re: Water and Sewer Review

Dear Brett:

As requested by the City of Coachella, we have completed our review of the proposed backbone improvements as submitted by your firm for the Lusardi Project.

We have reviewed your assumptions for water and sewer systems. In order for the water system to be checked a hardy cross analysis should be provided for size and delivery verification. Well site inputs are needed for this analysis.

Our analysis, for the proposed sewer, indicated that a peaking factor of 2.5 used is very adequate for the proposed development. However, per Sewer Master Plan an average of 1,540 gpd/acre is recommended, this will result as a change on the pipe diameter of the reach on Avenue 56 west of Fillamore. If a 2.5 peaking factor is used the proposed 27" would not be adequate, if the Master Plan recommended peaking factor is used, the use of a 27" pipeline is appropriate. Also, we recommend an analysis on the capacity of existing sewer treatment plan be conducted to show the impact of your development on the existing facility.

Very truly yours,

WILLDAN ASSOCIATES

Donald Bergh
Division Manager

DB/MP/kw

CC: City of Coachella
Richard Douglas

JULY 13, 1989

RANCHO COACHELLA VINEYARDS
MITIGATION PROGRAM

MITIGATION CATEGORIES AND MEASURES	a INFORMATIONAL	b S.P. / ARCH REVIEW	c ENINEERING	d CONSTRUCTION	ADDITIONAL COMMENTS FOR MITIGATION
LAND USE					
1 RESIDENTIAL AND AGRICULTURE BUFFER		●	O		LARGER LOTS USED IN THIS AREA
2 BUFFER BETWEEN COMMERCIAL AND RESIDENTIAL		●	O		SETBACK ESTABLISHED FOR BUFFER
3 BUFFER SPECIFIC PLAN FROM MANUFACTURING		●	O		100' R/W & SETBACK ON FILLMORE
3.1 GENERAL PLAN AMENDMENT / REZONE		●			COMPLETE
3.2 RECREATIONAL ELEMENT		●			
3.3 BILLBOARD / ADVERTISING		●			PER CITY ORDINANCE
3.4 MITIGATION MONITORING IN FINAL SP/EIR		●	O		AS SHOWN
3.5 MEET ALL CONDITIONS OF SP		●	O		
3.6 FINANCIAL & PHASING PLANS APPROVAL			O		PRESENTED AT DEVELOPMENT MAPPING
3.7 COMPLY WITH ORDINANCE		O	O		
3.8 FURTHER ENVIRONMENTAL REVIEW		O			IF REQUIRED
3.9 GPA CONDITIONS MET		O			
3.10 APPLICABLE FEES		O	O		
TRANSPORTATION AND CIRCULATION					
4.1 AMEND FILLMORE TO SECONDARY ARTERIAL		●	O		AMENDED IN GENERAL PLAN
4.2 AVE.52 AS APRIMARY ARTERIAL	●				CITY OF COACHELLA
5 PHASING			O		PHASED TRACT MAP
6 56TH AVENUE TO PRIMARY		●	O		PHASED TRACT MAP
7 FILLMORE TO SECONDARY		●	O		TO BE AMENDED
8 CONTROL ACCESS ON FILLMORE	●				
9 PHASE IN TRAFFIC SIGNALS			O		ON PHASED TRACT MAP
10 IMPROVE ADJACENT AND INTERNAL STREETS		●	O		FINAL MAPPING
11 INSTALL ALL APPROPRIATE SIGNAGE		●	O		FINAL MAPPING
LIGHT AND GLARE					
12 LIGHT FIXTURES			O		FINAL MAPPING
13 ROOFS LOW-REFLECTIVE MATERIAL		O			ARCH. REVIEW
14 LOW SODIUM LIGHT			O		FINAL MAPPING

O = TO BE COMPLETED

● = COMPLETED

JULY 13, 1989

RANCHO COACHELLA VINEYARDS
MITIGATION PROGRAM

MITIGATION CATEGORIES AND MEASURES	INFORMATIONAL a	S.P. / ARCH REVIEW b	ENINEERING c	CONSTRUCTION d	ADDITIONAL COMMENTS FOR MITIGATION
GEOLOGY AND SOILS					
15 SITE PREPARATION			O		
16 GEOTECHNICAL ENGINEER REVIEW			O	O	
17 SEISMIC DESIGN	●				
18 COMPACTION TO INCREASE SHEAR STRENGTH			O		
19 FLEXIBLE UTILITY CONNECTIONS			O		
20 ANCHORING BURIED STRUCTURES	●				
21 SITE-SPECIFIC GEOTECHNICAL TESTING			O		
22 REVIEW SOIL CONDITON AT GRADING				O	
23 FINAL SOIL REPORT				O	
DRAINAGE AND FLOODING					
24 MASTER STORM WATER			O		APPROVAL AT FINAL MAPPING
25 CURB AND GUTTER			O		FINAL MAPPING
26 RIP RAP			O		FINAL MAPPING
27 STORM DRAIN			O		APPROVAL AT FINAL MAPPING
PLANT LIFE					
28 LANDSCAPE & IRRIGATION			O		NO SLOPES + 5'
29 LANDSCAPE PHASING		●			NO SLOPES + 5'
30 FRONT YARDS		●			
31 DESERT VARIETIES	●	●			
32 SOIL CONDITIONING	●	●			
33 CAL POLY DESIGNS	●	●			
NOISE					
34 INTERIOR STANDARDS	●		O		PER CITY CODE
35 WINDOWS	●		O		
36 CITY ELEMENT		●			PER CITY CODE
37 MECHANICAL EQUIPMENT		●			
38 EXTERIOR EQUIPMENT		●			
39 CONSTRUCTION ACTIVITY				O	

O = TO BE COMPLETED

● = COMPLETED

JULY 13, 1989

RANCHO COACHELLA VINEYARDS
MITIGATION PROGRAM

MITIGATION CATEGORIES AND MEASURES	a INFORMATIONAL	b S.P. / ARCH REVIEW	c ENINEERING	d CONSTRUCTION	ADDITIONAL COMMENTS FOR MITIGATION
AIR QUALITY					
40 CONSTRUCTION DUST				O	
41 VEHICLE EMISSION	●				STATE LAW
42 RULES OF SCAQMD	●				
43 ENERGY CONSERVATION	●				
44 REDUCING AUTO EMISSIONS	●				
45.1 TRANSIT ACCOMMODATIONS		●			
45.2 BLOWSAND	●				
46 GROUND COVER		●			
47 WINDBREAKS	●				
SOCIOECONOMIC					
48 HOUSING	●	●			
FIRE PROTECTION					
49 WATER SYSTEM		●	O		
50 FIRE AGREEMENT		●			EXCHANGE SITE FOR FEES
POLICE PROTECTION					
51 RESERVATION FOR SUBSTATION		●			SHARE FIRE SITE
EDUCATION FACILITIES					
52.1 CVUSD AGREEMENT		O			EXCHANGE SITE FOR FEES
52.2 ACREAGE	●				ADEQUATE SITE AREA OFFERED
53 FEES		O			EXCHANGE SITE FOR FEES
PARKS AND RECREATION					
54 LIGHTING AND LANDSCAPE DISTRICT		●			
55 PARK AGREEMENT		●			EXCHANGE SITES FOR FEES
56 PLANTS PURCHASED IN CV	●			O	
57 NURSERY STOCK	●				
58 MAINTENANCE PROGRAM		●			
59 MOSQUITO CONTROL	●				
60 VECTOR PREVENTION GUIDES	●				

O = TO BE COMPLETED

● = COMPLETED

JULY 13, 1989

RANCHO COACHELLA VINEYARDS
MITIGATION PROGRAM

MITIGATION CATEGORIES AND MEASURES	a INFORMATIONAL	b S.P. / ARCH REVIEW	c ENINEERING	d CONSTRUCTION	ADDITIONAL COMMENTS FOR MITIGATION
WATER AND WASTEWATER					
61 MOSQUITO ABATEMENT	●				
62 MINIMIZE SOIL LOSS	●				
63 DRIP IRRIGATION	●				
64 DISINCENTIVES FOR WASTEFUL IRRIGATION	●				
65 CITY PURVEYOR	●				
66 CONSERVATION MEASURES	●				
67 LOW WATER DEMAND FOR PLANTS	●	●			
68 GROUPING PLANTS	●	●			
69 INFORMATION TO USERS	●				
70 MULCH	●				
71 EFFICIENT IRRIGATION	●				
72 PERVIOIUS PAVING	●				
73 RUN-OFF MINIMIZED	●				
74 RECLAIMIED WATER	●				
75 WATER AND SEWER REIMBURSEMENT AGREEMENT		O			INCLUDE IN DEV. AGREEMENT
SOLID WASTE					
76 ACCESS FOR WASTE DISPOSAL	●				
77 TRASH ENCLOSURES	●				
78 RECYCLABLE MATERIALS	●				
79 LOCATING TRASH COMPACTORS	●				

O = TO BE COMPLETED

● = COMPLETED

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2711
LOS ANGELES, CALIFORNIA 90053-2325

June 8, 1989

REPLY TO
ATTENTION OF
Office of the Chief
Environmental Resources Branch

Mr. Richard P. Douglass
Principal Planner
City of Coachella
1515 Sixth Street
Coachella, California 92236

Dear Mr. Douglass:

We have reviewed the Draft Environmental Impact Report (DEIR) for the Rancho Coachella Vineyards Specific Plan, as requested in a letter from your office, dated March 29, 1989.

Work in waters of the United States might require a permit under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. We cannot determine from the submitted information the extent of the Corps' jurisdiction over this project. Please give our Regulatory Branch documentation that clearly describes the area and extent of any proposed work in watercourses and adjacent wetlands to help us make that determination.

If the proposed project involves any Federal assistance through funding or permits, compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f) and implementing regulations, 36 CFR 800, will be required.

The proposed plan does not conflict with navigation, flood control, or existing or authorized plans or programs of the Corps of Engineers. We have no comments on the DEIR.

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

Sincerely,

Terrance L. Breyman
Robert S. Joe
Chief, Planning Division