

JOHN WAIHEE
GOVERNOR
STATE OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

RECEIVED

HOALIKU L. DRAKE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

'93 JUL 27 P1:20

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

July 26, 1993

Mr. Brian J.J. Choy, Director
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

**SUBJECT: Final Environmental Assessment and Negative
Declaration for the Prince Kuhio Plaza Parking
Lot Subdivision, Hilo, Hawaii**

The Department of Hawaiian Home Lands has reviewed the draft environmental assessment for the subject project and has determined that the proposed action will have no significant effect on the environment and, therefore, does not require the preparation of an environmental impact statement. This Notice of Determination and Environmental Assessment are being filed as a Negative Declaration.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final Environmental Assessment. Please contact Ms. Linda Chinn, our Hawaii Island Land Agent, at 586-3823 if you have any questions.

Warmest aloha,


Hoaliku L. Drake, Chairman
Hawaiian Homes Commission

HLD:RS:lc

cc: Homart Development Co.
KPR Information Services

4698I

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1993-08-08-HI-FAA-Prince Kuhio Plaza Parking
Lot Subdivision

AUG 8 1993

Prince Kuhio Plaza Parking Lot Subdivision

Environmental Assessment and Negative Declaration

Department of Hawaiian Home Lands
State of Hawaii

Prepared By:

KRP Information Services
1314 South King Street, Suite 951
Honolulu, HI 96814

Services for:

Homart Development Company
11766 Wilshire Boulevard
Los Angeles, CA 90025

July, 1993

**ENVIRONMENTAL
ASSESSMENT
AND
NEGATIVE DECLARATION**

PROJECT: PRINCE KUHIO PLAZA PARKING LOT
SUBDIVISION

LOCATION: WAIAKEA, SOUTH HILO
ISLAND OF HAWAII, HAWAII
TAX MAP KEY: 2-2-47:64

AGENCY: HAWAIIAN HOME LANDS
335 MERCHANT STREET
HONOLULU, HAWAII 96813

DEVELOPER: HOMART DEVELOPMENT CO.
11766 WILSHIRE BLVD.
LOS ANGELES, CALIFORNIA 90025
CONTACT PERSON:
YVETTE SOUDANI, P.E.
SENIOR DESIGN MANAGER
(310) 479 4938

CONSULTANT: KRP INFORMATION SERVICES
1314 SOUTH KING STREET, SUITE 951
HONOLULU, HAWAII 96814
(808) 545 3633
CONTACT PERSON:
JACQUELINE A. PARNELL, AICP

NOTICE OF DETERMINATION: NEGATIVE DECLARATION

FOR: PRINCE KUHIO PLAZA PARKING LOT
SUBDIVISION
WAIAKEA, SOUTH HILO
ISLAND OF HAWAII, HAWAII
TAX MAP KEY: 2-2-47:64

BY: HAWAIIAN HOME LANDS

The proposed action will have no significant effect on the environment and therefore does not require the preparation of an environmental impact statement. This notice of determination and environmental assessment are being filed as a Negative Declaration.

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SUMMARY

The Department of Hawaiian Home Lands (DHHL) is proposing to subdivide 7.33 acres from a 32.313 acre vacant parcel of land adjacent to the Prince Kuhio Plaza Shopping Center to create a parking lot. The proposed parking lot will replace existing parking which will be used for the construction of a new 61,873 square feet J. C. Penney store in the shopping center. It will also provide additional parking for the future expansion of the existing Sears and Liberty House stores by 20,000 square feet each.

Prince Kuhio Plaza is located at the southern end of Hilo. With the addition of the proposed new parking, it will encompass 46.3 acres of commercial property with 525,780 square feet of initial planned building floor area. The shopping center is bordered by Kanoiehua Avenue, Makaala Street, Puainako Street and Ohuohu Street. The proposed new parking lot that will be built upon approval of the subdivision will be located on Ohuohu Street, east of the existing built-up shopping area. The other three streets that surround this parcel are Makaala Street, Railroad Avenue, and Puainako Street.

The site of the planned parking lot on Ohuohu Street is presently vacant. Construction of a parking lot is an allowable use under the present zoning classification of limited industrial use.

Homart Development Company owns and operates the shopping center under a lease from Hawaiian Home Lands which has granted approval for its expansion. The expansion includes additions to the existing Liberty House and Sears stores and the construction of a new J. C. Penney store. Because the new construction will occupy land now used for parking, additional land must be converted into parking use, to make up for the lost parking and provide additional parking for the expanded commercial facilities. DHHL has approved a parking easement for 7.33 acres, with the stipulation that Homart be responsible for the subdivision of the easement from the parcel at their costs.

The property where the shopping center and proposed parking lot are located are among the lands set aside for the Hawaiian Homes Commission by the Hawaiian Homes Commission Act of 1921. The parcel is composed primarily of pahoehoe lava with some scattered outcroppings of a'a lava. With the exception of some pasturage use in the 1950s and 1960s, there has been no recorded lease or use of the property. Some bagasse dumping took place on the property in the 1950s but the use was not recorded. The parcel is presently vacant.

Surveys of the property for archaeological and cultural artifacts and for endangered plant and wildlife species were made prior to development of the

shopping center. No historic or cultural resources of value were found. Wildlife on the property consisted of mongoose, rats and common birds. No examples of rare, threatened or endangered plant and wildlife species were seen on the property or in the vicinity.

There will be no long-term adverse environmental impacts on native species, air or water quality because of the development of the parking lot. Drainage will be handled by dry wells. There will be short-term adverse impacts on air quality and noise will be generated during the construction phase. These impacts will be minimal and can be mitigated.

CHAPTER I

DESCRIPTION OF THE PROPOSED ACTION

General Description

The Department of Hawaiian Home Lands (DHHL) is proposing to subdivide 7.33 acres from a 32.313 acre vacant parcel of land adjacent to the Prince Kuhio Plaza Shopping Center to create a parking lot. The proposed parking lot will replace existing parking which will be used for the construction of a new 61,873 square feet J. C. Penney store in the shopping center. It will also provide additional parking for the future expansion of the existing Sears and Liberty House stores by 20,000 square feet each.

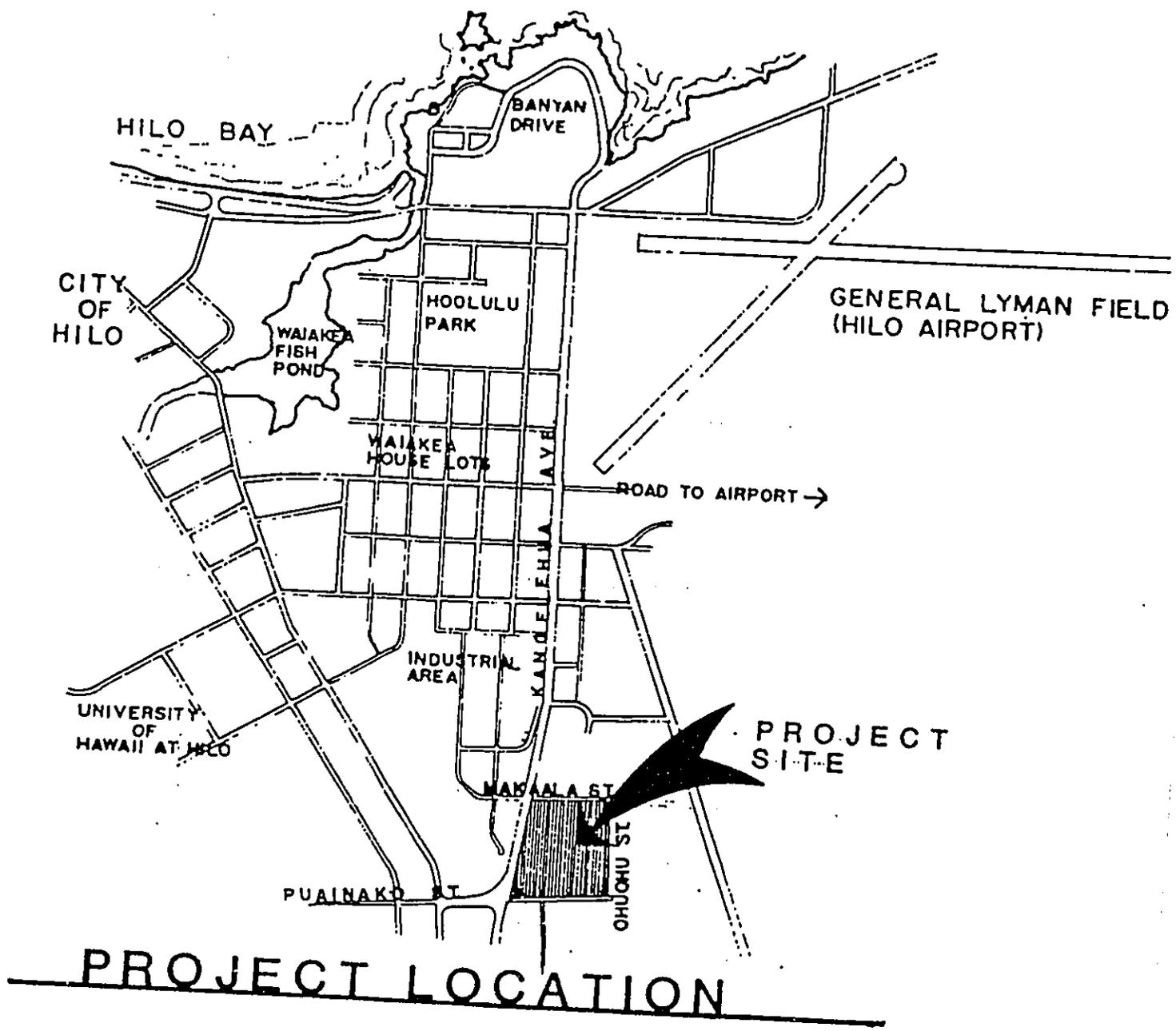
Description of the Site

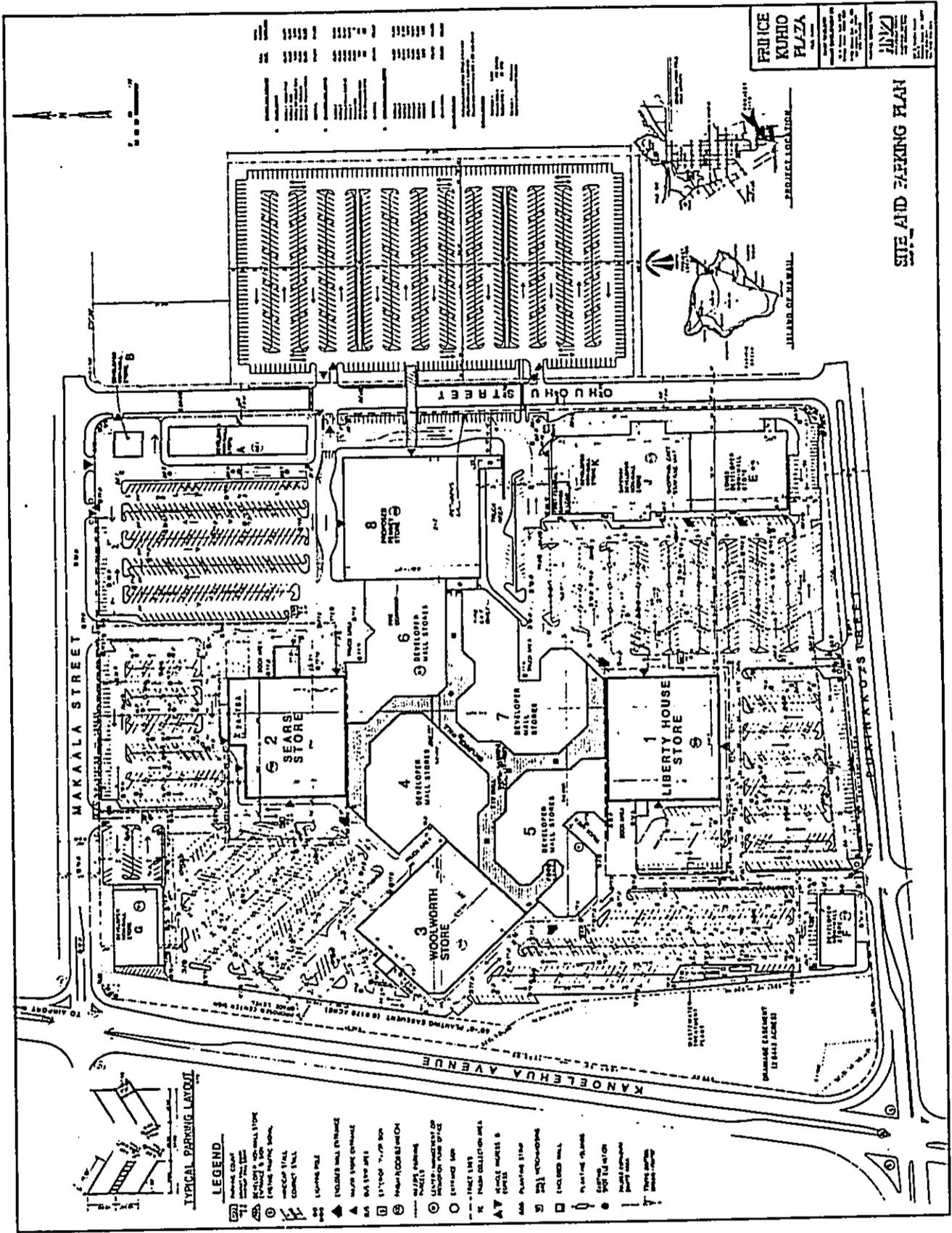
Prince Kuhio Plaza is located at the southern end of Hilo. With the addition of the proposed new parking, it will encompass 46.3 acres of commercial property with 525,780 square feet of initial planned building floor area. The shopping center is bordered by Kanoiehua Avenue, Makaala Street, Puainako Street and Ohuohu Street. The proposed new parking lot that will be built upon approval of the subdivision will be located on Ohuohu Street, east of the existing built-up shopping area. The other three streets that surround this parcel are Makaala Street, Railroad Avenue, and Puainako Street. The project location map and roadway network in the vicinity are shown in Figure 1 and 2. The site plan for the area is shown in Figure 3.

The shopping center's western boundary is adjacent to Kanoiehua Avenue, a major thoroughfare. The property across Kanoiehua Avenue is used for commercial. South of Prince Kuhio Plaza, across Puainako Street, is the Panaewa Hawaiian Homes Community, a residential development. The parcels of land located north of the shopping center across Makaala Street between Kanoiehua Avenue and Railroad Avenue are planned for development by DHHL as the Panaewa Commercial Lots. The area to the east across Ohuohu Street is presently vacant. The zoning for this parcel, the site of the planned parking lot, is limited industrial use. Construction of a parking lot is an allowable use in this zoning classification.

Project Background

Planning for the Prince Kuhio Plaza Shopping Center began in the mid 1970's. In September, 1977, the property was listed for auction by Hawaiian Home Lands. The sole bidder, Orchid Isles Group, was awarded the lease and





retained Redevco as its agent for securing the necessary General Plan amendment, rezoning, and regulatory permits. An environmental impact statement was prepared for the project in June, 1980. The center was subsequently constructed and opened for business in the early 1980's. Prince Kuhio Plaza was acquired by Homart Development Company in 1988.

Project Description

Hawaiian Home Lands has granted approval to Homart Development Company to expand the shopping center. The expansion includes additions to the existing Liberty House and Sears stores and the construction of a new J. C. Penney store. Because the new construction will occupy land now used for parking, additional land must be converted into parking use, to make up for the lost parking and provide additional parking for the expanded commercial facilities. DHHL has approved a parking easement for 7.33 acres, with the stipulation that Homart be responsible for the subdivision of the easement from the parcel at their costs.

This environmental assessment is being prepared by Homart Development Company and KRP Information Services on behalf of DHHL to support the subdivision of the 7.33 acre easement from the 32.313 acre parcel in question.

CHAPTER II

DESCRIPTION OF THE AFFECTED ENVIRONMENT

PHYSICAL CHARACTERISTICS

Location and Topography

The City of Hilo lies at the southeastern base of Mauna Loa at elevations ranging from sea level at Hilo Bay to 600 feet above sea level along the urban fringe. The slopes are generally very gentle, ranging from zero to five percent. The 1980 EIS describes the area where the parking lot subdivision is proposed as predominantly pahoehoe lava with some scattered outcroppings of a'a lava. The small amounts of soil on the property consist primarily of decomposed bagasse dumped on the site in the late 1950s and other decomposed matter.

Most of the parcel is relatively flat with a gentle slope from mauka to makai (south to north). The highest point of the property, before grading, was 90 feet above sea level near the southeast corner. The low point, fronting Kanoelehua near the southwest corner, is 56 feet above sea level.

Hydrogeology

The surface rocks in the project area consist of the Ka'u volcanic series of Mauna Loa, an extremely permeable basalt that is too recent in origin to have formed a deep soil and saprolite top layer. The Ka'u series, which erupted from Mauna Loa following the main deposition of Pahala ash, is relatively thin in section, perhaps 25 feet thick in the Hilo region. Beneath the ash is the initial Kahuku series basalt, extraordinarily permeable formation.

Despite the discontinuous strata of ash, permeable surface and subsurface formations result in a lack of appreciable surface runoff and the occurrence of high infiltration and subsurface flow rates. Also contributing to the large infiltration rates are low slopes of the Ka'u volcanics over much of the region, varying from 0.005 to 5.0 percent. The water table exhibits a mild seaward gradient (one to four feet per mile), culminating in several fresh water springs along and off the coast.

Climate

Hilo is located in a belt of northeastern tradewinds generated from the semi-permanent Pacific high-pressure zone to the northeast. Orographic rainfall, the result of moisture-laden clouds that condense as it is forced to move upward along the mountain slopes by the prevailing winds, is the principal means of

regional precipitation. At the project site and in the Hilo area, average annual rainfall is more than 150 inches per year.

Average temperature in Hilo ranges between 65 and 80 degrees. Cloudy skies often prevail; thus, the area receives only about 40 percent of the possible amount of sunshine.

Generally, tradewinds are more persistent in summer than in winter and are stronger in the afternoon than in the evening. Average wind speed is approximately seven miles per hour. A diurnal shift in wind direction often occurs as heating and cooling of the island give rise to onshore sea breezes during the day and offshore land breezes at night.

Water Quality

There are no streams or ponds in the area. Runoff from the proposed parking area will go into on-site dry wells. The proposed project will not affect drainage patterns to the extent that there will be an effect on surface or ground water quality.

Flora and Fauna

The project site is presently vacant. A survey of the property for endangered plant and wildlife species was made prior to development of the shopping center. The 1980 EIS notes that on-site flora included 'ohi'a, mango, octopus tress, a banyan tree, Alexander palms and various forms of common ground cover. Wildlife on the property consisted of mongoose, rats and common birds. No examples of rare, threatened or endangered plant and wildlife species were seen on the property or in the vicinity.

Air Quality

The air quality in the Hilo area can be termed good. Records of the state Department of Health Clean Air Branch indicate that particulate matter concentrations in the air average 34 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Hawaii state regulations require concentrations of particulate matter shall not exceed $55 \mu\text{g}/\text{m}^3$ of air. Concentrations of sulfur dioxide are less than $5 \mu\text{g}/\text{m}^3$. Hawaii state regulations require that concentrations of sulfur oxides shall not exceed $20 \mu\text{g}/\text{m}^3$.

The good quality of air in Hilo can be attributable to the absence of "heavy" industries in Hilo and the prevailing tradewinds. The proposed project is not expected to have any adverse effect on air quality.

Noise

There are no major noise sources in the area. Ambient noise levels are those customarily associated with commercial areas. No noise impacts are anticipated beyond those which are normally associated with construction.

Natural Hazards

The Hilo area is susceptible to various types of natural hazards. These include flood, volcanic activity, earthquakes, and tsunami inundation.

Flooding. Portions of the Hilo area are prone to flood damage by surface runoff from high intensity rainfall. Historical records indicate 31 major flooding incidents since 1880 in the Hilo area, with minor flooding occurring yearly. This high incidence of flooding can be attributed to a combination of high-intensity rainfall and undefined drainage ways.

The potential for flood damage has been considered in the developmental plans for the Hilo area and has limited the extent of urban development in flood-prone areas. To mitigate the potential for flooding in certain areas, drainage improvement programs have been initiated by the county.

The Federal Flood Insurance Rate map for the Island of Hawaii prepared by the U.S. Corps of Engineers as part of the National Flood Insurance Program designates the area as "C - Area of Minimal Flooding." Stormwater runoff from the shopping center is handled by an undeveloped drainage easement area of 2.5 acres. Within the paved area of the center, site and street runoff is handled by 14 dry wells.

Volcanic Activity. Lava flows are the most common volcanic hazards in Hawaii. Generally, there is very little direct danger to human life, but risk to property can be great. The greatest danger from volcanic activity to the Hilo area is from eruptions within the northeast rift zone of Mauna Loa. Since 1880, most lava flows from Mauna Loa have stopped prior to reaching the urban areas of Hilo.

Earthquakes. According to reports by the U.S. Geological Survey, earthquakes in the Hilo area can be expected in the future. Since the risk of major damage from earthquakes is considerable for all areas of the island, stringent earth-quake-resistant designs of structures have been implemented.

Tsunamis. Tsunamis are impulse-generated water waves caused by seaquakes, volcanic eruptions, or explosions. The city of Hilo, with the orientation of crescent-shaped Hilo Bay towards portions of the Pacific seismic belt, is very susceptible to tsunamis from the eastern half-circle of the seismic belt

that extends from the Aleutian Islands down to the western coast of South America. The project area is outside the tsunami inundation zone.

SOCIAL AND ECONOMIC CHARACTERISTICS

Land Ownership and Use

The property where the shopping center and proposed parking lot are located are among the lands set aside for the Hawaiian Homes Commission by the Hawaiian Homes Commission Act of 1921. The 1980 EIS notes that, with the exception of some pasturage use in the 1950's and 1960's, there has been no recorded lease or use of the property. Some bagasse dumping took place on the property in the 1950s but the use was not recorded.

Historic/Cultural Resources

An archaeological survey of the shopping center site was made in 1979. The survey found no archaeological artifacts, structures, or other remains of significance in the study area.

Recreation and Scenic Resources

No recreation areas will be affected by the proposed project.

Demography and Employment

According to the 1990 census, the resident population of Hawaii was 121,000, an increase of 28,100 over the 1980 resident population of 92,900. At 30.7 percent, Hawaii's rate of growth was more than twice the statewide growth rate of 14.9 percent. Hawaii is the second most populated county in the State.

Hawaii is divided into nine judicial districts: North and South Hilo, Hamakua, Puna, Ka'u, North and South Kona, and North and South Kohala. The shopping center is located within the urban area of South Hilo, a community that serves as the primary seat of government and commerce for the county. The resident population of the South Hilo District in 1990 was 44,639. The population of the adjacent district of Puna was 20,781. Along with North Hilo's 1,541 residents, the three districts account for 66,961 persons, or 55 percent of the island's population.

According to the Hawaii County Profile prepared by the First Hawaiian Bank (FHB) as a supplement to the Sept/Oct 1992 edition of its bimonthly publication, *Economic Indicators*, the civilian labor force on Hawaii was approximately 67,600 in July, 1992. The unemployment rate was 7.1 percent, with 62,800 persons employed and 4,800 unemployed. The most recent figures on employment indicate that the wholesale and retail trade sector provide 22 percent of the jobs. The proposed expansion of the shopping center is expected to

contribute 26 additional jobs, 6 as result of the relocation of the J.C. Penney store from downtown and 20 as a result of the expansion of Liberty House and Sears.

Traffic

Previous traffic studies for the project area include one for the 1980 EIS and more recently, in 1991, for HHL's Panaewa Commercial Lots and Industrial Park. While the proposed parking lot would not by itself affect traffic volumes, the lot will be used to support an expansion of the shopping center. A new traffic impact assessment was therefore conducted by Julian Ng, Inc. in March 1993 to evaluate the potential impacts of the proposed expansion to traffic conditions at two intersections serving the shopping center. The report is attached as an appendix to this document.

The primary vehicular access to the Prince Kuhio Plaza Shopping Center is from Kanoelehua Avenue via Puainako Street. Kanoelehua Avenue is a state roadway that is generally aligned in a north-south direction. It provides regional circulation through Hilo and links the town with the Puna and Ka'u Districts to the south.

Puainako Street is a four-lane divided roadway between Kanoelehua Avenue and Kilauea Avenue that provides east-west circulation through the Waiakea area of Hilo. Puainako Street is signal controlled at its cross intersection with Kanoelehua Avenue.

Access to the Center is also provided from Makaala Street, a two-lane roadway generally aligned in an east-west direction between Kanoelehua Avenue and Railroad Avenue, crossing Ohuohu Street. The cross intersection of Kanoelehua Avenue and Makaala Street is signal-controlled.

The impact to traffic was considered at the two nearest signalized intersections, i. e., the Kanoelehua Avenue intersections with Puainako Street and with Makaala Street.

A base condition for future (1995) afternoon peak traffic volumes without the proposed Prince Kuhio Plaza expansion was taken from the earlier DHHL study. The analysis of the base condition, which assumed that the additional southbound lane on Kanoelehua Avenue between Kamehameha Avenue and Puainako Street proposed by the State Highways Division is completed, showed that additional intersection improvements would be needed. These improvements would include a separate eastbound right turn lane on Makaala Street and a second southbound left turn lane on Kanoelehua Avenue at Puainako Street to accommodate the projected traffic. Traffic due to the proposed shopping center expansion was estimated and added to the base condition, and impacts were identified.

In addition, an independent reevaluation of future conditions at the Puainako Street intersection was done. Revised traffic projections were based on traffic counts (by others) taken in May 1992 at the Puainako Street intersection and a lower growth rate consistent with that used for the State's widening project.

The resulting impacts are discussed and final recommendations are presented in Chapter III of this report.

Utilities

On-site utilities serving the shopping center include electricity and telephone equipment, storm drainage pipelines and manholes, and water lines. The shopping center has its own sewage treatment plant. The sewage treatment plant has been upgraded from 30,000 gallons per day (gpd) to 60,000 gpd, with a peak design capacity of 120,00 gpd. This will be adequate to serve the needs of the new J.C. Penney store and the future expansion of the Sears and Liberty House stores.

CHAPTER III

PROBABLE IMPACTS OF THE PROPOSED ACTION AND MITIGATION MEASURES

PROBABLE IMPACTS AND MITIGATION MEASURES

Water Quality

There will be no adverse impact on water quality. Storm water management will be consistent with environmental regulations.

Air Quality

Short-term construction emissions will be minimal and can be mitigated. Suppression measures for fugitive dust will be employed for any grading or demolition activities. Measures will include watering methods.

Flora and Fauna

There will be no adverse impacts on flora and fauna.

Noise

Short-term construction emissions will be minimal and can be mitigated.

Utilities

Utilities in the project area are adequate to handle the present use and will not be affected by the proposed parking lot.

Traffic

The capacity analyses found that even without the increased traffic due to the proposed expansion, volume would exceed the capacities of the intersections despite the addition of a southbound lane on Kanoelehua Avenue that is planned by the State Highways Division

At the Kanoelehua Avenue intersection with Makaala Street, an additional eastbound lane on Makaala Street approaching Kanoelehua Avenue should be provided for right turns on to Kanoelehua Avenue, as recommended in the earlier traffic study for DHHL. At the Puainako Street intersection, an additional northbound left turn lane would be necessary. These improvements would

provide the added capacity to accommodate the increase (about 21% over existing) in traffic volumes that have been projected without the proposed expansion of Prince Kuhio Plaza.

With the additional traffic due to the proposed expansion of Prince Kuhio Plaza, critical movements and average delays at the signalized intersections would increase by 3% at Makaala Street and 6% at Puainako Street. At the Makaala Street intersection, LOS D conditions were found. At the Puainako Street intersection, the LOS E conditions would remain unchanged. The slight increase in average delays could be lessened with a change to the signal phasing and widening of the westbound approach to allow traffic crossing Kanoelehua Avenue to use a second lane, but there would still be LOS E conditions.

However, traffic counts taken in May and June 1992 show that the growth in traffic volumes at Puainako Street intersection that were projected in the 1991 traffic study for DHHL has not occurred. The traffic assignment for the intersection was redone using the growth rate from the State Highways Division's widening project and conditions were reevaluated; at the lower 2.88% annual growth, the second northbound left lane turn lane would not be needed and the 1995 PM Peak Hour conditions at the intersection would be acceptable at LOS D, with or without the proposed expansion of Prince Kuhio Plaza.

A separate right turn lane from eastbound Makaala Street to Kanoelehua Avenue and a second left turn lane from northbound Kanoelehua Avenue to Puainako Street should be considered to address existing and future traffic demands even without the proposed expansion of Prince Kuhio Plaza.

Historic/Archaeological Resources

There are no historic buildings or archaeological artifacts in the area that could be adversely affected by the project.

Social and Economic Conditions

Construction of the new parking lot, along with the additions and improvements to the shopping center, will provide additional shopping for residents of South Hilo and Puna. It is also expected to provide 26 new jobs.

Aesthetics

The parking lot will be designed and built in conformance with county standards which requires appropriate landscaping.

FINDINGS AND DETERMINATION OF SIGNIFICANCE

Findings

Chapter 200-12 (Environmental Impact Statement Rules) of Title 11 Administrative Rules of the State Department of Health specifies criteria for determining if an action may have a significant effect on the environment. The relationship of the proposed project to these criteria is discussed below.

- (1) *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*

The project site has no natural or cultural resources of value. It is presently zoned for light industrial use.

- (2) *Curtails the range of beneficial uses of the environment;*

The proposed parking lot will be located on a site that has not been used for anything in recent times.

- (3) *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions or executive orders;*

The project does not conflict with long-term state environmental policies or goals.

- (4) *Substantially affects the economic or social welfare of the community or state;*

The proposed improvements will provide economic and social benefits.

- (5) *Substantially affects public health;*

Public health is not threatened by existing facilities and functions at the adjacent shopping center and there is no reason to expect that public health would be affected in the future by the new parking lot.

- (6) *Involves substantial secondary impacts, such as population changes or effects on public facilities;*

The project does not involve substantial secondary impacts such as population changes or effects on public facilities. Water, sewer, drainage, and transportation systems are adequate to serve the project.

(7) *Involves a substantial degradation of environmental quality;*

Environmental impacts will be minor. The overall environmental quality will not be substantially degraded.

(8) *Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;*

The proposed project is consistent with the Hawaii County Master Plan. It neither involves a commitment for a larger action nor results in significant adverse effects upon the environment.

(9) *Substantially affects a rare, threatened or endangered species, or its habitat;*

There are no rare, threatened, or endangered species (plant or animal) on the project site.

(10) *Detrimentially affects air or water quality or ambient noise levels;*

Noise and dust are unavoidable short-term consequences of construction but can be mitigated through strict adherence to public health regulations governing air pollution and noise.

There will be no impact on water quality. Impacts on air quality will be short-term and should not result in a violation of standards. Noise associated with construction can be mitigated and there will be no substantive change in ambient noise quality when completed.

(11) *Affects an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.*

The project is not located in an environmentally sensitive area and is consistent with existing land use regulations for the area.

Determination

Based on these findings, it is anticipated that an environmental impact statement will not be required.

CHAPTER IV

ALTERNATIVES TO THE PROPOSED ACTION

There are three alternatives to the project. These are to build a parking structure on the property, construct parking at another location, or not to proceed with the project.

Construction of a parking structure on the shopping center site would be considerably more expensive than the proposed action without any environmental benefit.

Constructing parking at another location would be difficult. The shopping center is bounded on the west by Kanoelehua Avenue. Lands to the north and south of the center are either occupied or planned for development. The only location available is the parcel fronting Ohuohu Street on the east side of the center. The only location alternative is moving the parking lot more to the north or south of the parcel. This also would result in no environmental benefit.

If the proposed project is not implemented, there will be no change from existing conditions. Although expansion of the shopping center is allowed under existing zoning, it would not take place at this time. The subject Hawaiian Home Land parcel would either be developed for some other use or continue to remain vacant.

CHAPTER V

AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONSULTED

CONSULTED PARTIES

The following agencies and individuals have been consulted during the preparation of this environmental assessment:

State of Hawaii

Robert Taira, Hawaii District Office, Highways Division
Department of Transportation
Dennis Tulang, Environmental Management Division
Department of Health

County of Hawaii

Virginia Goldstein, Director, Planning Department
Masa Ayuma, Planning Department
Darin Arai, Planning Department
Harold Sugiyama, Department of Public Works

PREPARERS

The following firms were involved in the preparation of this environmental assessment:

Homart Development Company
KRP Information Services

CHAPTER VI

COMMENTS AND RESPONSES TO THE
DRAFT ENVIRONMENTAL ASSESSMENT

Comments on the draft environmental assessment were received from the State of Hawaii Department of Transportation and the County of Hawaii Department of Public Works.

Their comments and the Department of Hawaiian Home Lands' responses follow.

HWY-PS
2.7398

JUN 30 1993

TO: Brian Choy, Director
Office of Environmental Quality Control

FROM: Rex D. Johnson, Director
Department of Transportation

R. Johnson

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT, PRINCE KUHIO PLAZA
PARKING LOT SUBDIVISION, HILO, HAWAII
TMK: 2-2-47: 64

We are providing the following comments from our review of the subject draft environmental assessment.

1. The developer should provide improvements at the Kanoelehua Avenue and Puainako Street intersection to:
 - a. Improve west-bound through traffic flow on Puainako Street.
 - b. Provide additional left-turn storage on east-bound Puainako Street.
2. The developer should provide a right-turn lane on east-bound Makaala Street at Kanoelehua Avenue.
3. The developer should adjust the traffic signal timing/phases as noted in the traffic study.
4. Internal traffic circulation within the shopping mall parking lot should be designed to prevent vehicle backups onto Puainako Street and Kanoelehua Avenue.

Mr. Brian Choy
Page 2

HWY-PS 2.7398

JUN 30 1993

5. Required improvements must be provided at no cost to the State.
6. Plans for construction work within the State highway right-of-way must be submitted for our review and approval.

c: Department of Hawaiian Home Lands
335 Merchant Street
Honolulu, Hawaii 96813

Ms. Jacqueline A. Parnell
KRP Information Services
P.O. Box 27506
Honolulu, Hawaii 96827

JOHN WAIHEE
GOVERNOR
STATE OF HAWAII



HOALIKU L. DRAKE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

July 14, 1993

MEMORANDUM

TO: The Honorable Rex Johnson, Director
Department of Transportation

FROM: Hoaliku L. Drake, Chairman
Hawaiian Homes Commission *Hoaliku L. Drake*

SUBJECT: Draft Environmental Assessment (EA) for the Prince
Kuhio Plaza Parking Lot Subdivision, Hilo, Hawaii

Thank you for your comments on the subject Draft Environmental Assessment. The following is in response to your memorandum of June 30, 1993, addressed to the Office of Environmental Quality Control.

1. Improvements at the intersection of Kanoelehua Avenue and Puainako Street would be necessary for expected growth in traffic volumes even without the proposed project. The only additional laneage improvement identified in the traffic assessment is the conversion of an exclusive right turn lane to a through/right turn option lane on the westbound approach to the intersection.

The additional left turn storage on eastbound Puainako Street is already needed and the left turn volume is not expected to increase because of the proposed subdivision. In addition, such an improvement may adversely affect vehicular access into the Puainako (commercial) Center. Construction of this improvement by the Department of Hawaiian Home Lands is not warranted.

2. An additional lane for right turns from eastbound Makaala Street to Kanoelehua Avenue was identified in the traffic assessment as needed without the proposed action. The right turn volume is not expected to increase because of the proposed subdivision. Construction of this improvement by the Department of Hawaiian Home Lands is not warranted.

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MEMORANDUM TO REX JOHNSON

Page two

July 14, 1993

3. We do not believe that traffic signal timing and phasing should be adjusted by private entities. We understand that the traffic signal timing and phasing on state highways on the island of Hawaii is the responsibility of the State Highways Division. Copies of the operational analyses of the intersections from the traffic study will be provided for your use.
4. Internal traffic circulation within the proposed parking lot will be designed to minimize any queuing onto public streets, including Puainako Street and Kanoelehua Avenue. The two driveways proposed for providing access to the lot are located off of Ohuohu Street, approximately 500' and 900' from Puainako Street. Ohuohu Street is located approximately 1,400 feet east of Kanoelehua Avenue.
5. The subdivision is an action of the Department of Hawaiian Home Lands, a State agency.
6. Plans for any construction work within the state highway rights-of-way will be submitted for review and approval.

A copy of your letter and this response will be included in the final Environmental Assessment and Negative Declaration when it is filed with the Office of Environmental Quality Control.

cc: Office of Environmental Quality Control
Homart Development Co.
KRP Information Services

4854I

Stephen K. Yamashiro
Mayor



Donna Fay K. Kiyosaki
Chief Engineer

Riley W. Smith
Deputy Chief Engineer

County of Hawaii
DEPARTMENT OF PUBLIC WORKS
25 Aupuni Street, Room 202 • Hilo, Hawaii 96720-4252
(808) 961-8321 • Fax (808) 969-7138

May 28, 1993

MS JACQUELINE PARNELL AICP
KRP INFORMATION SERVICES
1314 SOUTH KING STREET SUITE 951
HONOLULU HI 96814

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PRINCE KUHIO PLAZA
PARKING LOT SUBDIVISION
TMK: 2-2-47: 64
Location: Waiakea, South Hilo, Hawaii

We have reviewed the subject draft and have the following comments:

1. The traffic assessment report shall address impacts to the Ohuohu/Makaala and Ohuohu/Puainako intersections, including provisions for turning lanes and signalization, if warranted.
2. Lane improvements for westbound traffic on Puainako Street crossing Kanoelehua Avenue as shown on Exhibit 5 should be constructed by the developer concurrently with the construction of the J.C. Penny store. Construction plans shall be submitted for review and approval by the Department of Public Works and the State Highways Division.
3. Submit two (2) copies of the Traffic Assessment Report to the State Highways Division for their review and comments. Kanoelehua Avenue and Puainako Street west of Kanoelehua Avenue are controlled by the State Highways Division.

Should you have any questions, please contact Stanley Takemura at 961-8327.

GALEN M. KUBA, Acting Division Chief
Engineering Division

STT:byf

cc: Planning Department

JOHN WAIHEE
GOVERNOR
STATE OF HAWAII



HOALIKU L. DRAKE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

July 14, 1993

Mr. Galen M. Kuba
Acting Division Chief
Engineering Division
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Kuba:

SUBJECT: Draft Environmental Assessment (EA) for the
Prince Kuhio Plaza Parking Lot Subdivision, Hilo,
Hawaii, TMK No. 2-2-47:64 (por)

Thank you for your comments on the subject Draft
Environmental Assessment. The following is in response to your
letter of May 28, 1993.

1. Because impacts to the Ohuohu Street intersections with Makaala and Puainako Streets are not expected to be significant, analyses were not performed at these locations. As indicated in the traffic assessment report, Ohuohu Street is "striped for two lanes and presently serves very little traffic" (page 4). Future conditions with the new proposed parking lot are not expected to be significantly different. An assessment-level evaluation is described below to provide additional information.

If all of the additional traffic from the proposed expansion of the shopping center were to be added to Ohuohu Street, and distributed to Makaala Street and to Puainako Street per the traffic assignment, as shown in Exhibit 3 of the Traffic Assessment Report, the highest peak hour approach volume to a stop sign would be southbound on Ohuohu Street at Puainako Street, with less than 100 vehicles in a single lane (allowing 10 vehicles per hour existing). A major street volume of 1,500 vehicles per hour would be required to meet the peak hour warrant for traffic signals (Manual on Uniform Traffic Control Devices,

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Mr. Galen M. Kuba

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Figure 4-5). The 1995 projected volume on Puainako Street just east of Kanoelehua Avenue totals 1,348 vehicles per hour, of which the majority are expected to enter or leave 1) the Prince Kuhio Plaza via the existing driveways or 2) the DHHL subdivision via Pilipa'a Street. Therefore, the peak hour, which in other instances has typically been the easiest of eleven signal warrants to satisfy, would not be met.

The greatest impact at the Ohuohu Street intersection with Puainako Street would be for southbound traffic, most of which (less than 100 vehicles in the peak hour, as described above) would turn right. For the minimal volume on Puainako Street in this area, the total capacity for the right turn from a stop sign would be greater than 600 vehicles per hour. Deducting the right turns, the reserve capacity for this movement would still exceed 400 vehicles per hour, and Level of Service A conditions would be maintained.

At the northbound Ohuohu Street approach to Makaala Street, an exercise similar to the above would show 50 vehicles turning left. With volumes on Makaala Street just west of Kanoelehua Avenue totaling 784 vehicles, the signal warrant again would not be satisfied. Levels of service at an unsignalized intersection, which are defined for reserve capacities in increments of 100 vehicles per hour, would be minimally affected by the projected 50 vehicles. Future conditions for the left turn are expected to be Level of Service A.

2. As indicated in your comment #3, Kanoelehua Avenue is controlled by the State Highways Division. The Department of Hawaiian Home Lands has no plans for improvements to the Puainako Street intersection at this time.
3. Two copies of the traffic report were submitted to the Highways Division for their review and comments before publication of the Draft Environmental Assessment. They have also received copies of the DEA, and responded with comments.

Mr. Galen M. Kuba
Page three

July 14, 1993

A copy of your letter and this response will be included in the final Environmental Assessment and Negative Declaration when it is filed with the Office of Environmental Quality Control.

Warmest aloha,


Hoaliku L. Drake, Chairman
Hawaiian Homes Commission

HLD:RS:lc

cc: Office of Environmental Quality Control
Homart Development Co.
KRP Information Services

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REFERENCES

- Bank of Hawaii. *Hawaii 1991, Annual Economic Report*. Honolulu, Hawaii. 1992.
- First Hawaiian Bank Research Department. *Hawaii County Profile*. Supplement to Economic Indicators. Honolulu, Hawaii. September-October 1992.
- Hawaii State Department of Business and Development. *State of Hawaii Data Book 1992*. Honolulu, Hawaii. November 1991.
- HNA/California. *Prince Kuhio Plaza Surface Parking Studies*. Redondo Beach, California. August 31, 1992.
- Redevco Properties, Inc. *Prince Kuhio Plaza Environmental Impact Statement*. Honolulu, Hawaii. June 1990.
- Parsons Brinckerhoff Quade & Douglas, Inc. *Draft Traffic Impact Study for Panaewa Commercial Lots*. Honolulu, Hawaii. November 1991.
- U. S. Soil and Conservation Service. *Soil Survey of Island of Hawaii , State of Hawaii*. Washington, D. C. August 1972.

TRAFFIC ASSESSMENT REPORT

PRINCE KUHIO PLAZA

PARKING LOT SUBDIVISION

HILO, HAWAII

prepared for:

**Homart Development Company
11776 Wilshire Boulevard, Suite 250
Los Angeles, California 90025**

prepared by:

**Julian Ng, Incorporated
P.O. Box 816
Kaneohe, Hawaii 96744**

March 1993

**TRAFFIC ASSESSMENT REPORT
PRINCE KUHIO PLAZA
PARKING LOT SUBDIVISION**

HILO, HAWAII

prepared by: Julian Ng, Inc.
March 1993

The Department of Hawaiian Home Lands (DHHL) is proposing to subdivide 7.33 acres from a vacant 32.313-acre parcel of land in Hilo, Hawaii for a parking lot to facilitate a proposed expansion of the existing Prince Kuhio Plaza shopping center. While the proposed parking lot would not by itself affect traffic volumes, the lot would be used to support an expansion of the shopping center. A traffic assessment was therefore done to evaluate the potential impacts of the proposed shopping center expansion to traffic conditions at two intersections serving the shopping center.

Scope of Work

The impact to traffic from the proposed expansion of the Prince Kuhio Plaza is considered at the two nearest signalized intersections, i.e., the Kanoiehua Avenue intersections with Puainako Street and with Makaala Street. A traffic study¹ prepared for DHHL by others in 1991, which included weekday peak period traffic counts taken in 1990 and projections of 1995 weekday peak hour traffic in the area, was initially used as the basis for the traffic assessment.

A base condition for future (1995) afternoon peak hour traffic volumes without the proposed Prince Kuhio Plaza expansion was taken from the earlier DHHL traffic study. The analysis of the base condition, which assumed that the additional southbound lane on Kanoiehua Avenue between Kamehameha Avenue and Puainako Street proposed by the State Highways Division is completed, showed that additional intersection improvements, including a separate eastbound right turn lane on Makaala Street and a second northbound left turn lane on Kanoiehua Avenue at Puainako Street, would be needed if the projected traffic from the 1991 DHHL traffic study were to be accommodated. Traffic due to the proposed shopping center expansion was estimated and added to this base condition, and impacts were identified.

In addition, an independent reevaluation of future conditions at the Puainako Street intersection was done. Revised traffic projections were based on traffic counts (by others) taken in May 1992 at the Puainako Street intersection and a lower growth rate consistent with that used for the State's widening project.

1. Parsons Brinckerhoff Quade and Douglas, Inc., *Panaewa Commercial Lots Traffic Impact Study (Draft)*, November 1991.

Analysis Methodology

Capacity and level-of-service conditions were calculated using methods described in the *Highway Capacity Manual*² for future traffic without and with the proposed expansion. The intersection analyses included both the Planning Analysis and the Signalized Intersection Operational Analysis described in the *Highway Capacity Manual*. In the Planning Analysis, which provides an overall assessment of demand relative to capacity, conflicting movements are added together. Sums exceeding 1,400 vehicles per hour (vph) indicates probable over-capacity conditions, while sums 1,200 vph or less indicate likely under-capacity conditions. The Planning Analysis was used to evaluate the base layout (existing plus planned improvements) and alternative modified layouts. In cases where the base layout had near or over capacity conditions, modifications were considered and the alternative with the best results in the Planning Application was used in the more detailed Operational Analysis.

The Operational Analysis consists of determining volume-to-capacity (v/c) ratios at a signalized intersection from the intersection layout, traffic characteristics, and signal phasing. Average delays are also determined for each lane group, each approach, and for the overall intersection. A "Level of Service" (LOS), ranging from LOS A (good) to LOS F (poor) is determined from these delays, as follows:

Average Stopped Delay:	0.0	5.0	15.0	25.0	40.0	60.0	seconds per vehicle
Level of Service:	A	B	C	D	E	F	>>

(Source: *Highway Capacity Manual*, Table 10-1)

For example, conditions on a lane group with an average delay greater than 15.0 seconds but not more than 25.0 seconds would be described as Level of Service C.

The Operational Analysis can provide varied results depending on the assumptions and criteria used in the calculation. The analyses reported herein assumed random arrivals at each approach, reflecting signals operating independently or average progression conditions. Default values for capacities were also used. Timing for each phase was taken to the nearest second. Other criteria applicable to the operational analyses were as follows:

1. maintain v/c ratio \leq 1.10 for all lane groups
2. minimize overall intersection delay
3. if possible, maintain LOS D or better for all lane groups; alternatively, maintain LOS E or better for all lane groups

2. Transportation Research Board, National Research Council, *Highway Capacity Manual*, Special Report 209, Washington, D.C. 1985.

In the initial analyses using the traffic projected in the 1991 DHHL traffic study, capacities and delays were calculated for the desired (although not always realistic) full compliance with the yellow and red signal indications. Consistent violations of this compliance is indicated where the v/c ratio exceeds 1.0. Further, a peak hour factor of 0.90 (1.00 means the hourly volume was spread evenly over the peak hour) was assumed for each approach. Signal cycles were maintained at 120 seconds. The initial analyses produced a conservative, "by-the-book" evaluation.

For the independent reevaluation of the Kanoelehua Avenue and Puainako Street intersection, a more realistic analysis was done. A peak hour factor of 0.95 and shorter clearance (yellow plus all-red) intervals were used to better represent conditions observed in the field.

Base Traffic Conditions

The Prince Kuhio Plaza is located in the Panaewa area of Hilo, and is bounded by Kanoelehua Avenue on the west, Puainako Street on the south, Ohuohu Street on the east, and Makaala Street on the north. The proposed subdivision is located east of Ohuohu Street (see Exhibit 1).

Kanoelehua Avenue in the vicinity of the Prince Kuhio Plaza is a four-lane divided roadway, generally following a north-south orientation, with a posted speed limit of 35 miles per hour. Kanoelehua Avenue is one segment of State Highway 11, which begins in Hilo and terminates in Kailua-Kona, providing service to the south half of the island of Hawaii. Kanoelehua Avenue becomes Volcano Highway outside of Hilo; other segments of Highway 11 include portions of Hawaii Belt Road, Mamalahoa Highway, Kuakini Highway, and Queen Kaahumanu Highway. The intersections of Kanoelehua Avenue with Puainako Street and with Makaala Street are controlled by traffic signals.

At the approaches to the intersections with Puainako and Makaala Streets, left turn lanes are cut into the median of Kanoelehua Avenue, and separate phasing provides protected, i.e., unopposed, left turn movements into the side streets. Separate right turn lanes are provided for northbound traffic. Southbound right turns are made from the outside through lane; a large traffic island isolates most of the southbound right turns into Puainako Street from the effects of the traffic signal.

West of Kanoelehua Avenue, Puainako Street is a divided four-lane arterial street. Median openings provide access to the Puainako (commercial) Center and other roadways perpendicular to the street. The right turn movement from southbound Kanoelehua Avenue becomes the outside lane for westbound traffic. The Puainako Street eastbound lanes become a through-only and a right turn only lane at its approach to Kanoelehua Avenue; an eastbound left turn lane is added in the median. Farther west, beyond Kilauea Avenue, Puainako Street is a two-lane roadway.

East of Kanoelehua Avenue fronting the Prince Kuhio Plaza, Puainako Street is striped for one wide lane in each direction, separated by a median lane for left turns. The westbound approach to Kanoelehua Avenue includes separate lanes for left turns, through traffic, and right turns. East of Ohuohu Street to Railroad Avenue, Puainako Street is a divided four-lane roadway.

The traffic signal phasing for the Puainako Street approaches provide protected/permitted left turns. Most of the left turns movements are made during the protected phase, which leads, or occurs just before the opposing through movements. While left turns are permitted across gaps in the opposing traffic, field observations during the afternoon peak period indicate that very few left turns are made during the permitted phase because of the high volume of opposing through traffic. The signal was observed to operate at a variable cycle length, ranging from 110 to 135 seconds.

The north-south Ohuohu Street separates the proposed parking lot from the shopping center. Although wide enough for four lanes, it is striped for two lanes and presently serves very little traffic. Only a single driveway to the Prince Kuhio Plaza enters the street, as the property to the east is presently undeveloped. Stop signs control Ohuohu Street traffic at its intersections with Puainako and Makaala Streets.

Makaala Street east of Kanoelehua Avenue, while wide enough for four lanes, is generally striped for two lanes. A separate right turn lane is provided at the westbound approach to the signalized intersection with Kanoelehua Avenue. Left turns and through traffic share a single westbound lane. West of Kanoelehua Avenue, Makaala Street is a two-lane roadway providing local access in an industrial area. The eastbound approach to Kanoelehua Avenue is a single lane shared by all movements. A single side-street phase is provided for Makaala Street traffic.

The State Highways Division³ will be widening Kanoelehua Avenue by adding a third southbound lane between Kamehameha Avenue and Puainako Street. The project, scheduled for advertising to bidders in October 1993 and expected to be completed before 1995, will provide a separate lane exclusively for right turns at intersections. The plans call for maintaining two lanes for southbound through traffic. No other improvements to Kanoelehua Avenue are planned for the next ten years.

Exhibit 2 shows the traffic assignment (estimate) for future (1995) afternoon (PM) peak hour traffic volumes at the Kanoelehua Avenue intersections with Makaala and Puainako Streets. This estimate, from the 1991 DHHL traffic study, was based on manual counts taken in the field in October 1990 and a projected increase in traffic volumes of 21% over five years (annual rate of 3.8 percent per year, compounded).

3. Telephone conversation with Mr. Robert Taira, State Department of Transportation, Highways Division, Hawaii District Office, February 25, 1993.

Capacity analyses of the two intersections with Kanoelehua Avenue indicate that the projected base PM peak hour traffic demand (without the proposed project) at each intersection would exceed the available capacity, even with the additional southbound lane on Kanoelehua Avenue for right turns.

At the Makaala Street intersection, the side street phase would require a large portion of the signal's green time because the high volume of eastbound right turns shares a single lane with other eastbound traffic. Sufficient capacity would be provided by an additional lane on the eastbound approach (the existing two-lane west leg) for right turns only, as recommended in the earlier DHHL traffic study. With the added lane, the operational analysis showed an overall Level of Service C, with delays to side street and left turn lanes at LOS D. All lane groups had v/c ratios less than 1.00.

At the Puainako Street intersection, the 1995 base traffic estimate exceeds the capacity of the proposed intersection (existing lanes plus the separate southbound right turn lane). The addition of a second northbound left turn lane was identified using the Planning Analysis as an effective intersection improvement that could provide near-capacity conditions in the afternoon peak hour (this improvement may also benefit the morning peak hour, in which left turn volumes greater than 350 vehicles per hour were counted in 1990 for the DHHL traffic study and in 1992 for the County's Puainako Street DEIS⁴; these volumes exceed the 300 vehicles per hour guideline in the *Highway Capacity Manual* {p. 9-63} for considering a second left turn lane). With a second northbound left turn lane, overall intersection level of service would be LOS E, with several lane groups having average delays exceeding 60 seconds (LOS F). Volumes on several lane groups exceed the calculated capacity, indicating that significant portions of the yellow clearance intervals will be used.

Impact of Proposed Project

The proposed project, the subdivision of land for a parking lot, will by itself not affect traffic volumes. However, the subdivision is needed to facilitate the expansion of the Prince Kuhio Plaza, which can be expected to cause increased traffic in the area. This increase is considered to be the impact of the proposed subdivision.

The suggested procedure for estimating traffic volumes generated by shopping centers from *Trip Generation*⁵ was applied to the existing Prince Kuhio Plaza and to a future shopping center assuming completion of all of the planned increases in floor area. This conservative approach calculates the total driveway volumes by adding together the traffic generated by the main part of the shopping center and that generated by the peripheral buildings.

4. County of Hawaii Department of Public Works, *Draft Environmental Impact Statement, Puainako Street Extension and Widening*, December 1992. (Appendix G)
5. Institute of Transportation Engineers, *Trip Generation (5th Edition)*, 1991.

At Prince Kuhio Plaza, increases in the floor area in peripheral buildings are not planned; hence, the increase in driveway traffic is estimated by considering the increase in floor area in the main building(s), as shown below:

Traffic generated by shopping center, Average Weekday PM Peak Hour:

$$\ln(T) = 0.637 \ln(X) + 3.553 \quad \text{where } T = \text{Vehicle Trip ends}$$

$$X = 1,000 \text{ square feet gross area}$$

for proposed (481,772 GSF), T = 1,787 vehicles per hour

for existing (377,347 GSF), T = 1,529 vehicles per hour

Net increase = 258 vehicles per hour

Based on information presented in *Trip Generation*, 50% of the increase (129 vehicles per hour) would enter the site, and 50% would leave the site.

Pass-by traffic, which recognizes that some of the traffic attracted by a shopping center is diverted from nearby roadways and would be on the roads even without the shopping center, was also considered. Pass-by traffic is included in the driveway volumes but would not increase traffic volumes in the area. The additional pass-by traffic was estimated to be 33 vehicles per hour. The net effect of pass-by traffic would be to decrease volumes on some movements at nearby intersections that may appear to not be affected by the project.

The additional traffic from the shopping center expansion was distributed using the total traffic counted during the afternoon peak period (3:00 PM to 6:00 PM) in 1990 as part of the earlier DHHL traffic study. Table 1 shows the trip distribution used. Exhibit 3 shows the net impact of the project traffic.

Table 1
TRIP DISTRIBUTION

from/to:	South	West	North
Entering traffic	14%	45%	41%
Exiting traffic	27%	38%	35%

The project traffic assignment in Exhibit 3 was added to the volumes in Exhibit 2 to derive an estimate of future traffic with the proposed increase in floor area at the Prince Kuhio Plaza, shown in Exhibit 4. In each case, optimal signal operation was assumed by changing the signal timing to minimize the average delay in the Operational Analysis of the signal operation. At both the Makaala and the Puainako Streets intersections with Kanoelehua Avenue, the analyses show critical movements increasing about 3% and average intersection delays increasing about 10%. At the Makaala Street intersection, overall level of service changes from a borderline LOS C/D to LOS D.

At the Kanoelehua Avenue/Puainako Street intersection, average delay remains in the LOS E range. If the westbound Puainako Street approach is widened (Figure 5) to allow through movements in the existing right turn lane, and the signal operation for Puainako Street movements is split (all eastbound movements will use one phase, while all westbound movements would use a separate phase), the sum of the critical movements and the average delay would each be only about 1% greater than the base (without project) case.

Reevaluation of Intersection of Kanoelehua Avenue and Puainako Street

Since peak hour conditions at the Kanoelehua Avenue and Puainako Street intersection were found to be unacceptable using the traffic projections from the 1991 DHHL traffic study, and traffic counts taken in May and June of 1992 at the intersection indicate that traffic volumes have not increased (Table 2), a revised estimate of 1995 PM Peak Hour traffic was made. A growth rate of 2.88% of existing traffic per year, based on the estimates used in the State's widening project⁶ for 1992 and 2012 average daily traffic, was applied to the turning movement counts taken in May 1992 for the revised assignments shown in Exhibit 6.

Table 2
TRAFFIC COUNTS

Kanoelehua Avenue At Puainako Street

	October 1990 *	May 1992 **	June 1992 ***
PM Peak Hour approaches			
North leg (Kanoelehua Avenue southbound)	1,582	1,412	1,311
West leg (Puainako Street eastbound)	759	784	739
South leg (Kanoelehua Avenue northbound)	755	750	852
East leg (Puainako Street westbound)	585	710	591
Total PM Peak Hour approaches	3,681	3,656	3,493
Other data (total of approaches):			
24-hour (June 16-17, 1992)	---	---	42,639
AM Peak Hour (7:00-8:00 AM)	2,827	2,910	2,571

Sources:

* Parsons Brinckerhoff Quade and Douglas, Inc., *Panaewa Commercial Lots Traffic Impact Study (Draft)*, November 1991.

** County of Hawaii Department of Public Works, *Draft Environmental Impact Statement, Puainako Street Extension and Widening*, December 1992. (Appendix G)

*** State of Hawaii, Department of Transportation, Highways Division, *Traffic Survey Data (Individual Stations) - Island of Hawaii 1992*. Station 18-G.

6. State Department of Transportation, Highways Division, FAP Project # NH-011-2(24)

Analyses of this revised traffic assignment show near capacity conditions for the proposed intersection with a single northbound left turn lane and average delays in the LOS D range. With the addition of the traffic from the proposed expansion, the critical volume sum increases 6%, but the operational analysis shows average delay remaining the same if the signal cycle is increased from 120 to 150 seconds.

The physical changes described above for the westbound Puainako Street approach would have a smaller impact to conditions with this revised traffic assignment because of different ratios of turning movements. Based on the revised assignment, a left turn only lane, a left turn/through option lane, and a through/right turn option lane would be the most efficient use of the three approach lanes.

Summary of Analyses Findings

The analyses using the traffic projections from the 1991 DHHL traffic study indicate that additional turning lanes, shown with light shading in Exhibit 5, will be needed without any expansion of the Prince Kuhio Plaza. Increased traffic from the proposed expansion would minimally affect conditions; an additional lane on the westbound approach of Puainako Street, shown with heavier shading in Exhibit 5, and a change in the signal phasing would bring with-expansion conditions closer to without-expansion conditions. Similar impacts at the Puainako Street intersection were found with a revised traffic projection. Table 3 shows a summary of the analyses findings.

Table 3
INTERSECTION ANALYSES RESULTS

	Sum, Crit. Movements	Operational Analysis	
		Overall LOS	Avg. Delay
KANOELEHUA AVENUE AND MAKAAALA STREET *			
Base condition without expansion	901	C/D	24.76
With expansion of Prince Kuhio Plaza	926	D	27.32
KANOELEHUA AVENUE AND PUAINAKO STREET			
Traffic based on 1990 counts (from 1991 traffic study) **			
Base condition without expansion	1,323	E	48.48
With expansion of Prince Kuhio Plaza	1,367	E	53.12
With expansion and roadway modification	1,340	E	48.94
Revised traffic projection based on 1992 counts			
Base condition without expansion	1,320	D	39.50
With expansion of Prince Kuhio Plaza	1,399	D	39.34
With expansion and roadway modification	1,370	D	38.50

* separate right turn lane provided on eastbound Makaala Street

** second northbound left turn lane provided on Kanoelehua Avenue

Conclusions and Recommendations

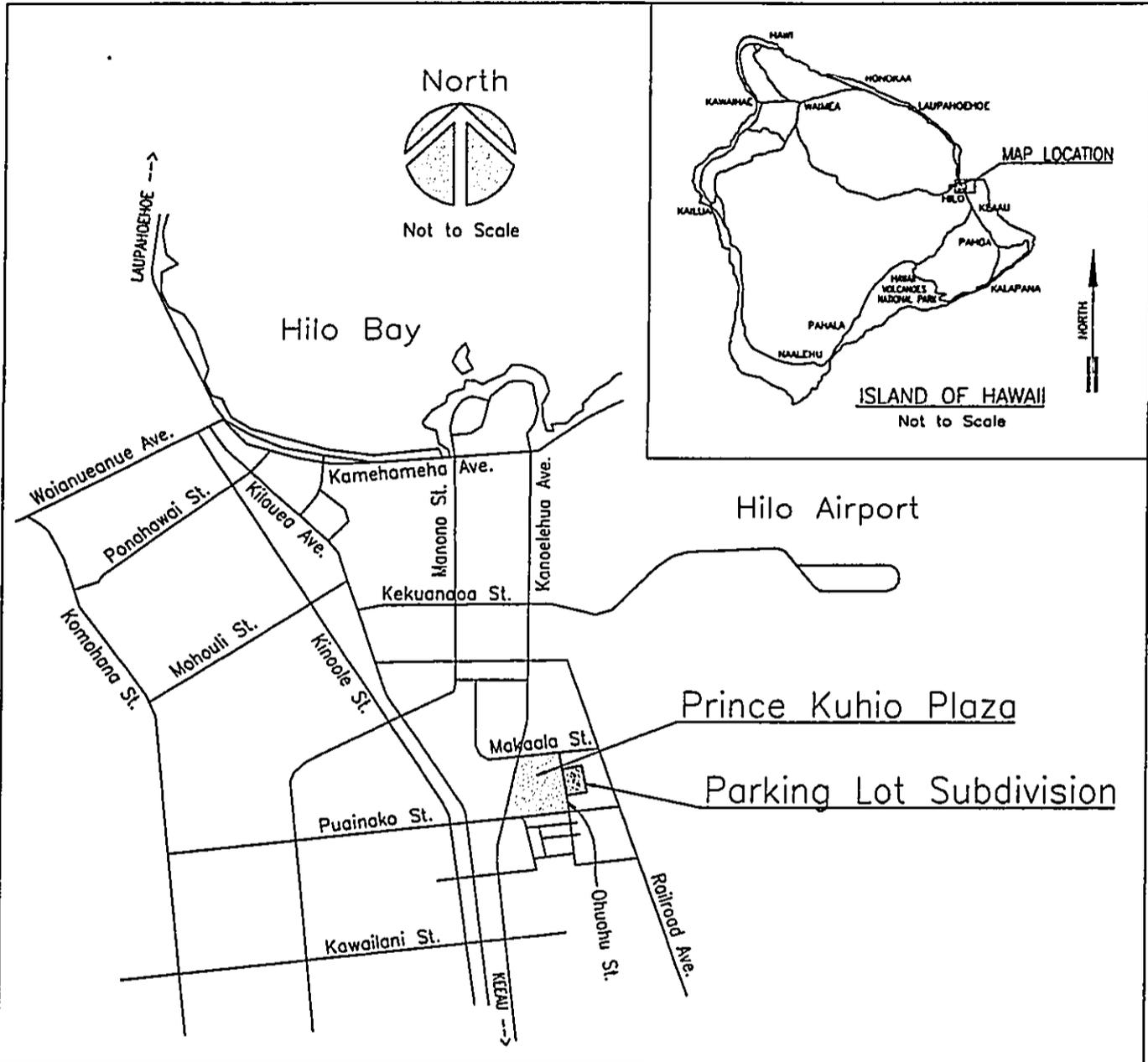
Traffic volumes for a 1995 base case (no specific project in the vicinity) afternoon peak hour from a 1991 traffic study prepared for DHHL were used to assess the impact of additional traffic from a proposed expansion of the Prince Kuhio Plaza. The capacity analyses found that, without the increased traffic due to the proposed expansion, volumes would exceed the capacities of the intersections, despite the addition of a southbound lane on Kanoelehua Avenue that is planned by the State Highways Division.

At the Kanoelehua Avenue intersection with Makaala Street, an additional eastbound lane on Makaala Street approaching Kanoelehua Avenue should be provided for right turns onto southbound Kanoelehua Avenue, as recommended in the earlier traffic study for DHHL. At the Puainako Street intersection, an additional northbound left turn lane would be necessary. These improvements would provide the added capacity to accommodate the increases (about 21% over existing) in traffic volumes that have been projected without the proposed expansion of the Prince Kuhio Plaza.

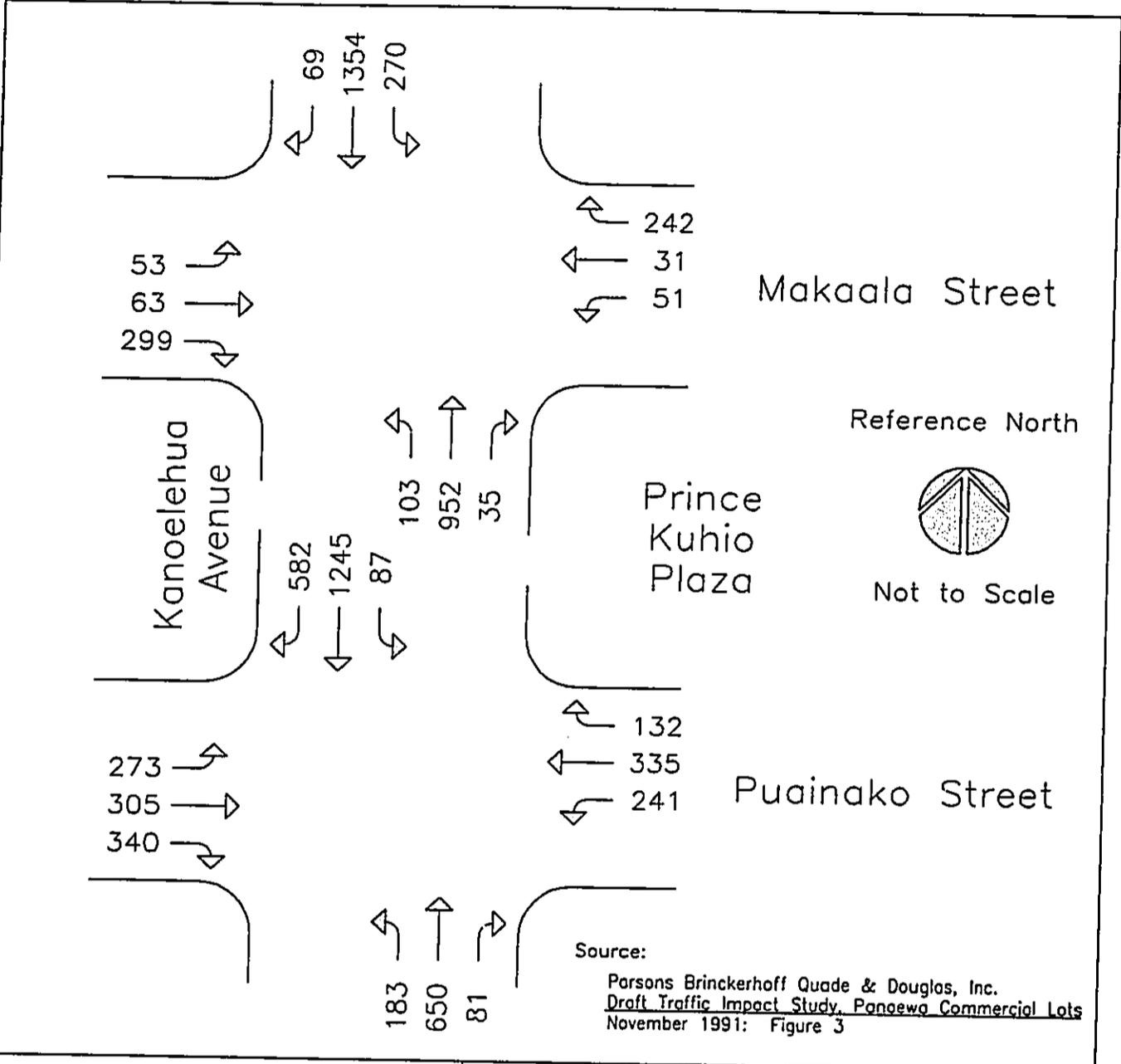
With the additional traffic due to the proposed expansion of Prince Kuhio Plaza, critical movements and average delays at the signalized intersections would increase by 3% at Makaala Street and 6% at Puainako Street. At the Makaala Street intersection, LOS D conditions were found. At the Puainako Street intersection, the LOS E conditions would remain unchanged with the addition of project traffic; the slight increase in average delays could be lessened with a change to the signal phasing and widening of the westbound approach to allow through traffic crossing Kanoelehua Avenue to use a second lane.

However, traffic counts taken in May and June 1992 show that the growth in traffic volumes at the Puainako Street intersection that were projected in the 1991 traffic study for DHHL has not occurred. The traffic assignment for this intersection was redone using the growth rate from the State Highways Division's widening project and conditions were reevaluated; at the lower 2.88% annual growth, the second northbound left turn lane would not be needed and the 1995 PM Peak Hour conditions at the intersection would be acceptable at LOS D, without or with the traffic due to the proposed expansion of the Prince Kuhio Plaza.

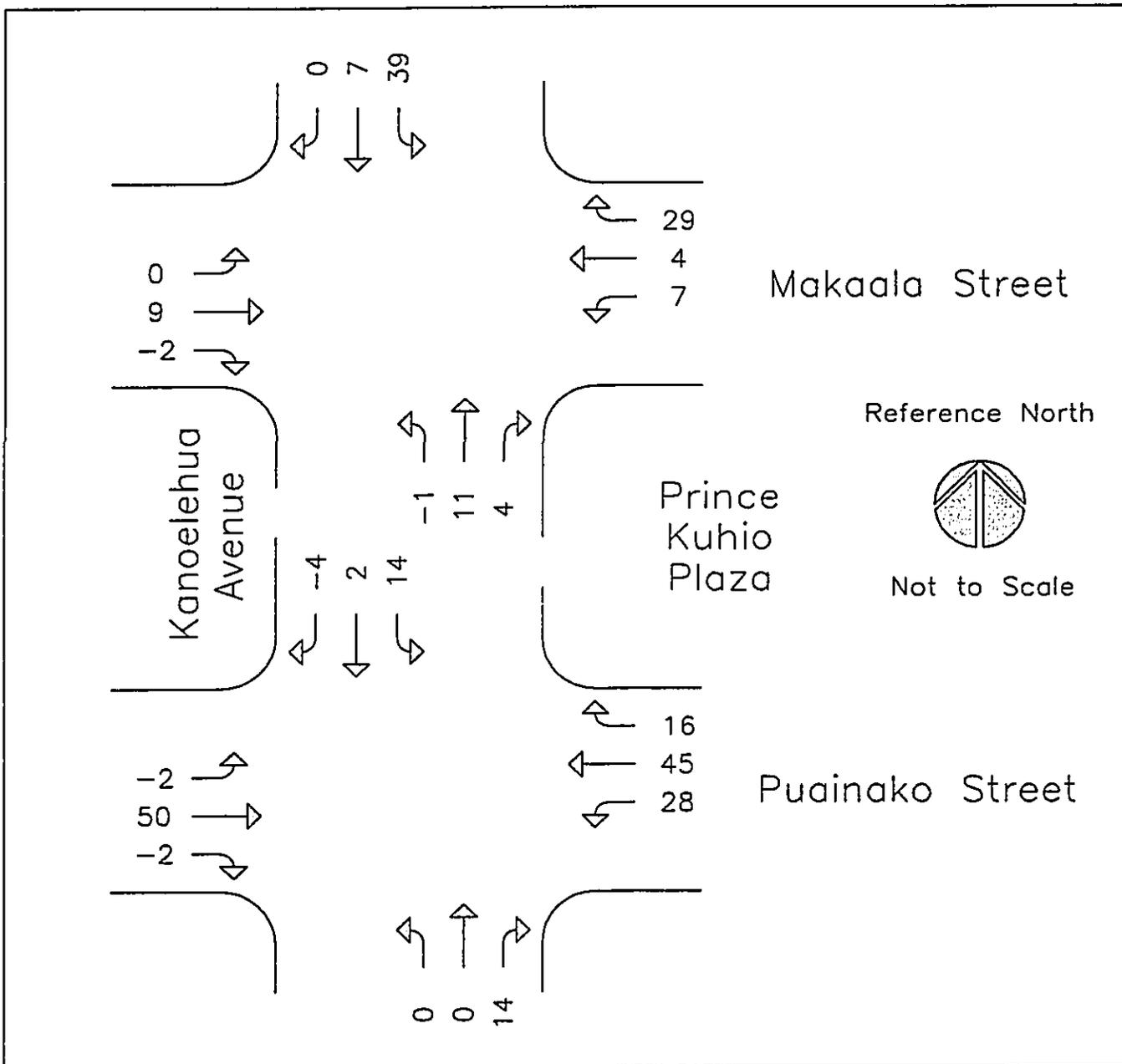
A separate right turn lane from eastbound Makaala Street to Kanoelehua Avenue and a second left turn lane from northbound Kanoelehua Avenue to Puainako Street should be considered to address existing and future traffic demands even without the proposed expansion of the Prince Kuhio Plaza. With the additional traffic from the proposed expansion, intersection improvements at Puainako Street and Kanoelehua Avenue, to allow westbound through movements from the existing right turn only lane, along with changes to the signal phasing, should be considered.



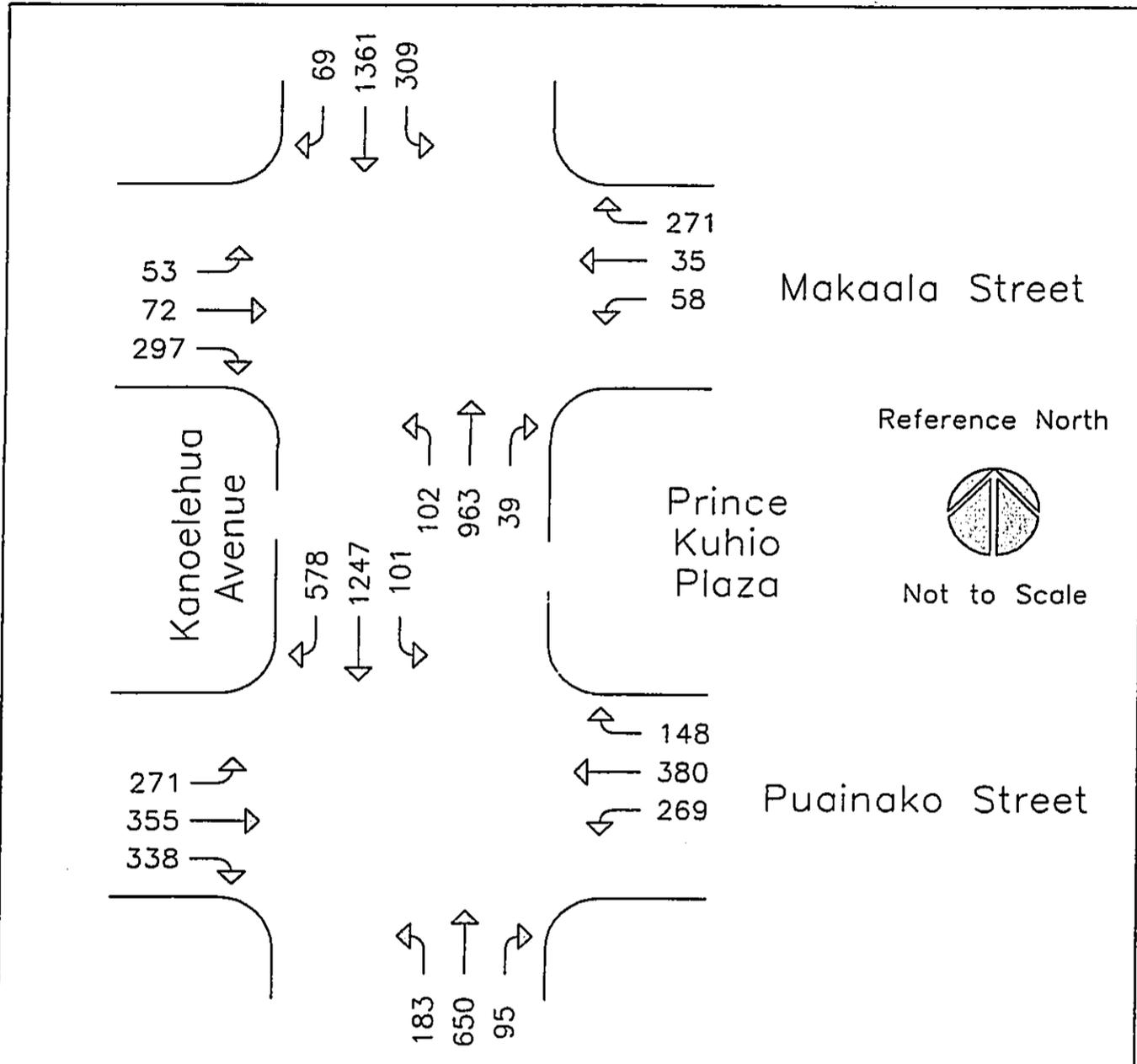
<u>Traffic Assessment</u> Prince Kuhio Plaza Parking Lot Subdivision	Location Map Hilo, Hawaii	Exhibit 1
	prepared by: Julian Ng, Inc. March 1993	



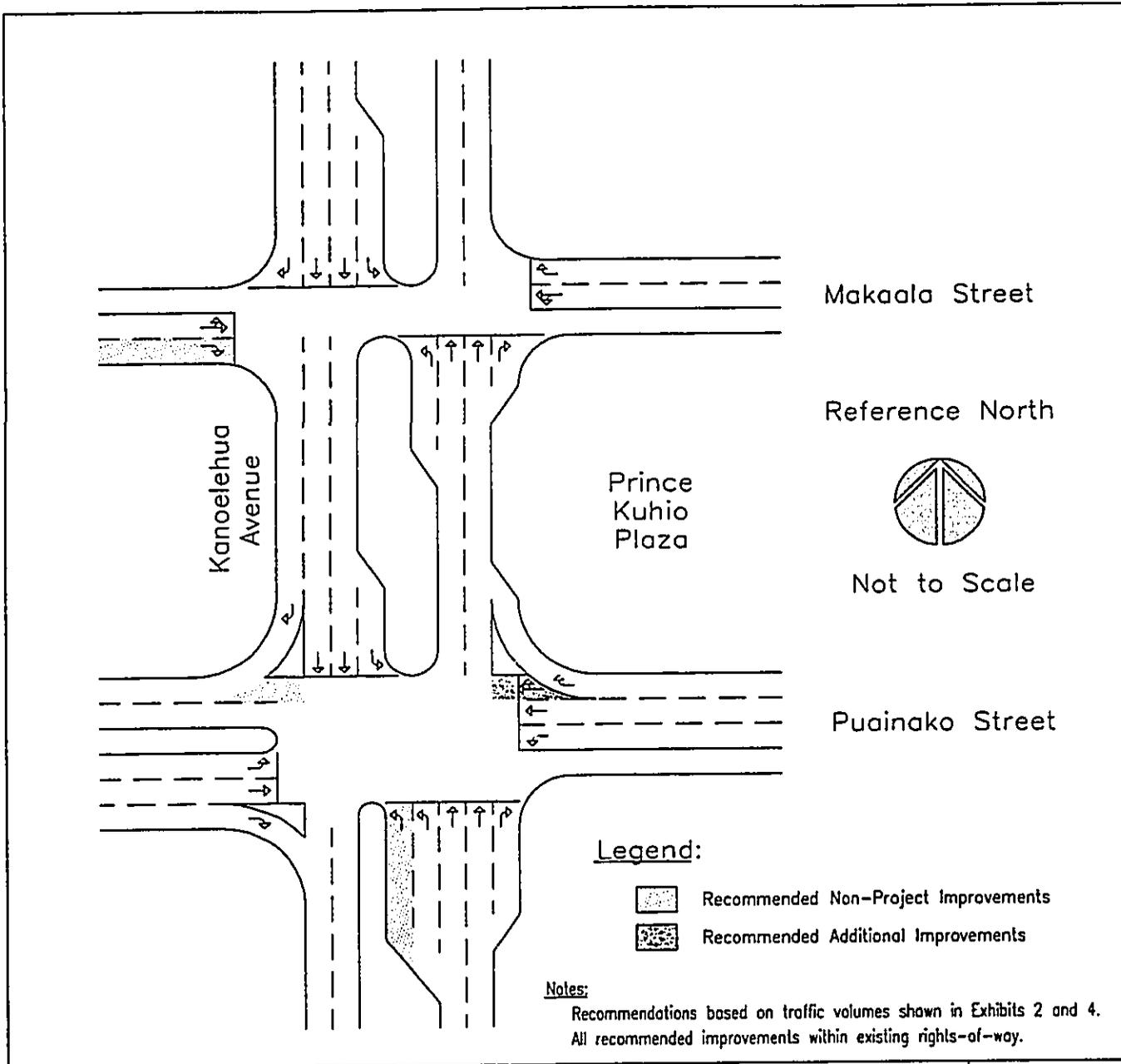
Traffic Assessment Prince Kuhio Plaza Parking Lot Subdivision	Traffic Assignment 1995 without project	Exhibit 2
	prepared by: Julian Ng, Inc.	



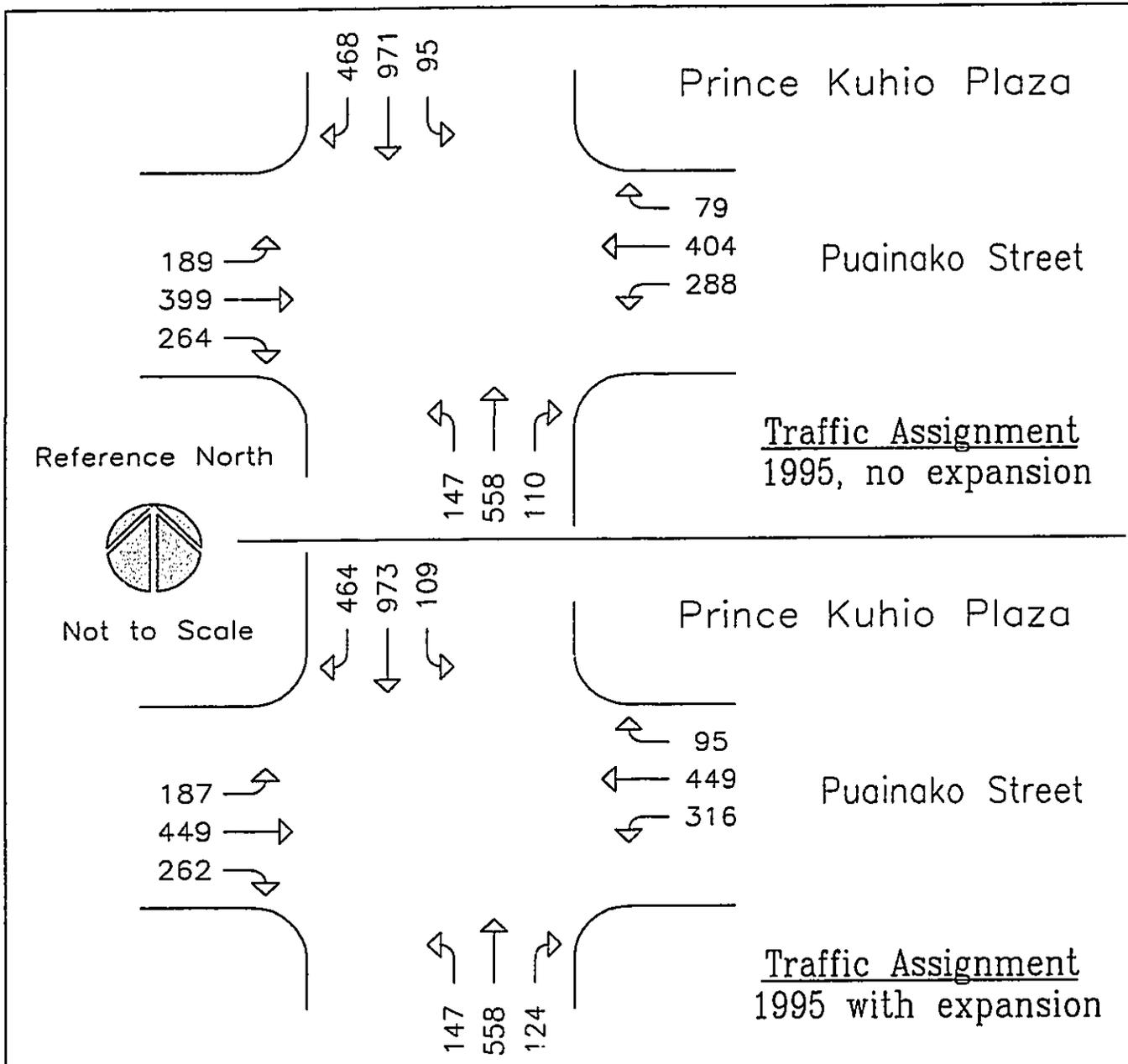
<u>Traffic Assessment</u> Prince Kuhio Plaza Parking Lot Subdivision	Traffic Assignment Net Project Impact	Exhibit 3
	prepared by: Julian Ng, Inc. March 1993	



<u>Traffic Assessment</u> Prince Kuhio Plaza Parking Lot Subdivision	Traffic Assignment 1995 with project	Exhibit 4
	prepared by: Julian Ng, Inc. March 1993	



<p>Traffic Assessment Prince Kuhio Plaza Parking Lot Subdivision</p>	<p>Laneage Schematic Kanoelehua Avenue</p>	<p>Exhibit 5</p>
<p>prepared by: Julian Ng, Inc. March 1993</p>		



Traffic Assessment
 Prince Kuhio Plaza
 Parking Lot Subdivision

Kanoelehua Avenue
 & Puainako Street

prepared by: Julian Ng, Inc.

March 1993

Exhibit
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