Stephen K. Yamashiro
Mayor

Virginia Goldstein
Director

Norman Olesen
Deputy Director

County of Hawaii

PLANNING DEPARTMENT

25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252
(808) 961-8288 • Fax (808) 961-9615

December 23, 1996

Mr. Gary Gill, Director
Office of Environmental Quality Control
State Office Tower
235 S. Beretania Street, Room 702
Honolulu, HI 96813-2437

Dear Mr. Gill:

Subject: **Final EIS-- Big Island Candies Retail and Production Facility**
Waiakea, South Hilo District, Hawaii
Tax Map Key: 2-2-34:67, 68, 69, 76, 77, 104, 106

Enclosed are the following:

- Four (4) copies of the Final Environmental Impact Statement for the subject project;
- OEQC Publication Form;
- Final EIS Distribution Cover Letter;
- Final EIS Distribution List;
- Acceptance notification and report.

Please publish notice of the acceptance of the Final EIS in the January 8, 1997, OEQC Environmental Notice.

Please contact Alice Kawaha at 961-8288 if you have any questions.

Sincerely,

VIRGINIA GOLDSTEIN
Planning Director

SG:pak
F:\WPWIN60\SUSAN\LBICGO01.EIS

Enclosures

cc: Sidney Fuke & Associates
Mr. Roy Takemoto

December 23, 1996

FINAL ENVIRONMENTAL IMPACT STATEMENT ACCEPTANCE REPORT

PROJECT: Big Island Candies Retail and Production Facility

APPLICANT: Big Island Candies, Inc.

LOCATION: Waiakea, South Hilo District, Hawaii

TMK: Tax Map Key: 2-2-34:67, 68, 69, 76, 77, 104, 106

I. BACKGROUND

Big Island Candies, Inc. (BIC), a Hawaii corporation, will seek a General Plan amendment from Low Density Urban to High Density Urban and rezoning from Residential (RS-10) to General Commercial (CG-20) for approximately 3.34 acres. The proposed site is between Hinano and Laukapu Streets makai of Kekuanaoa Street near the airport. BIC proposes to construct a 2-story building for retail, production, office, storage, and employee facilities. The proposed facilities will be scaled to fit the residential character of the surrounding area with lush landscaping especially along the perimeter of the site. BIC's present location is too small to allow for expansion, the layout is inefficient, and traffic egress is often difficult.

The existing uses on the proposed site include commercial establishments (architectural office and plant nursery), two residences, and remnants of a former commercial visitor establishment, Orchids of Hawaii, including greenhouses and a garden. The garden and greenhouses will be incorporated into the proposed site plan.

Since the site has been entirely previously disturbed, there are no concerns related to endangered species or archaeology. The site is not located in a flood hazard zone. Mitigation measures have been incorporated into the project to address concerns with tour bus noise and traffic.

II. PROCEDURE

A. The Notice of Availability of the Environmental Impact Statement Preparation Notice (EISPN) for this project was published in the July 23, 1996 "OEQC Environmental Notice".

B. The 30-day consultation period for this project expired on August 22, 1996. During this period 8 letters were received which offered comments. The substantive comment letters as well as the responses to them are included in the Final EIS.

C. The Notice of Availability of the Draft EIS for this project was published in the October 8, 1996 "OEQC Environmental Notice."

D. The 45-day review period for this project ended on November 22, 1996. The Applicant responded to 5 letters of comment. These letters and the responses are included in the Final EIS.

E. The Notice of Availability of the Final EIS for this project will be published in the December 23, 1996 "OEQC Environmental Notice."

III. ENVIRONMENTAL IMPACT STATEMENT CONTENT

The Final EIS consists of one volume. As required, this document contains:

1. Summary sheet
2. Table of contents
3. Statement of purpose and need for action
4. Project description
5. Discussion of known alternatives to the proposed action
6. Description of the environmental setting
7. A statement of the proposed actions' relationship to the land use plans, policies, and controls for the affected area
8. A statement of probable impact on the environment
9. Relationship between local short-term uses and enhancement of long-term productivity
10. Discloses all irreversible and irretrievable commitments of resources
11. Addresses all probable unavoidable adverse environmental effects
12. Description of mitigation measures to minimize impacts
13. A summary of unresolved issues
14. A list of organizations and individuals consulted in preparation of the Environmental Impact Statement
15. Reproductions of all substantive comments and responses made during the Environmental Impact Statement review period

The County of Hawaii Planning Department, as the Approving Agency, has determined that the *content* requirements of the Environmental Impact Statement, as specified in Section 11-200-17 of the Environmental Impact Statement Rules, have been met.

IV. RESPONSES TO COMMENTS

The Applicant has responded to all substantive comments made during the review period of the Draft Environmental Impact Statement. Copies of the substantive comments and responses are included in the Final EIS.

The County of Hawaii Planning Department, as the Approving Agency, has determined that this Environmental Impact Statement has fulfilled the *public review* requirement of Chapter 200 of Title 11, Administrative Rules, Environmental Impact Statement Rules.

V. UNRESOLVED ISSUES

None.

I. SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

After this Final Environmental Impact Statement for the subject project is accepted, a supplemental environmental impact statement shall be prepared if there is a major or substantial change to the proposed project, or if new or different environmental impacts are anticipated.

Any supplemental environmental impact statement shall be reviewed in accordance with Chapter 343, Hawaii Revised Statutes, and Chapter 200 of Title 11, Hawaii Administrative Rules, Environmental Impact Statement Rules.

II. DETERMINATION

The Planning Department, as the Approving Agency, hereby determines this Final Environmental Impact Statement for the subject project to be acceptable under the procedures established in Chapter 343, Hawaii Revised Statutes.

VIRGINIA GOLDSTEIN
Planning Director

Dec 1996 FEIS
Big Island Candies

JAN 8 1997

Final Environmental Impact Statement

Big Island Candies Retail & Production Facility

Waiakea, South Hilo District, Hawaii
TMK: 3rd 2-2-34:67, 68, 69, 76, 77, 104, 106

Prepared for: Big Island Candies, Inc.
Prepared by: Roy R. Takemoto
Land Use Consultant

December 1996

Final Environmental Impact Statement

BIG ISLAND CANDIES RETAIL AND PRODUCTION FACILITY

Waiakea, South Hilo District, Hawaii
TMK: 3rd 2-2-34:67, 68, 69, 76, 77, 104, 106

Prepared for:
Big Island Candies, Inc.

Prepared by:
Roy R. Takemoto
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721

This document has been prepared pursuant to *Hawaii Revised Statutes* Chapter 343 and *Hawaii Administrative Rules* Chapter 11-200.

Roy R. Takemoto
Date: 12/6/96

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SUMMARY

Applicant and Approving Agency

Applicant

Big Island Candies, Inc. ("BIC"), a Hawaii corporation, proposes to construct a facility for its retail and production operations. The need for a General Plan amendment triggers the environmental review requirements under *Hawaii Revised Statutes* Chapter 343.

Approving Agency

Since the County of Hawaii Planning Department reviews the petitions for General Plan amendment, the Planning Department is the approving agency who will review the acceptability of this EIS.

Location and Ownership

Location

The project site is located at Waiakea Homesteads, South Hilo District, island and county of Hawaii. The Site is within the block bounded by Kekuanaoa-Hinano-Hualani-Laukapu Streets. The 3.34-acre Site consists of seven parcels: TMK 3/2-2-34: 67, 68, 69, 76, 77, 104 & 106.

Ownership

Allan K. and Irma K. Ikawa have an agreement to purchase these parcels from the Shigeru K. Oda Trust, and would lease the parcels to BIC.

Project Description

The existing Big Island Candies facilities are located on Kalanianaole Street in an industrial area on the way to Hilo Harbor. Besides the unattractiveness and low visibility, this location is too small to allow for expansion, the layout is inefficient, and traffic egress is often difficult.

Conceptual Plan

Visitor and service access will be from Hinano Street. Access from Laukapu Street will be limited to employee parking. The main building, a two-story structure, will have retail at the ground level. The second floor will be used for office, storage, and employee facilities including a fitness room. A courtyard and covered walkway will connect the main building to an auxiliary retail wing. Visitors will be able to leisurely roam through the greenhouses and gardens, or relax in the covered pavilion that overlooks the gardens.

Proposed Operations

Normal hours for production operations will be from 7:30 a.m. to 4:00 p.m. Monday through Friday, with possible exceptions during peak holiday periods. Retail operations will be from 8:30 a.m. to 5:00 p.m. seven days a week.

Timetable and Cost

The estimated construction start is mid-1997, with completion a year later in mid-1998. The estimated construction cost is $2,000,000.

Environmental Setting

Climate

The elevation of the Site is approximately 20' above mean sea level. The mean annual rainfall is about 136". Wind patterns are diurnal-- dominant easterly tradewinds prevail during the day, while in the evening cooler westerly winds sweep down the slopes of Mauna Loa and Mauna Kea.

Topography and Soils

The topography of the Site is relatively flat. The soil classification is Keaukaha Series (rKFD), which is extremely rocky muck, well-drained, thin (<1') organic soils overlying pahoehoe lava bedrock. Runoff is medium, erosion hazard slight, and shrink-swell potential high (although these soils are usually moist, when dried they have high shrinkage but low swelling potential).

Natural Hazards

The Site is not in any natural hazard zone. The Flood Insurance Rate Map designates the Site in Zone X. The Site is also outside the Civil Defense Tsunami Evacuation Zone. The Site is in lava flow hazard zone 3.

Flora/Fauna

The Site does not contain any endangered or threatened species. The Site has been used for commercial and residential purposes; the only vegetation on the Site are introduced landscaping plants.

Historic/Cultural/ Archaeological Resources

Because the entire Site had been previously disturbed, any surface or subsurface archaeological remains are unlikely. The existing structures on or near the Site are not historically significant.

Water Resources

There are no streams or defined water courses within the Site.

Noise

Because of the Site's proximity to a major roadway (Kekuanaoa Street), the ambient noise level from the traffic is quite high (equals or exceeds 65 L_{dn}). The Site is also subject to aircraft noise due to its proximity to the airport. The average day/night noise level from aircrafts in the vicinity of the Site is approximately 60L_{dn}.

Socio-economic Characteristics

Based on real property tax records, less than half of the 57 lots in the immediate vicinity of the Site are still owner-occupied. Of the owner-occupied lots, 92% are elderly. Several owner-occupants residing closest to the Site were interviewed. None of them opposed the project. A spot-check of real property tax records indicates that property tax assessed values for parcels used for single-family residences located immediately adjacent to commercially-zoned areas, as well as single-family residences located within the commercial zoning district, had the same tax assessed value as a single-family residence parcel in the interior blocks surrounded entirely by other single-family residential uses.

Infrastructure and Public Facilities

Kekuanaoa Street is a two-lane County collector road. Hinano Street is a two-lane County roadway with a 40' wide right-of-way (with planned street widening to 50' in accordance with the City of Hilo Zoning Map). Approximately 160 cars, 40 vans, and 13 buses can be expected to visit the project during an average retail day. This projected volume will not affect the level of service of the Kekuanaoa intersections at Hinano and Manono Streets. The turning radius of tour buses will cause buses to encroach on the opposing traffic lanes when making right turns from Kekuanaoa to Hinano Street and from Hinano to Kekuanaoa Street. There are adequate capacity of water and wastewater facilities in the area to accommodate the project.

Impacts and Mitigation

The potential impacts and proposed mitigation measures are summarized in the following table. The mitigation measures have been sorted according to when the mitigation measure should be implemented-- i.e., during the design or construction phase, during the operational phase, or in the process of permit compliance.

Mitigation Measures Related to Design/Construction (Monitored at Plan Approval)

Impacts/Concerns	Suggested Mitigation Measures	Consultant	EIS §
Noise impact from onsite vehicular traffic on neighbors	Design dense perimeter landscaping, especially around parking lots.	Landscape Architect	§3.1.7
Scenic character of existing large trees, especially along Hinano Street	Incorporate the trees into the landscaping plan to the extent feasible.	Landscape Architect	§3.1.4
Design compatibility with surrounding residences	Design low-scale, residential character buildings	Architect	§3.1.8
Narrow width of Hinano Street to accommodate buses	Expand pavement width to 20' from Kekuanaoa/Hinano intersection to project entrance (approx. 400') in accordance with County requirements; provide additional 5' along Site's Hinano Street frontage for street widening purposes.	Civil engineer	§3.3.1
Tight turning radius for bus right turns from Kekuanaoa to Hinano Street	Expand the curve radius to the extent possible within the existing right-of-way in accordance with *County requirements.*	Civil engineer	§3.3.1
Construction noise	Specify in the construction documents compliance with standards in the Community Noise Control regulations (HAR 11-46).	Architect/ Contractor	§3.1.7
Solid waste management	Prepare solid waste management plan.	Civil engineer	§3.3.7
Onsite containment of development-generated runoff	Provide drainage improvements in accordance with County requirments (e.g. drywells).	Civil engineer	§3.3.4

Mitigation Measures Related to Operations (Monitored by Applicant)

Impacts/Concerns	Suggested Mitigation Measures	EIS §
Bus noise and narrow width of interior streets	Instruct bus drivers to access Site from Kekuanaoa Street and restrict driving through neighborhood	§3.1.7 §3.3.1
Onsite bus noise	Instruct bus drivers to turn off engines and not to idle while waiting for passengers.	§3.1.7
Right-turn swing of buses into opposing lane	Advise bus drivers to exercise caution when making right turns from Kekuanaoa to Hinano Street; encourage left turns from Hinano to Kekuanaoa Street.	§3.3.1

Mitigation Measures Related to Permit Compliance (Monitored by Respective Approving Agency)

Impacts/Concerns	Suggested Mitigation Measures	EIS §
Dust and sedimentation during construction	Grading Permit (Department of Public Works)	§3.1.2
Impact on groundwater from dry-well injection	Underground Injection Control Permit (Department of Health)	§3.3.4

Alternatives

The following alternatives were considered:

- *No Project.* Nonconforming commercial uses would continue to use the Site. An opportunity to diversify the neighborhood activities with a compatible non-residential use would be foreclosed.
- *Alternative Commercially-Zoned Site.* This is not a feasible alternative. There are no existing commercially-zoned properties that meet the area, accessibility, and aesthetic requirements of the project.
- *Alternative Design.* The proposed low-scale design already fits the surrounding residential character.

The advantages with the proposed project outweigh the trade-offs involved with the above alternatives.

Relationship to Land Use Plans, Policies, and Controls

State Land Use Classification	Urban
County General Plan	Low Density Urban. Requires amendment to High Density Urban.
County Zoning	Residential (RS-10). Requires rezoning to General Commercial (CG-20).
Special Management Area (SMA)	Not in the SMA.
Other Permits	The project will have to comply with the Americans with Disabilities Act. Other applicable permits and approvals include: plan approval, grading permit,

building permit, driveway permit, construction within the County right-of-way, Underground Injection Control permit (for drywells), and sign permit.

Unresolved Issues

No unresolved issues.

CHAPTER 1

INTRODUCTION

1.1 APPLICANT

The Applicant, Big Island Candies, Inc. ("BIC"), a Hawaii corporation, proposes to construct a facility for its retail and production operations. BIC will relocate to the proposed facility from its current location in the Kalaniaanole Industrial Area. BIC retails deluxe cookies, baked products, and candies to visitors and island residents.

1.2 PURPOSE OF THIS DOCUMENT

The need for a General Plan amendment triggers the environmental review requirements under *Hawaii Revised Statutes* Chapter 343.[1] The approving agency who reviews the acceptability of the EIS is the County of Hawaii Planning Department.

This document has been compiled from published and unpublished studies, field investigations, and input from various agencies and the community. Technical studies conducted specifically for this project are included as appendices to this EIS.

The EIS process consists of the following steps:

1. *Hawaii Revised Statutes* §343-5(a)(6).

1. *EIS Preparation Notice and Consultation Period.* During this initial phase of the EIS process, the EIS consultant prepared a summary document consisting of preliminary information describing the project and environs. Availability of this document, called the EIS Preparation Notice, was published in the July 23, 1996 *OEQC Environmental Notice* and mailed to various organizations to notify interested persons that an EIS was being prepared for this project. Publication in the Bulletin commenced a 30-day Consultation Period to receive comments that ended on August 22, 1996. The comments assisted in identifying the major issues that should be addressed in the EIS.
2. *Draft EIS.* The Draft EIS compiled pertinent information on the project. It described the proposed action, existing conditions, issues, and possible solutions (mitigation measures) or alternatives to resolve the issues. Availability of the Draft EIS was published in the October 8, 1996 *OEQC Environmental Notice.*
3. *Public Review Period.* Publication in the *OEQC Environmental Notice* commenced a 45-day Review Period to receive comments that ended on November 22, 1996. The objective during this review period is to clarify, correct inaccuracies, and/or provide additional pertinent information.
4. *Final EIS.* The Final EIS incorporates the comments made during the review period. As a comprehensive record of information and concerns, the EIS serves as an important decisionmaking reference.

CHAPTER 2

DESCRIPTION OF PROPOSED ACTION

2.1 LOCATION AND OWNERSHIP

The project site consists of seven parcels (TMK 3/2-2-34: 67, 68, 69, 76, 77, 104 & 106) totaling approximately 3.34 acres located in Waiakea, South Hilo District, island and county of Hawaii (see Figure 1, "Vicinity Map," on page 2-2, Figure 2, "Location Map," on page 2-3, and Figure 3, "Tax Map," on page 2-4) ("Site"). The Site is located between Hinano and Laukapu Streets on the *makai* (northern) side of Kekuanaoa Street. Allan K. and Irma K. Ikawa have an agreement to purchase these parcels from the Shigeru K. Oda Trust, and would lease the parcels to BIC.

2.2 EXISTING USES

Site. Although zoned Residential (RS-10), the current use of the Site includes nonconforming commercial uses (architectural office and plant nursery). Previously, the Site was used for a floricultural business oriented to the visitor industry called Orchids of Hawaii. Visitors came on buses and cars. Remnants of the former floricultural business still remain on the Site, such as a garden and greenhouses, and will be refurbished as part of the proposed site plan. There are also two rented residences on the Site which will be demolished due to their poor condition.

Surrounding Areas. The surrounding uses adjacent to the Site are residences and a church. There are also several non-residential uses in the vicinity including a credit union, restaurant, offices, stores, and other business uses (see Figure 4 on page 2-5).

FIGURE 1. Vicinity Map

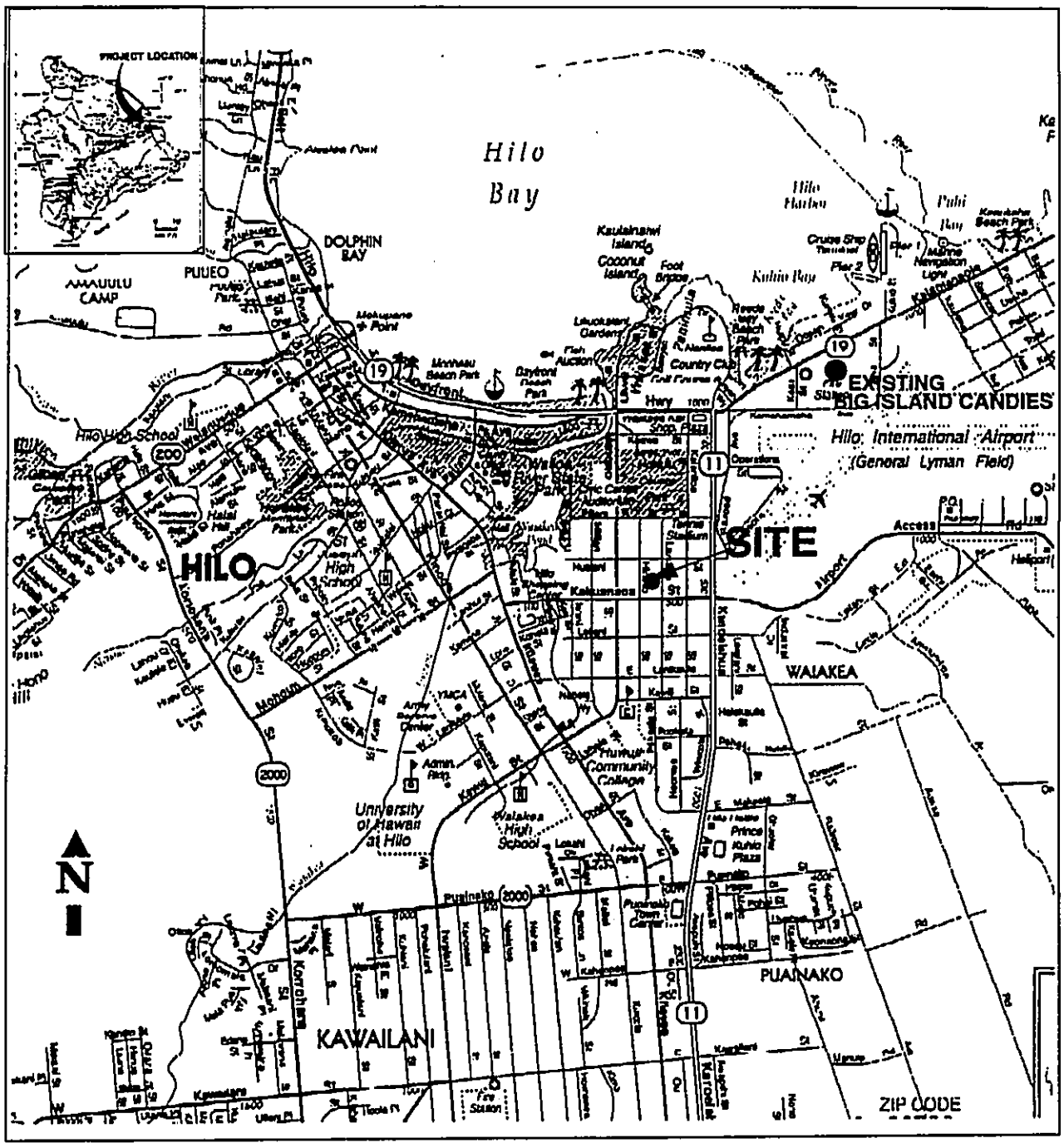


FIGURE 2. Location Map

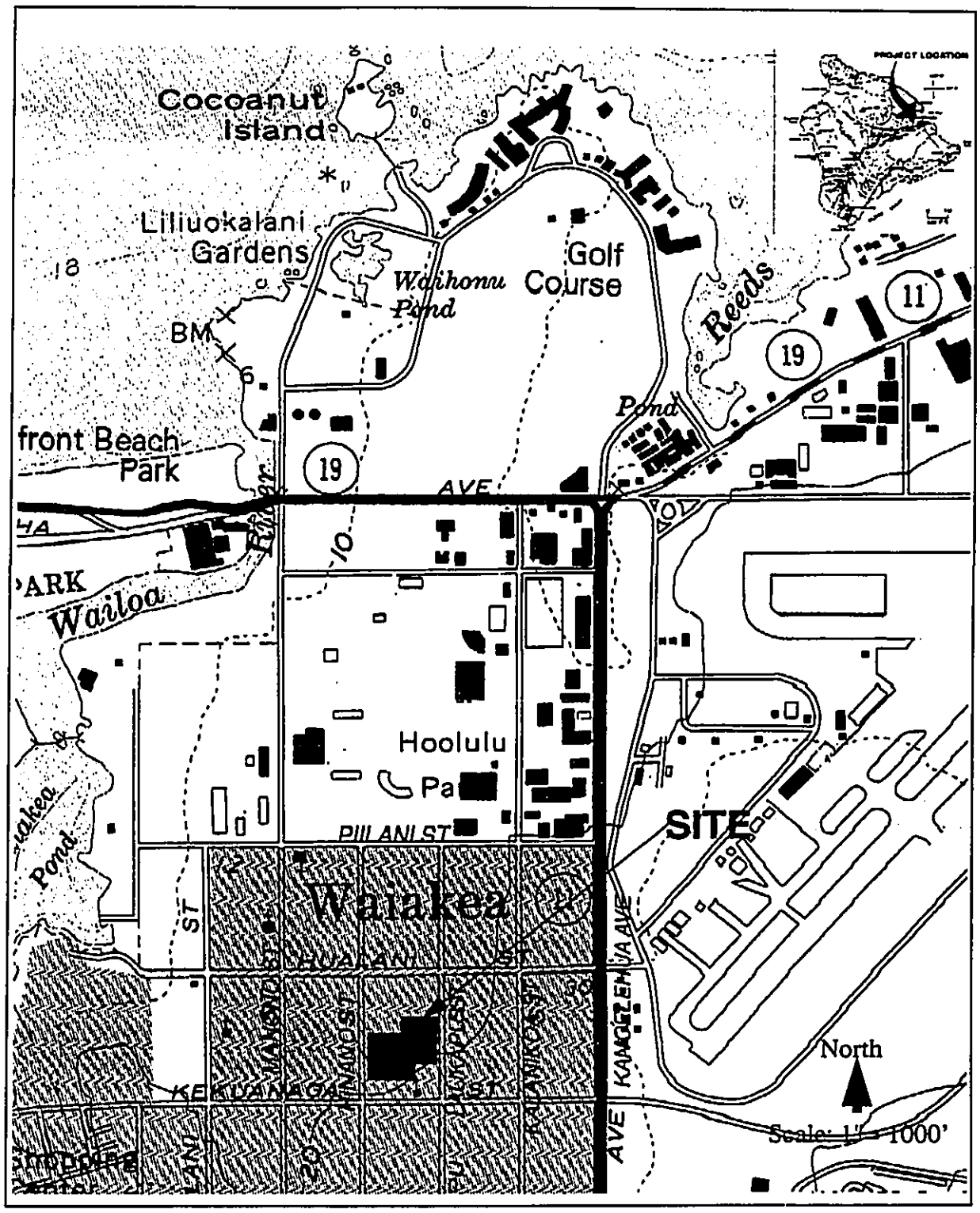


FIGURE 3. Tax Map

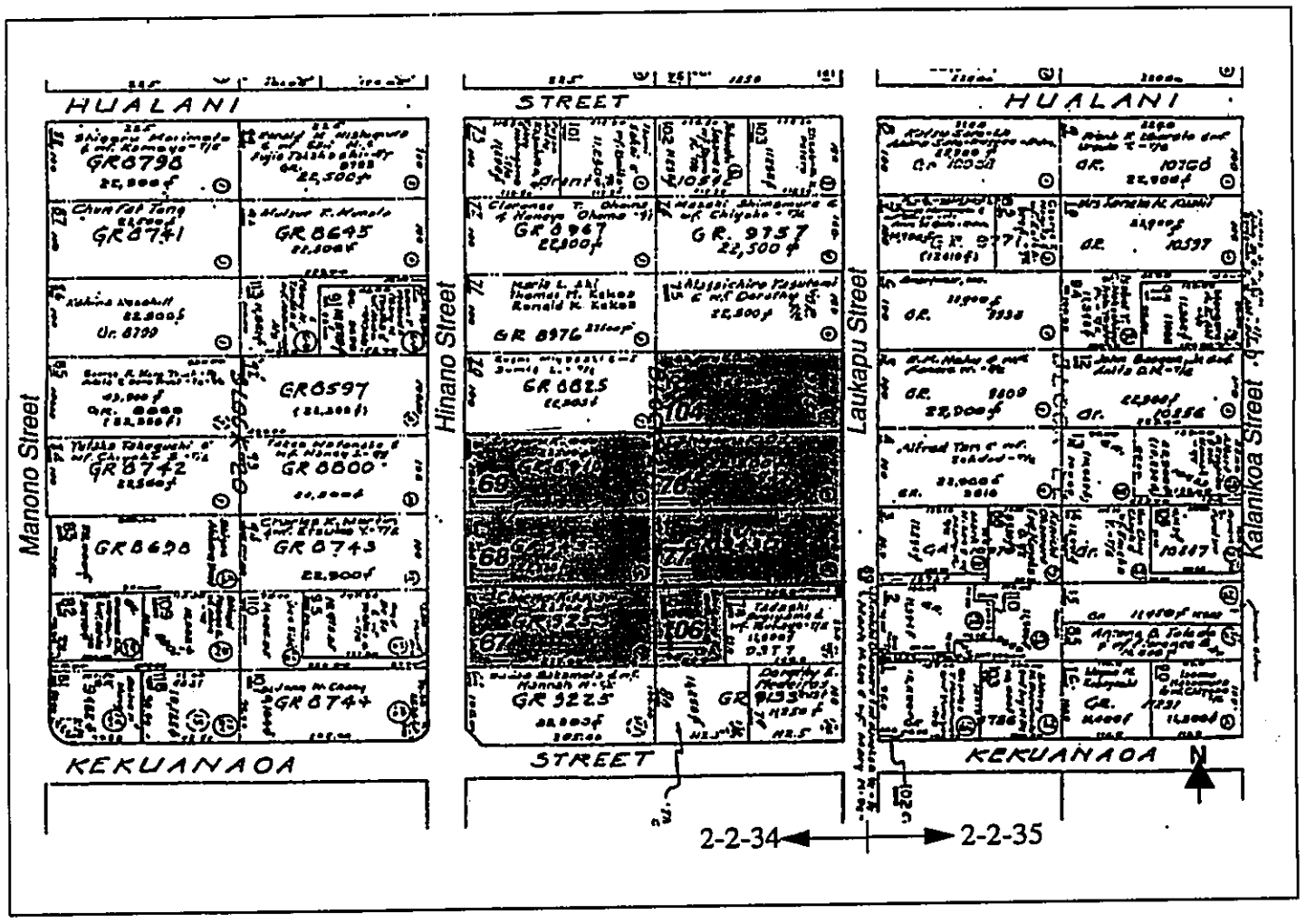
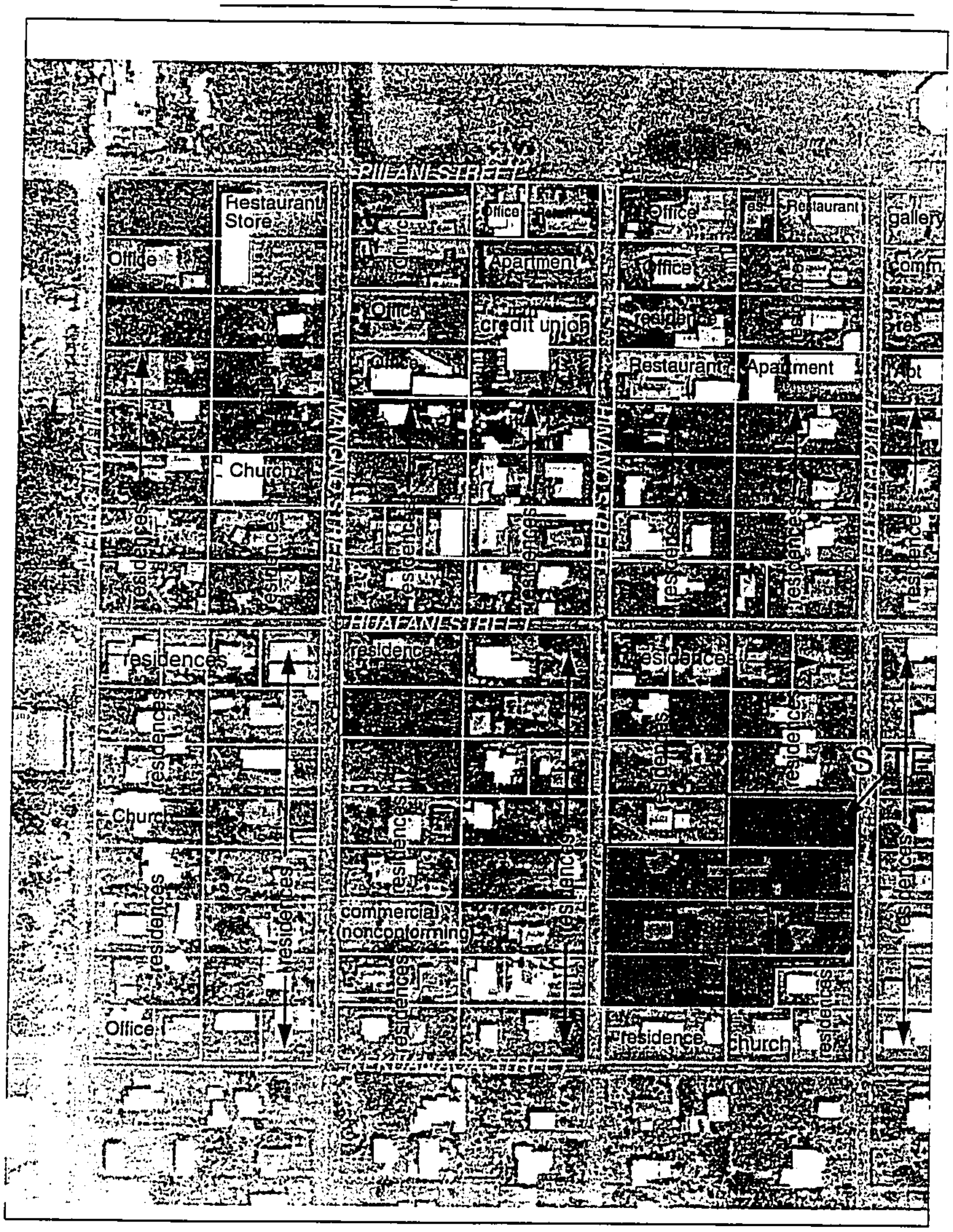


FIGURE 4. **Surrounding Uses**



2.3 PROJECT DESCRIPTION

2.3.1 Project Objectives

The existing Big Island Candies facilities are located on Kalanianaole Street in an industrial area on the way to Hilo Harbor. Besides the unattractiveness and low visibility, this location is too small to allow for expansion, the layout is inefficient, and traffic egress is often difficult.

The objectives of the new facility include:

- *Production.* Provide adequate space to produce additional local goods (e.g., dairy or pastry products) and optimize production efficiency.
- *Retail.* Expand BIC's retail line and provide potential retail lease space for compatible businesses.
- *Employee facilities.* Provide amenities for employees such as a fitness room.
- *Garden setting.* Incorporate the existing gardens, greenhouses, and landscaping into a lush and inviting setting for visitors.
- *Accessibility.* Locate in a convenient and easily accessible area.

2.3.2 Conceptual Plan

The scale and number of proposed buildings will be similar to the existing buildings; the character of the Site will not significantly change. Visitor and service access will be from Hinano Street. Access from Laukapu Street will be limited to employee parking. Buses and vans will enter from Hinano Street, drop off the visitors at the porte cochere, and park at the designated bus and van parking areas (see Figure 5 on page 2-8 and Figure 6 on page 2-9).

The main building, a two-story structure, will have retail at the ground level. Similar to the existing BIC facility, visitors will be able to view the production operations from the retail area through glass walls. The second floor will be used for office, storage, and employee facilities including a fitness room (see Figure 7 on page 2-10). A courtyard and covered walkway will connect the main building to an auxiliary retail wing. Where the retail

in the main building will focus on candy and baked products, this auxiliary retail area will sell other types of products (e.g., t-shirts). The Applicant has not determined the specific uses or tenants for this retail space. The 4,000 s.f. auxiliary building has space for up to four retail businesses at 1,000 s.f. per bay.

The total gross floor area of the main building is approximately 29,700 s.f.; together with the auxiliary retail building the total gross floor area of the project is approximately 33,700 s.f. The ground floor footprint (including the auxiliary retail) totals approximately 19,075 s.f., which results in a lot coverage of only 13%. Most of the land area of this low scale project will be used for landscaped open space and parking. In keeping with the residential character of the surrounding area, the height of the building is 35', which is the height limit for the residential zoning district.

Visitors will be able to leisurely roam through the greenhouses and gardens, or relax in the covered pavilion that overlooks the gardens.

2.3.3 Proposed Operations

Normal hours for production operations will be from 7:30 a.m. to 4:00 p.m., Monday through Friday, with possible exceptions during peak holiday periods. Retail operations will be from 8:30 a.m. to 5:00 p.m., seven days a week.

BIC currently employs 75 persons full-time. An additional 15 persons are employed seasonally or part-time especially during peak periods. With the new facility, there may be an additional 20 full-time positions. The number of employees working on a shift at any given time will be a projected maximum of 62 persons.

2.4 TIMETABLE AND COST

The estimated construction start is mid-1997, with completion a year later in mid-1998. The estimated construction cost is $2,000,000.

FIGURE 5. Conceptual Site Plan

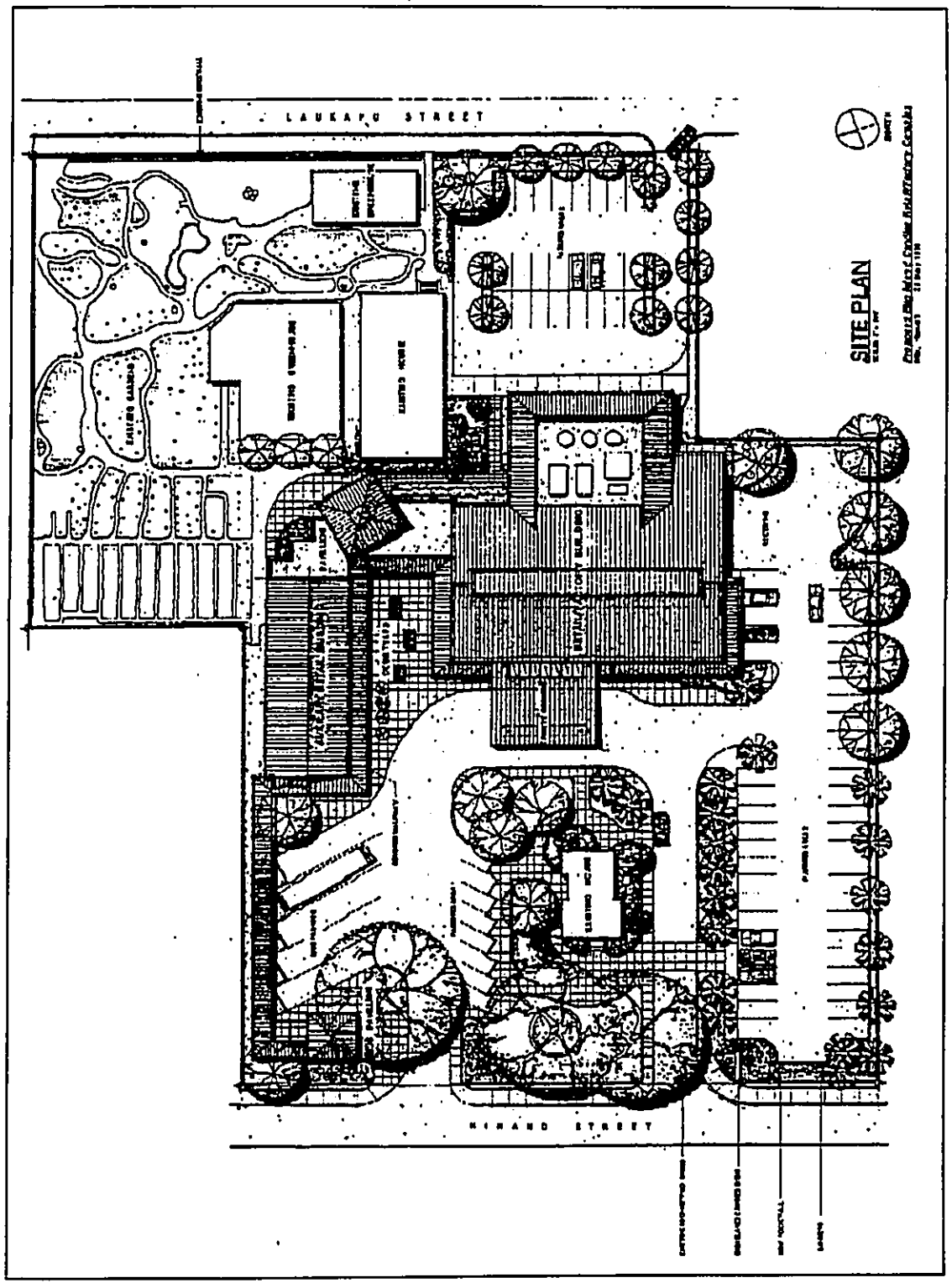


FIGURE 6. Rendering of Proposed Facilities

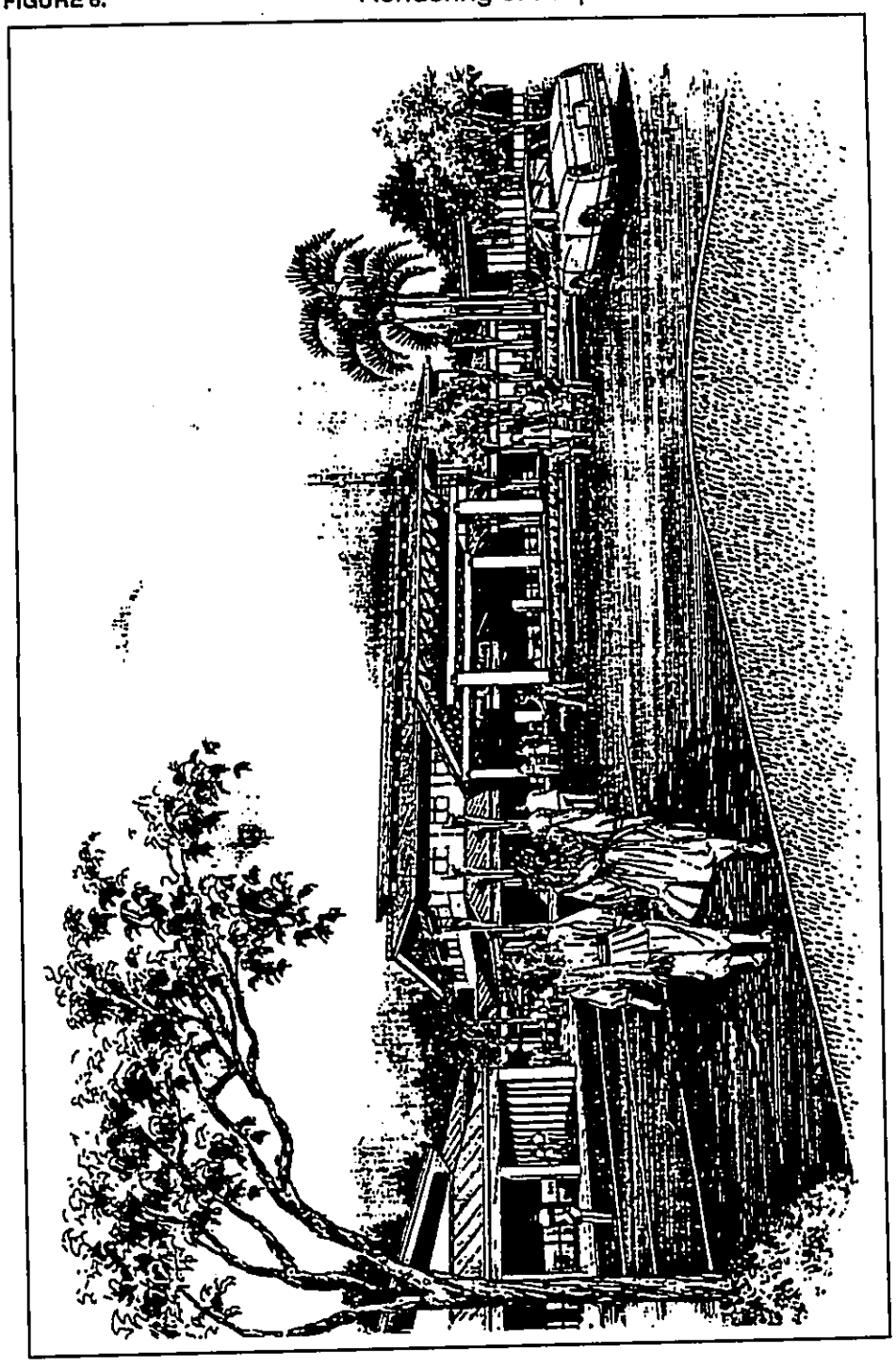


FIGURE 7. Building Section

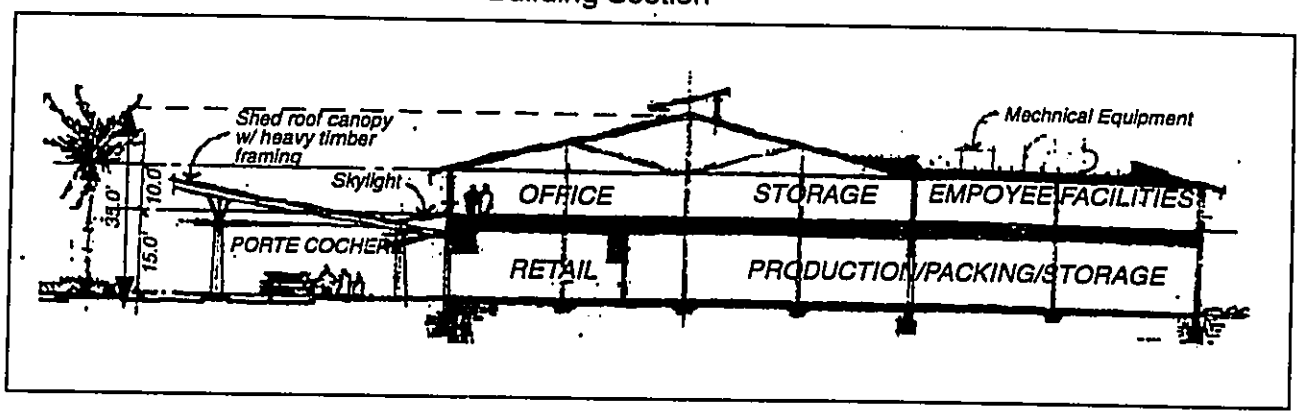
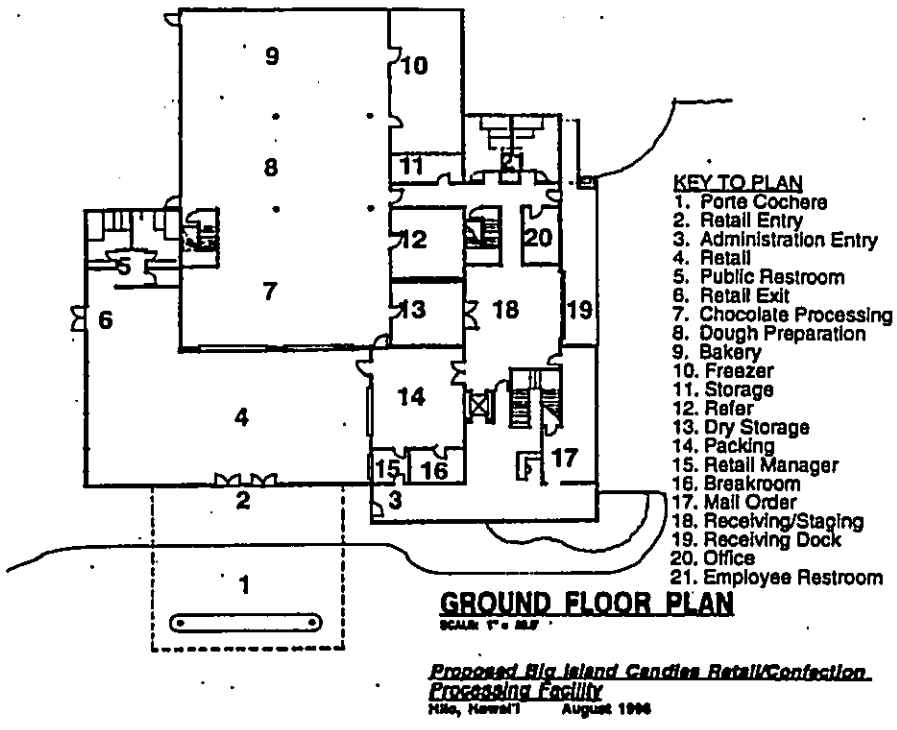
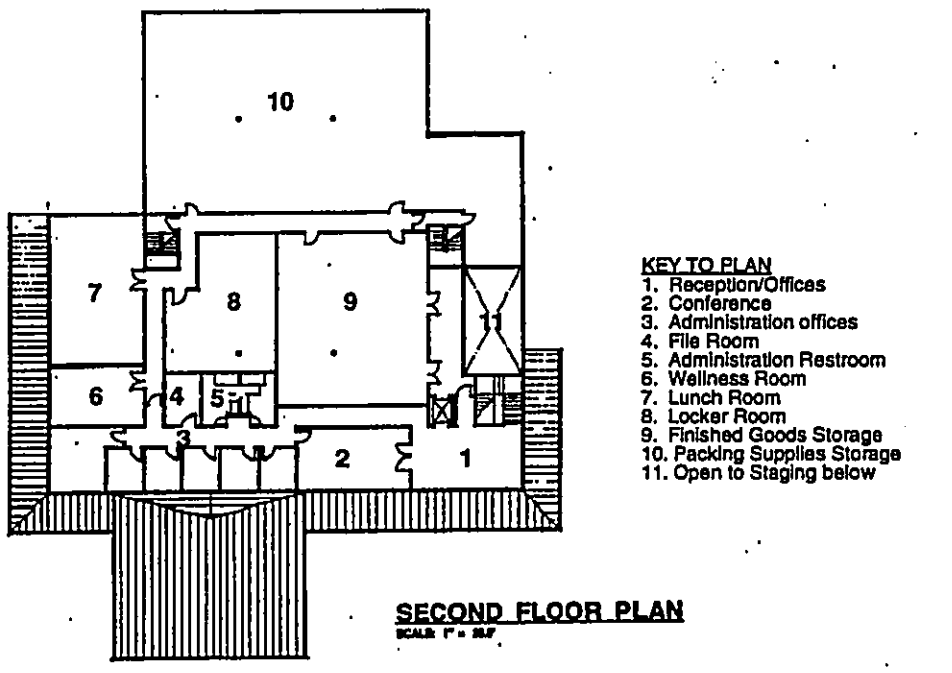


TABLE 1. **Proposed Uses (Preliminary)**

Uses	Area
Retail, main building	3,075 s.f.
Production/Packing	6,195 s.f.
Storage	8,800 s.f.
Administration	2,600 s.f.
Employee facilities	2,575 s.f.
Other (circulation, etc.)	6,455 s.f.
Total (main building)	***29,700 s.f.***
Retail, auxiliary	4,000 s.f.
GRAND TOTAL	***33,700 s.f.***
Ground floor footprint	19,075 s.f.
Lot coverage	13%
Visitor parking	45 spaces
Bus/van parking	13 spaces
Employee parking	24 spaces

FIGURE 8. Floor Plans





CHAPTER 3

ENVIRONMENTAL SETTING, IMPACTS, & MITIGATION MEASURES

3.1 PHYSICAL CHARACTERISTICS

3.1.1 Climate

Setting

The elevation of the Site is approximately 20' above mean sea level. Located on the wetter windward side of the island, the mean annual rainfall is about 136". Generally, the wet months occur from October through April. Mean annual temperature is about 73°F. Wind patterns are diurnal--dominant easterly tradewinds prevail during the day, while in the evening cooler westerly winds sweep down the slopes of Mauna Loa and Mauna Kea.[1]

Impacts

None-- the project will not alter the microclimate of the region.

Mitigation

None required.

1. State of Hawaii, Department of Land and Natural Resources. *An Inventory of Basic Water Resources Data: Island of Hawaii*. Report R34, 1970.

3.1.2 Topography & Soils

Setting

The topography of the Site is relatively flat. The Soil Survey Report classifies the soil as Keaukaha Series (rKFD), which is extremely rocky muck, well-drained, thin (<1') organic soils overlying pahoehoe lava bedrock. Runoff is medium, erosion hazard slight, and shrink-swell potential high (although these soils are usually moist, when dried they have high shrinkage but low swelling potential).[2]

Impacts & Mitigation

None. Compliance with the County Grading Permit requirements would further ensure minimal erosion and sedimentation impacts during construction.

3.1.3 Natural Hazards

Setting

Flood and Coastal Hazards. The Flood Insurance Rate Map designates the Site in Zone X, which means that it is outside the 500-year flood plain. The Site is also outside the Civil Defense Tsunami Evacuation Zone (see Figure 9 on page 3-3).

Volcanic and Earthquake Hazards. The United States Geological Survey (USGS) classifies the area as Lava Flow Hazard Zone 3, on a scale of ascending risk 9 to 1.[3] The Building Code designates the entire island of Hawaii in Earthquake Zone 3 and contains certain structural requirements to address the relative seismic hazards.

Impacts and Mitigation

None. The Site is not within any flood, tsunami, or volcanic hazard zones. The Building Code requirements mitigate potential earthquake hazards.

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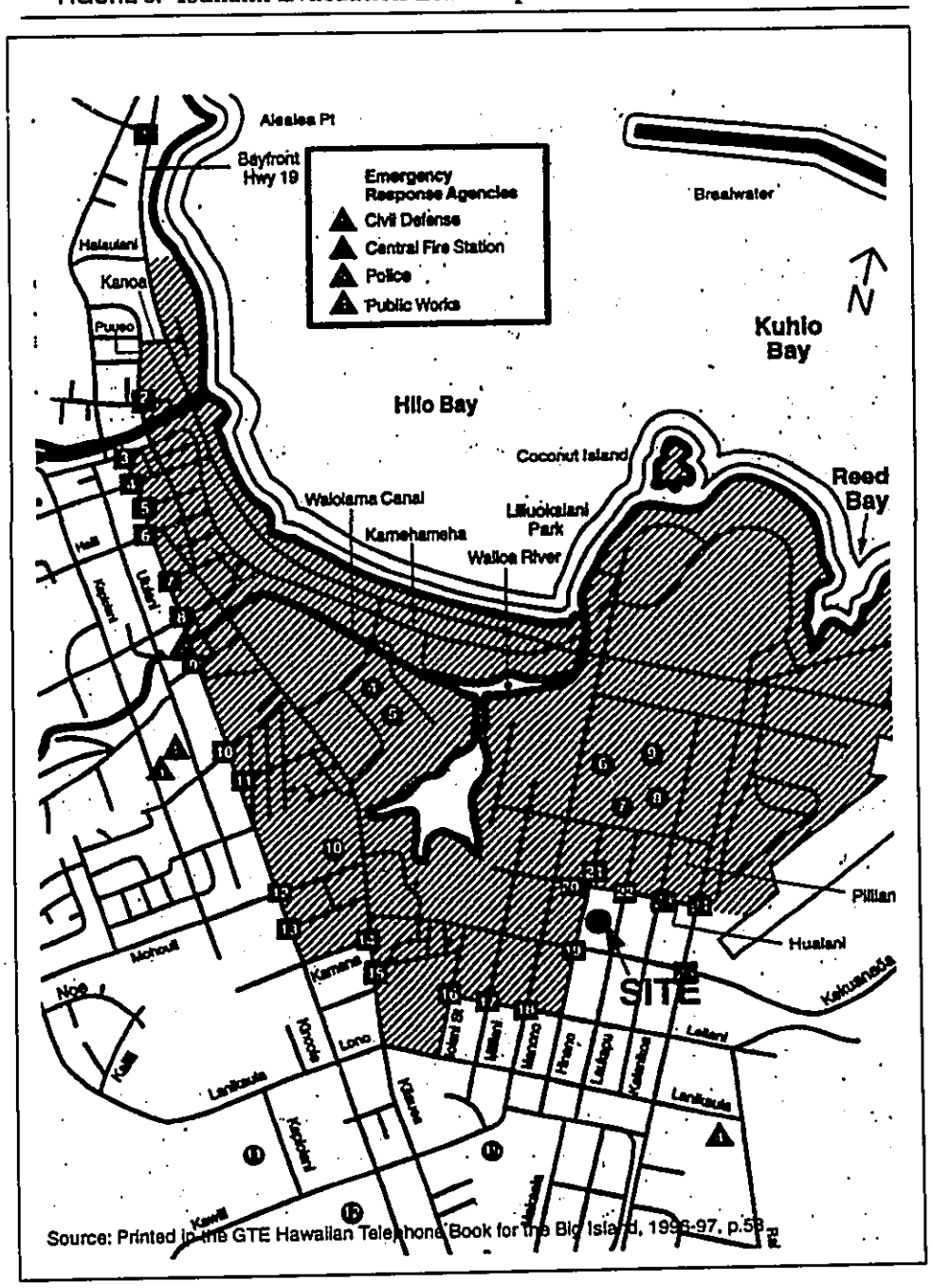
2. U.S. Department of Agriculture, Soil Conservation Service. *Soil Survey of Island of Hawaii.* State of Hawaii, 1973, sheet 74.
3. Heliker, C. *Volcanic and Seismic Hazards on the Island of Hawaii.* U.S. Geological Survey, 1991.

FIGURE 9. Tsunami Evacuation Zone Map



3.1.4 Flora/Fauna

Setting

The Site has been used for commercial and residential purposes; the only vegetation on the Site are introduced landscaping plants.

Impacts and Mitigation

None. The Site has been entirely previously disturbed and is not a natural habitat for any rare or endangered species. The existing tall trees on the Site, especially along Hinano Street, have been incorporated into the landscaping plan.

3.1.5 Historic/Archaeological Resources

Setting

Because the entire Site had been previously disturbed, any surface or subsurface archaeological remains are unlikely. The existing structures on or near the Site are not historically significant, as confirmed by the State Historic Preservation Division.[4]

Impacts and Mitigation

None.

3.1.6 Water Resources

Setting

The Hilo area is underlain by basal groundwater. The nearest stream is Wailoa River located approximately 1800' from the Site.

Impacts and Mitigation

None.

4. See letter from Don Hibbard, Administrator, State Historic Preservation Division, dated 11/1/96 (included in Appendix D).

3.1.7 Air Quality and Noise

Setting

Because of the Site's proximity to a major roadway (Kekuanaoa Street), the ambient noise level from the traffic is quite high (equals or exceeds 65 L_{dn}). The Site is also subject to aircraft noise due to its proximity to the airport. The average day/night noise level from aircrafts in the vicinity of the Site is approximately 60L_{dn}.[5]

Impacts

Air Quality. Because all operations will occur within an enclosed facility, the processing operations will not generate any noise or offensive odor (there will be baking aroma). Although the Office of Environmental Quality Control raised concerns with ethanol emissions from bakeries,[6] neither the Sanitation Branch nor the Food and Drug Branch of the Department of Health was aware of any such problems. The Sanitation Branch confirmed that scrubbers would not be required for bakery-type operations like Big Island Candies; scrubbers are required only for cooking operations that produce smoke or oily residue (e.g., BBQ).[7]

Noise. An unavoidable noise impact will be the visitor traffic to the Site, especially buses. However, the traffic noise should not be significantly greater than the visitor traffic to the Site generated by the previous floricultural use. On a busy day, approximately 15-20 buses could arrive mostly within the later morning hours (9:30 a.m. to 12:00 p.m.) (see Figure 13, "Incoming Hourly Traffic at Big Island Candies," on page 3-16). The increased noise from the buses should not be significantly greater than the existing ambient noise from Kekuanaoa Street and the frequent aircraft overflights to which the residents in the area are already exposed.

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5. Belt Collins & Associates. Noise Exposure Map Report: General Lyman Field, Hilo, Hawaii, prepared for State of Hawaii, Department of Transportation, October 1988, p. 2-46 (ambient background noise levels), fig. 4-1 (aircraft noise contour map).
6. See letter from Gary Gill, director, Office of Environmental Quality Control, dated 11/20/96 (included in Appendix D).
7. Telephone conversation with Food & Drug Branch and Sanitation Branch of the Honolulu office, as well as the Sanitation Branch of the Hilo office, on 11/29/96.

Although the Department of Health recently extended coverage of the Community Noise Control regulations to the neighbor islands,[8] these rules do not apply to vehicular noise. A separate set of regulations apply to vehicular noise,[9] but these regulations only apply to Oahu. The Department of Health Noise and Radiation Branch indicated that buses have not had any problems meeting the standards set forth in those regulations. In Waikiki, where complaints have been received, the problems arise from buses idling to keep the air conditioning on while waiting for the passengers.[10]

The Airports Division of the State Department of Transportation uses $60L_{dn}$ as the acceptable noise limit for residential areas. Because of the commercial nature of the project, and the enclosed facilities, the project is not as sensitive to the aircraft noise as a typical residence.

The residents within the vicinity of the Site will also be exposed to noise *impacts during construction. The Department of Health Community Noise* Control regulation applies to construction activity.

Mitigation

Design Phase. Landscaping plans should maximize the density of the perimeter landscaping especially along the boundary of the parking lots to buffer and minimize vehicular noise from impacting upon the immediately adjacent neighbors.

Construction Phase. Construction documents should require that the contractor notify the neighbors of the work schedule. This schedule should either expedite the duration of construction with extended working hours, or limit the working hours to reasonable weekday time periods. The Department of Health Community Noise Control regulation provides standards and enforcement measures to ensure that the noise from construction is not excessive.

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8. *Hawaii Administrative Rules* Chapter 11-46, effective September 23, 1996.
9. *Hawaii Administrative Rules* Chapter 11-42.
10. Telephone conversation with the Noise and Radiation Branch, Honolulu office, on 11/29/96.

Operational Phase. Big Island Candies should instruct tour bus drivers to use Kekuanaoa Street, and not drive through the neighborhood. If the mandates of Big Island Candies do not effectively control the bus drivers, then the County can respond to any community complaints by legally restricting buses from using certain streets pursuant to the Hawaii County Traffic Code.[11] The narrowness of the streets and tight turning radii may practically discourage bus traffic along these interior streets. Big Island Candies should also instruct the bus drivers to not idle while waiting for their passengers.

3.1.8 Scenic Resources

Setting

Currently, the existing landscaping and structures are not fully maintained. The proposed project, embellished with landscaping, will improve the scenic quality of the area. The proposed building has been scaled to fit the surrounding residential character of the area.

Impacts

None.

3.2 SOCIO-ECONOMIC CHARACTERISTICS

3.2.1 Social Impact

In 1992, the County redesignated approximately 280 lots in the Waiakea Houselots area bounded by Hualani-Mililani-Lanikaula-Kalanikoa Streets from Medium Density Urban and Industrial to Low Density Urban (see Figure 10 on page 3-10).[12] In a mailout survey conducted by the Hawaii Island Board of Realtors, 55% of the landowners affected by the redesigna-

11. Hawaii County Code §24-166 (restricted use of highways by certain vehicles).

12. Hawaii County Ordinance No. 92-115 (for additional discussion, see Section 4.3, "HAWAII COUNTY GENERAL PLAN," on page 4-4).

tion opposed the redesignation.[13] However, nearly half of those opposed to the redesignation (i.e., favored Medium Density) were non-owner-occupants, while nearly all of those who favored the redesignation (i.e., favored Low Density) were owner-occupants.[14]

Many of the owner-occupants are elderly who desire to live their remaining lives in peace in the area where they have lived for so many years. The Waiakea Houselots was created as homesteads by the Territory of Hawaii in the early 1900s. Most of the existing single family dwellings average about 30 to 40 years of age.[15] The long-time residents enjoy the convenience of Waiakea Houselots to shopping, airport, recreation, schools, banks, and medical facilities. They object to the annoyances from the encroaching industrial and commercial uses including noise, foul smells, and truck traffic along the narrow roads, as expressed by the following testimony:

> . . . Our Waiakea Houselot area is composed mostly of elderly and retired people. I *have lived in Waiakea House Lot for over 69 years. . .* Waiakea House Lot is a very unique place. . . It is an ideal place for the elderly and the retired. It is close to every place we want to get to: the hotels, the beaches, the parks, the stadiums, the swimming pool, the wharfs, the airport, the shopping centers, the doctors office, the banks, the schools and the hospital. There is no place in the world where you can find a residential area close to all these facilities. When you become old and retired you need to be close to all these facilities. All the roads in Waiakea Houselot is narrow, it was built for only passenger cars. Whenever the trucks and school buses are on the road they take more than half of the road. When they make a turn, they get 5 to 6 ft. off the pavement on to the grassy area. This is the area which we take care. When you see these trucks cut a furrow on the lawn you get really upset. . . It was a big mistake to let some part of Waiakea Houselots to be industrialized. We have suffered a lot from our mistake. There are parking problems, noise all

13. Honolulu Advertiser, September 30, 1992, "Waiakea opposes zoning proposal".

14. Written testimony by Michael Shewmaker, President, Hawaii Island Board of Realtors, explaining the *preliminary* results of the survey, July 1992:

Favor GP Amendment:	54
Owner-occupant	49
Non-owner	5
Against GP Amendment	70
Owner-occupant	40
Non-owner	30

15. Planning Department, County of Hawaii, Feasibility Study-- Waiakea Houselots, prepared by request of Resolution No. 317-91, p. 2.

> night, equipment running on the street all hours of the night and morning, and foul smell at times. . .[16]

Neighborhoods usually resist change because they want to keep things the way they were and/or they object to specific concerns. In the case of Waiakea Houselots, the long-time residents have accepted that changes are inevitable, and only want to ensure that the changes are compatible with their continued residential use. In recognition of the transitional state of the Waiakea Houselots area, the County had designated this area as Medium Density Urban since 1971.[17] The current mix of non-residential uses in proximity to single-family residential uses resulted from this past policy (see Figure 4, "Surrounding Uses," on page 2-5).

Besides the increasing number of non-residential uses, the diminishing number of owner-occupants is another indication of the maturing and changing character of this area. Based on real property tax records, less than half of the 57 lots in the immediate vicinity of the Site are still owner-occupied.[18] Of the owner-occupied lots, 92% are elderly (see Figure 11 on page 3-11).

16. Written testimony by Mr. Gabriel Manning, submitted 5/28/92, Planning Department file on Ordinance No. 92-115.
17. Planning Department, County of Hawaii, Feasibility Study-- Waiakea Houselots, prepared at request of Resolution No. 317-91, p. 16.
18. Real property tax records indicate whether the landowner receives a homeowner's exemption. Owner-occupancy is a prerequisite to qualify for the homeowner's exemption. One can determine whether the owner-occupant is elderly by examining the amount of the exemption since those over age 60 qualify for at least a double exemption.

FIGURE 10. Subject Area of 1992 General Plan Amendment

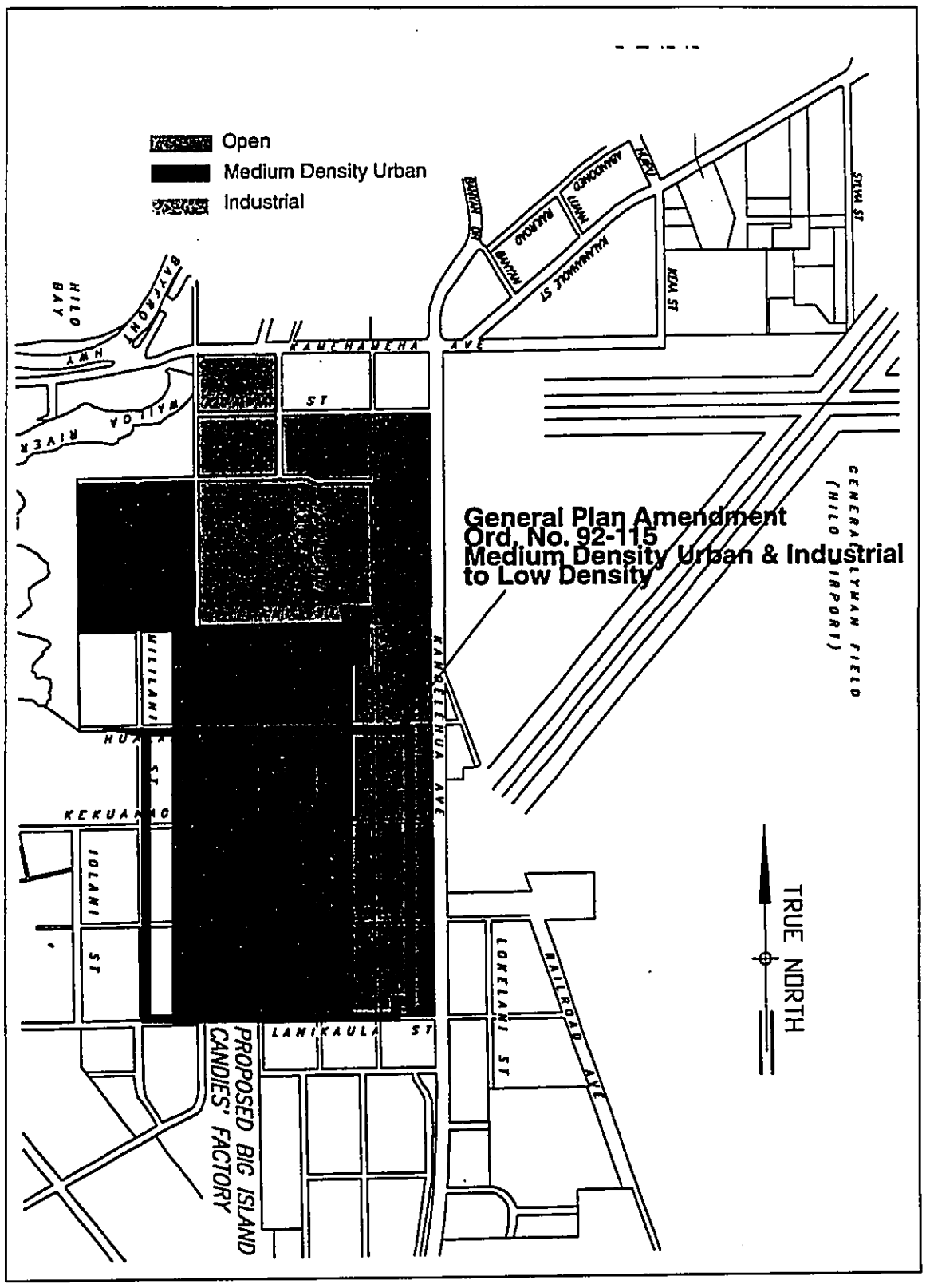
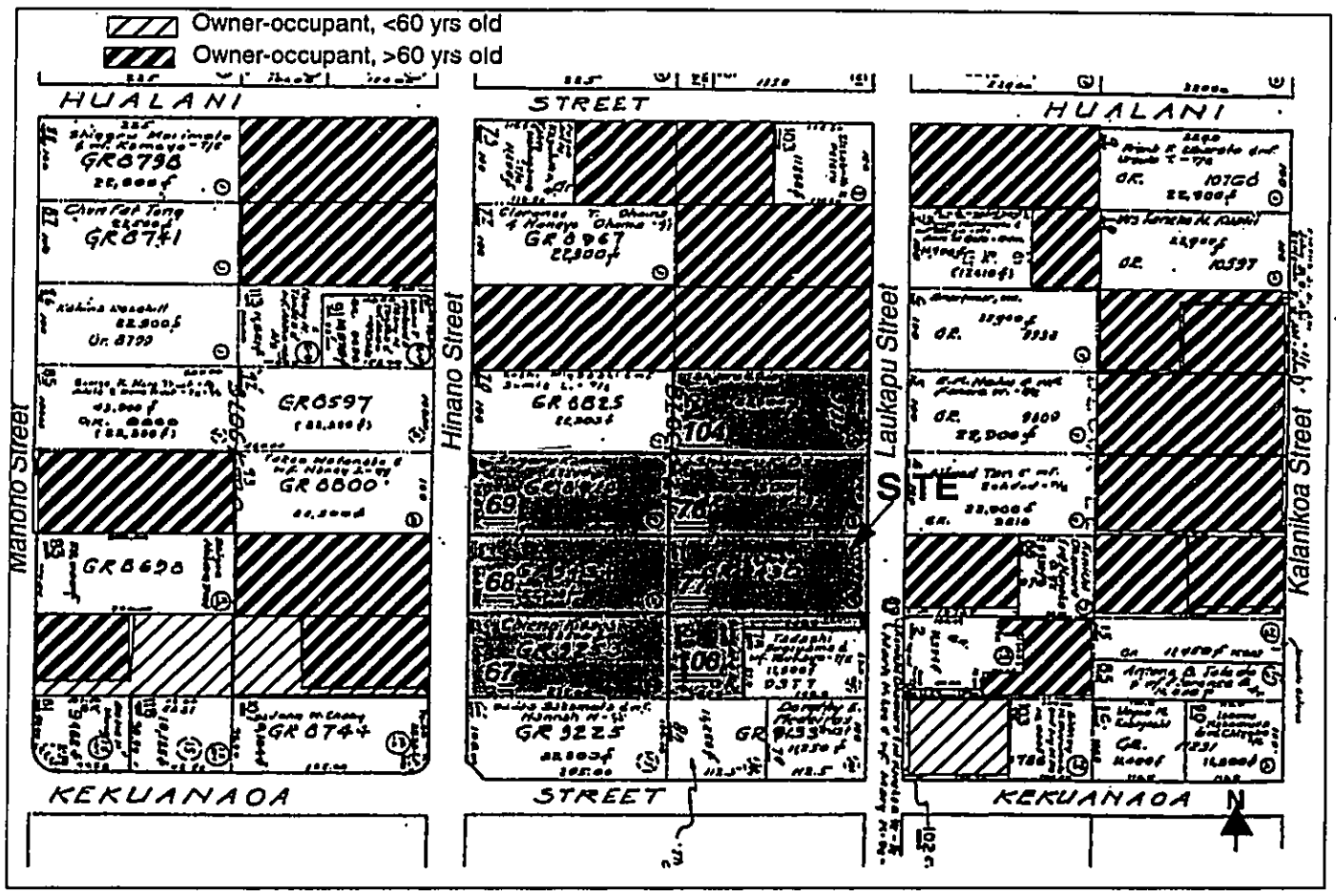


FIGURE 11. Owner-Occupied Lots in Immediate Vicinity of Site



The movement to redesignate the area from Medium Density to Low Density was a justified acknowledgment by the County that permitting industrial uses in such close proximity to residences was perhaps a mistake. However, accepting the fact that the Waiakea Houselots residents do not resist change *per se* for the sake of maintaining the status quo and are open to compatible changes, the Low Density designation could have been an overreaction that restricts acceptable non-residential uses that can be made

to be compatible with the surrounding residential uses. This proposition finds support by the endorsement of the project by the Waiakea Houselots Lower Association *kumiai* as well as the individual old-time residents immediately adjacent to the Site who were surveyed for this project.[19]

Eight owner-occupants residing closest to the Site were interviewed. None of them opposed the project. Several were eager to have the project conveniently located nearby so that they would not have to deal with the traffic and parking problems of the existing Big Island Candies site. A couple of the residents even expressed interest to work for Big Island Candies. None of the residents had any concerns with the bus noise, even those residents living directly across the Site's proposed entrance on Hinano Street who would be most impacted by the project. One resident recalled the buses that used to visit the Orchids of Hawaii business that formerly operated on the Site. This resident used to welcome the tourists who took pictures of their house or just relaxed under the big shady tree in their front yard.

In short, the long-time residents do not oppose the proximity of non-residential uses. In fact, they value the convenience of living in close proximity to such uses, provided such uses are not noisy, smelly, ugly, or generate truck traffic. The proposed project mitigates all of these concerns: the enclosed facility will not be noisy, no foul industrial smells will emanate, the building will be a low-scale building designed to fit with the surrounding residential structures with extensive landscaping, adequate onsite parking will be provided, and the project's location near Kekuanaoa will prevent the tour buses from having to drive through the interior neighborhood streets.

The focus on owner-occupants does not exclude renters' concerns. Owner-occupants and renters basically share the same concerns with any proposed development-- noise, traffic, parking, aesthetics.

19. See letter from the Waiakea Houselots Lower Association, dated August 1, 1996, in Appendix C. Interview surveys were conducted by the EIS author on September 14, 1996 of selected owner-occupants along Hinano and Laukapu Streets between Kekuanaoa and Hualani Streets.

3.2.2 Land Values

Some of the Waiakea Houselots residents expressed concern about rising property taxes resulting from their close proximity to encroaching higher-value non-residential uses.[20] A spot-check of real property tax records indicates that property tax assessors only consider the actual use without regard to speculative potential uses. The assessed value for a single-family zoned parcel (RS-10) located immediately adjacent to the Commercially-zoned area along Piilani Street (CG-7.5) had the same tax assessed value as a parcel in the interior blocks surrounded entirely by other single-family residential uses.[21] Moreover, a parcel zoned Commercial (CG-7.5) but actually used as a single-family residence was assessed at the same value as the other single-family parcels zoned for single-family residential (RS-10).[22] Based on this evidence, it is highly unlikely that rezoning the Site to commercial would affect the property tax values of the surrounding single-family lots.

3.3 PUBLIC FACILITIES, UTILITIES, AND SERVICES

3.3.1 Roads and Traffic

Setting

This section summarizes a Traffic Impact Analysis Report prepared by M&E Pacific, Inc. and included in this EIS as Appendix A. The primary vehicular route to the Site is expected to be via Kekuanaoa Street and

20. See Resolution No. 317-91, County of Hawaii.

21. The 1996 assessed value of TMK 2-2-34:52 (zoned RS-10 adjacent to CG-7.5) had the same land value as TMK 2-2-34:94 (zoned RS-10 surrounded by other residential uses) for a 22,500 s.f. lot of $93,800.

22. The 1996 assessed land value of TMK 2-2-34:54 (zoned CG-7.5), which is used as a single -family residence, was $93,800 for a 22,500 s.f. lot. In comparison, the adjacent commercially-zoned parcel used as a restaurant (TMK 2-2-34:53) had an assessed value of $151,900 for a 22,500 s.f. lot.

Hinano Street. Manono Street, which parallels Hinano Street, provides the only through route between Kamehameha Avenue and Kekuanaoa Street in the Waiakea neighborhood. Based on these routes, the key intersections are on Kekuanaoa Street at Hinano and Manono Streets.

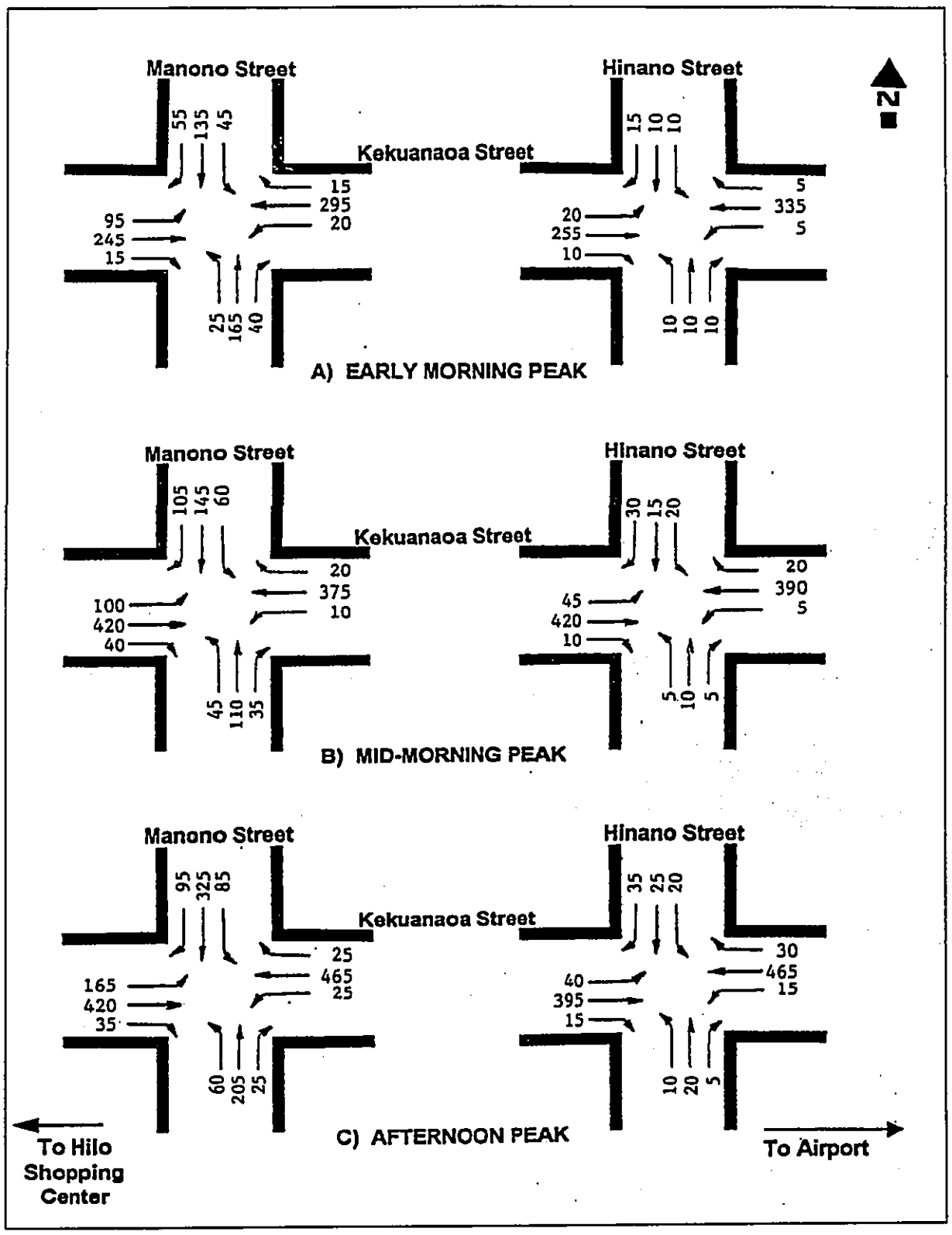
Kekuanaoa Street is a two-lane County collector road signed for 35 mph. The intersection of Kekuanaoa and Manono Streets is signalized with left turn lanes and advance green turn signals for left turns from Kekuanaoa to Manono. There is no separate left turn lane on Manono Street to Kekuanaoa.

The intersection of Kekuanaoa and Hinano Streets are stop-controlled along Hinano Street. There are no separate turning lanes on Kekuanaoa or Hinano Streets. Hinano Street is a two-lane County roadway with a 40' wide right-of-way. The City of Hilo Zoning Map specifies all minor streets to be widened to 50'.

Traffic counts taken at the Hinano and Manono intersections along Kekuanaoa Street indicate that the existing traffic volume along Kekuanaoa Street increases throughout the day until it reaches a peak in the afternoon. The existing traffic along Hinano Street is low (see Figure 12 on page 3-15).

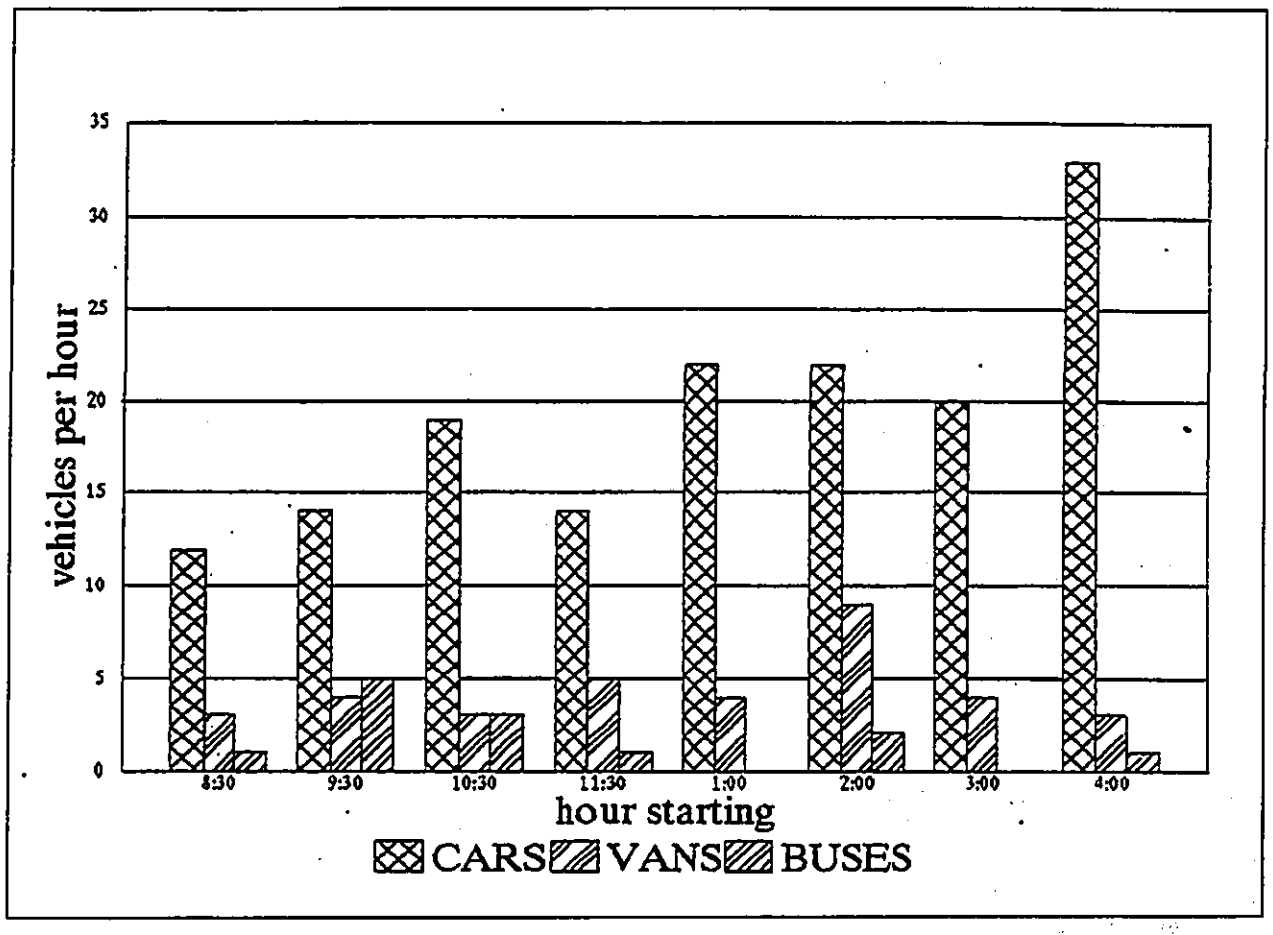
To determine the potential traffic impact of the proposed project, incoming and outgoing vehicular traffic were counted at the existing BIC outlet. Based on this count, approximately 160 cars, 40 vans, and 13 buses can be expected to visit the project during an average retail day. Tour bus and van traffic is heavier in the mid-morning and early afternoon (see Figure 13 on page 3-16). The automobile traffic rises to a peak in the afternoon, with a significant portion of the peak probably related to employee pick-ups.

FIGURE 12. Existing Traffic Volumes



Impacts

FIGURE 13. Incoming Hourly Traffic at Big Island Candies



Forecasted traffic conditions in the year 1997, the planned opening date of the project, is based on the General Plan population growth rate of 1.7%. With the project-generated traffic added to the forecasted ambient traffic, the impact to the levels of service of the Hinano and Manono intersections are as follows:

- Early-morning. No change in levels of service at both intersections indicating no impact from the proposed project;
- Mid-morning. No change in the level of service at the Manono intersection. The southbound approach of Hinano Street decreased from level B to C; however, this change does not imply an adverse traffic impact since level C is still acceptable. Also, the threshold between levels of service B and C is an average delay of 10.0 seconds. Since the existing traffic delay is already 9.6 seconds, any small increase in the average delay would change the level of service.
- Afternoon peak. No change in the level of service at the Hinano intersection. The northbound approach of Manono Street decreases from level C to D. Level D is still acceptable.

TABLE 2. Level of Service Analysis

Kekuanaoa/Manono Intersection (signalized)			Kekuanaoa/Hinano (unsignalized)		
	Existing	Forecast (w/ Project)		Existing	Forecast (w/ Project)
Early Morning Peak Hour					
Kekuanaoa Street Eastbound	B	B	*Hinano Street Northbound*	B	B
Kekuanaoa Street Westbound	B	B	*Hinano Street Southbound*	B	B
Manono Street Northbound	B	B	*Kekuanaoa Street Eastbound, left turn*	A	A
Manono Street Southbound	B	B	*Kekuanaoa Street Westbound, left turn*	A	A
Entire Intersection	B	B	*Entire Intersection*		
Mid-Morning Peak Hour					
Kekuanaoa Street Eastbound	B	B	*Hinano Street Northbound*	C	C
Kekuanaoa Street Westbound	B	B	*Hinano Street Southbound*	B	C
Manono Street Northbound	B	B	*Kekuanaoa Street Eastbound, left turn*	A	A

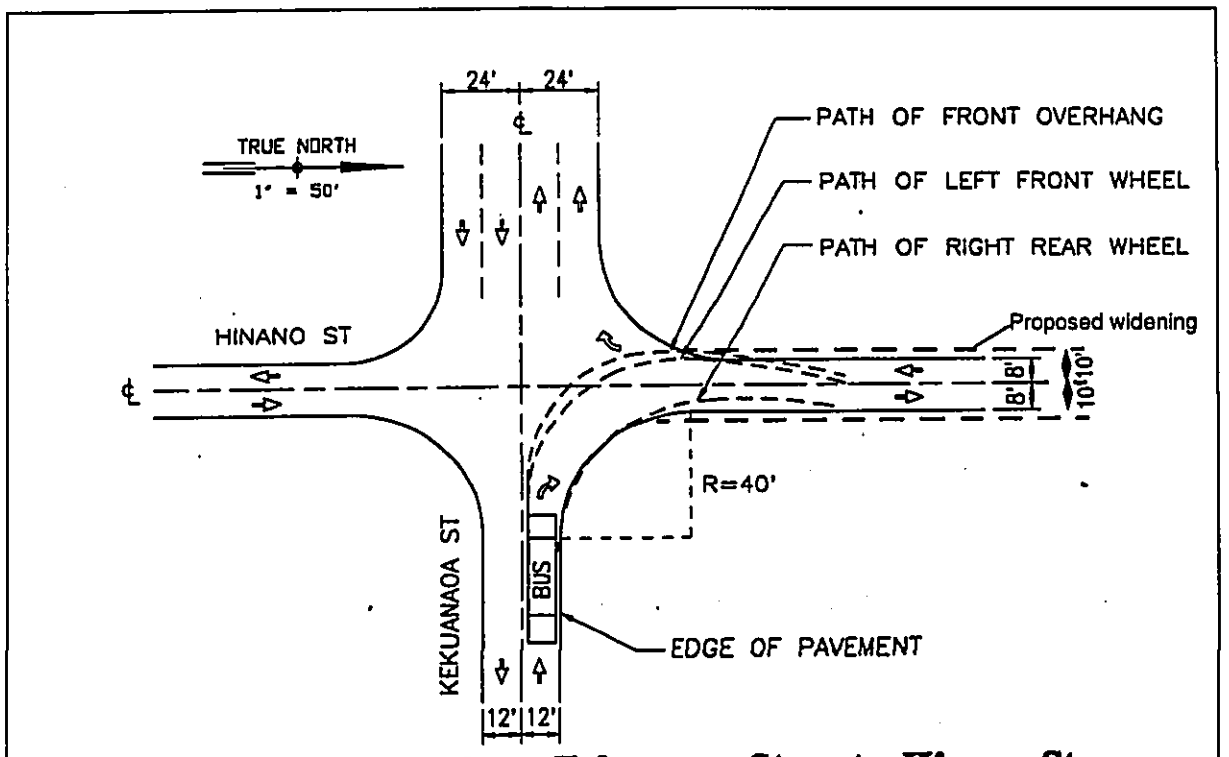
TABLE 2. Level of Service Analysis

Kekuanaoa/Manono Intersection (signalized)			Kekuanaoa/Hinano (unsignalized)		
	Existing	Forecast (w/ Project)		Existing	Forecast (w/ Project)
Manono Street Southbound	C	C	*Kekuanaoa Street Westbound, left turn*	A	A
Entire Intersection	B	B	*Entire Intersection*		
Afternoon Peak Hour					
Kekuanaoa Street Eastbound	C	C	*Hinano Street Northbound*	C	C
Kekuanaoa Street Westbound	C	C	*Hinano Street Southbound*	C	C
Manono Street Northbound	C	D	*Kekuanaoa Street Eastbound, left turn*	A	A
Manono Street Southbound	E	E	*Kekuanaoa Street Westbound, left turn*	A	A
Entire Intersection	D	D	*Entire Intersection*		

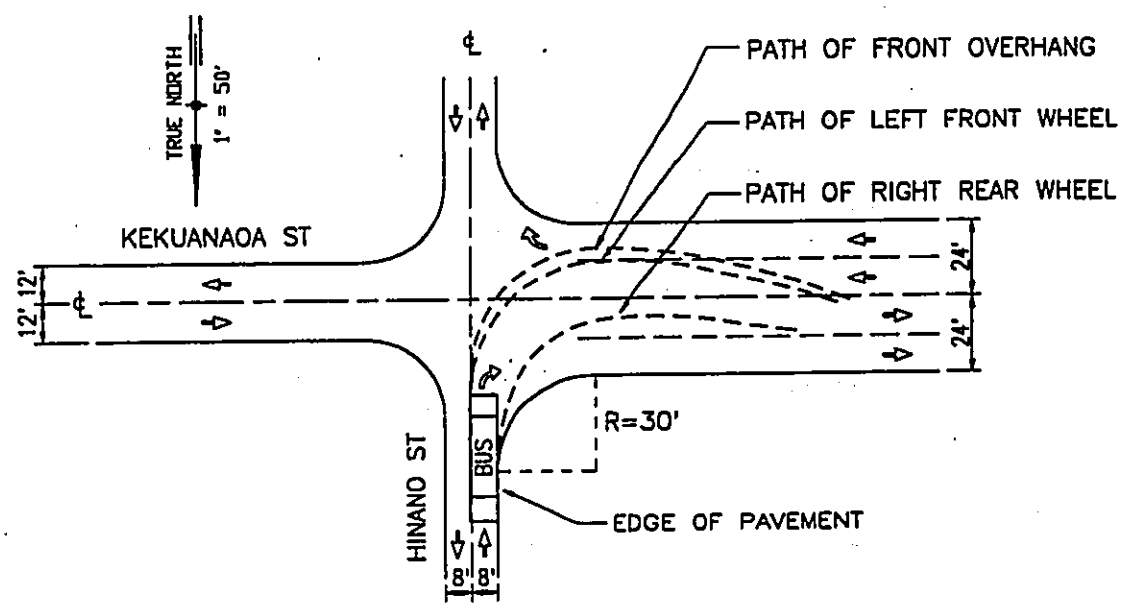
Although the project will not have significant traffic impacts, the narrow width of Hinano Street may cause some problems to accommodate buses (see Appendix B, Preliminary Engineering Report). The width of a typical bus is 8.5 feet. The width of the Hinano Street travel lane is 8 feet. When two buses must pass each other, one or both need to move to the shoulder. Widening the pavement width from 16' to 20' (10' travel lanes) would provide sufficient passing capacity.

When a bus makes a right turn from Kekuanaoa to Hinano Street, the bus will have to swing into the oncoming lane on Hinano Street (see Figure 14 on page 3-19). However, because of the low volume of traffic along Hinano, the buses would only occasionally encounter a conflict. By improving the curve radius, together with the pavement widening to 20', the buses should adequately maneuver the turn without going off the pavement.

FIGURE 14. **Effects of Curb Turning Radius**



A. Righthand turn from Kekuanaoa St. onto Hinano St.



B. Righthand turn from Hinano St. onto Kekuanaoa St.

When a bus makes a right turn from Hinano Street to Kekuanaoa Street, the 30' curb radius will cause the bus to swing into oncoming traffic. However, this situation will rarely occur since the buses will usually make left turns instead from Hinano to Kekuanaoa Street to their next stop, which is Liliuokalani Gardens. In the infrequent event of a right turn, the recent County improvements such as the right turn pocket from Kekuanaoa to Hinano Street, should provide additional lane width to accommodate the turning bus without endangering oncoming traffic. After the left turn onto Kekuanaoa Street, the buses will turn left on Kanoelehua Avenue and drive along Kanoelehua into Banyan Drive. Because of the traffic lights at the intersection of Kekuanaoa/Manono Streets and Kekuanaoa/Kanoelehua Avenue, sufficient gaps in the traffic flow will allow the left turn from Hinano to Kekuanaoa Street without much problem.

Neither the police department nor the State Department of Transportation raised any other traffic or road improvement concerns.[23]

Mitigation

Design phase. Pursuant to comments from the County Department of Public Works and Planning Department, project engineering design to be approved by the County should include:

- widen the pavement from 16' to 20' from the intersection to the project's entrance, a distance of approximately 400';
- reserve, dedicate, and/or improve according to County requirements a wdith of 5' along the Hinano Street frontage for street widening purposes to increase the right-of-way width from 40' to 50' in conformance with the City of Hilo Zoning Map;
- improve the curve radius of the right turn from Kekuanaoa to Hinano Street to the extent possible within the existing right-of-way; if additional area is necessary, the County needs to condemn any additional area not owned by the County or the Applicant.

23. See letter from Wayne Carvalho, Police Chief, dated 8/5/96 (included in Appendix C), and letter from Kazu Hayashida, Director of Transportation, dated 11/14/96 (included in Appendix D).

Operational phase. BIC will instruct tour bus operators to restrict their routes to the Site via Kekuanaoa to Hinano Street. When departing the Site, BIC will advise tour bus operators that the easiest route to their next stop, Liliuokalani Gardens, is a left turn from Hinano to Kekuanaoa Street. If BIC's mandates to the tour bus operators do not control tour buses from driving through the neighborhood, then the County can respond to community complaints by imposing legal restrictions to prohibit tour buses from using certain streets.[24]

3.3.2 Water System

Setting

County water service is available via 6-inch mains along Hinano or Laukapu Streets. The Site is currently serviced by one $1^1/_2$-inch meter and two $^5/_8$-inch meters.[25]

Impacts

The project's estimated water demand is summarized in Table 3 below.

TABLE 3. Estimated Water Demands[a]

Actual Average Daily Usage	4,166 gpd
Average Daily Demand (based on DWS standard of 3000 gals/ acre for commercial operations)	10,020 gpd
Maximum Daily Demand (based on DWS standard of 1.5 times average daily demand)	15,030 gpd
Peak Hour Demand (based on DWS standard of 5x average daily demand)	50,100 gpd
Fire Flow Demand	2,000 gpm/ 2 hours

a. M&E Pacific, Inc., Preliminary Engineering Report for Big Island Candies Relocation, July 1996 (included as Appendix B in this EIS).

24. Hawaii County Code §24-166 (restricted use of highways by certain vehicles).

25. See letter from the County of Hawaii Department of Water Supply, dated August 12, 1996, in response to EIS Preparation Notice (Appendix C).

Since the proposed project will have a fire sprinkler system, the new water connection must be a 6-inch diameter line and will require a separate fire flow meter in addition to a normal service meter. The existing water system has adequate capacity to accommodate the projected water demands, as confirmed by the Department of Water Supply.[26]

Mitigation

None required since adequate capacity is available.

3.3.3 Wastewater System

Setting

There are 8-inch diameter sewer mains along Laukapu and Hinano Streets. Both lines connect to a 10-inch diameter collector along Kekuanaoa Street. All three lines are gravity-flow.[27]

Impacts

The anticipated average daily sewerage flow is summarized in Table 4 below.

TABLE 4. Estimated Average Daily Sewerage Flow

Employees (based on 80 employees at 35 gal/person/day	2,800 gpd
Visitors (based on 600 visitors at 5/gal/person/day	3,000 gpd
Total average daily flow	5,800 gpd

Either of the two 8-inch lines along Laukapu or Hinano Streets has capacity to accommodate the estimated wastewater flow demands.[28]

Mitigation

None required since adequate capacity is available. Sewer line connections shall conform to the rules and regulations of the Department of Public Works, Wastewater Division.

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26. See letter from Mr. Milton Pavao, Manager, Department of Water Supply, dated 11/4/96 (included in Appendix D).
27. M&E Pacific, Inc., Preliminary Engineering Report for Big Island Candies Relocation, July 1996 (included as Appendix B in this EIS).
28. Ibid.

3.3.4 Drainage System

Setting

Presently, the Site does not have any storm drainage system.

Impact

The proposed project will increase the amount of runoff generated by a typical storm in the Hilo area. The roofs for the new building and covered walkways, plus the large paved areas will reduce the Site's ability to absorb surface water by infiltration. Current storm water regulations require the installation of an onsite catchment and disposal system to maintain the runoff volume at or below preconstruction levels. Based on storm drainage calculations, the installation of a network of drain inlets can deliver the excess runoff to three drywells and one seepage pit installed around the perimeter of the Site to capture the difference between the existing and developed runoff quantities.[29]

Mitigation

None. If the drywells are considered "injection wells", the Underground Injection Control (UIC) Permit would mitigate potential impacts to the groundwater quality. The Site is located *makai* of the UIC line where the permit requirements are less stringent (e.g., no public notice required).

3.3.5 Electrical/Telephone

Setting

Electricity and telephone lines are available via overhead lines on Hinano or Laukapu Streets.

Impacts and Mitigation

None.

29. Ibid.

3.3.6 Police & Fire Protection

Setting

The proposed project would be served by the County's fire station headquarters located on Kinoole Street or the 24-hour substation at Waiakea, and supported by additional substations at Kawailani and Kaumana. The police headquarters is located nearby on Kapiolani Street approximately two miles from the Site.

Impacts and Mitigation

None. The project will be designed and constructed to comply with the Fire Code. During the design phase, the Fire Department will review the plans and specifications for the fire protection facilities as part of the Building Permit approval process. During the construction phase, the Fire Department will inspect and approve the installed fire protection system as part of the Certificate of Occupancy approval process.

3.3.7 Solid Waste

The Applicant shall prepare a solid waste management plan in conformance with the rules and regulations of the Department of Public Works, Solid Waste Division prior to Plan Approval.

CHAPTER 4

RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

4.1 STATE PLAN

The Hawaii State Plan consists of goals, objectives, policies, and priority directions to guide the future long-range development of the State. The project conforms with the applicable policies discussed below.

Objectives and policies for the economy-- in general.[1]

Objectives:

Planning for the State's economy in general shall be directed toward achievement of the following objectives:

(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards of Hawaii's people.

(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.

Policies:

To achieve the general economic objectives, it shall be the policy of this State to:

1. *Hawaii Revised Statutes* §226-6.

(4) Expand existing markets and penetrate new markets for Hawaii's products and services.

(8) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.

(9) Foster greater cooperation and coordination between the government and private sectors in developing Hawaii's employment and economic growth opportunities.

(10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.

(11) Maintain acceptable working conditions and standards for Hawaii's workers.

(13) Encourage businesses that have favorable financial multiplier effects within Hawaii's economy.

Discussion: The Hawaii State Plan encourages economic diversification that fosters employment and is sensitive to the culture and surrounding neighbors. The project provides a range of employment opportunities from managerial to low-skill jobs. With the relocation to the proposed Site, Big Island Candies will be able to expand its employment base. The east side of the Big Island needs economic stimulation with the decline of the sugar industry.

Objectives and policies for the economy-- visitor industry.[2]

Objective:

Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.

Policies:

To achieve the visitor industry objective, it shall be the policy of this State to:

(1) Support and assist in the promotion of Hawaii's visitor attractions and facilities.

(2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people.

2. *Hawaii Revised Statutes* §226-8.

(3) Improve the quality of existing visitor destination areas.

(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related development which are sensitive to neighboring communities and activities.

(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.

Discussion: Big Island Candies is an established visitor attraction in Hilo. The project will improve the quality of this attraction. The Site, nestled in a residential area, will provide visitors a unique opportunity to experience the character of the local neighborhood, yet minimizing intrusion with extensive perimeter landscaping and locating at the outer edge of the neighborhood. Dialog with the Waiakea *kumiai* groups and surrounding residents has been initiated to ensure that the development is sensitive to community concerns.

Objective and policies for socio-cultural advancement-- culture.[3]

Objective:

Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawaii's people.

Policies:

(1) Foster increased knowledge and understanding of Hawaii's ethnic and cultural heritages and the history of Hawaii.

(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawaii's people and which are sensitive and responsive to family and community needs.

(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawaii.

Discussion: The Big Island Candies business promotes increased appreciation of Hawaii's ethnic and cultural mixture through its products-- e.g., creative use of "local" favorites such as chocolate-covered *iso* peanuts and

3. *Hawaii Revised Statutes* §226-25.

cuttlefish, as well as the use of local ingredients such as macadamia nuts, Kona coffee, and taro chips. Since these products appeal to both local residents and visitors, the business serves as a place where residents and visitors have an opportunity to interact.

4.2 STATE LAND USE LAW

The State Land Use classification for the Site is Urban; no district reclassification would be necessary to accommodate the proposed project.

4.3 HAWAII COUNTY GENERAL PLAN

The General Plan Land Use Pattern Allocation Guide (LUPAG) Map designation for the Site is Low Density Urban. This Low Density designation is intended for single family residences, ancillary community and public uses, and convenience type commercial uses. Because the proposed use does not fit the description of a "convenience type" commercial use, the project requires an amendment to the General Plan to redesignate the Site to High Density Urban. The High Density designation is intended for "commercial, multiple residential and related services (general and office commercial; multiple residential-- up to 87 units per acre)."[4]

From 1971 through the latest comprehensive review of the General Plan in 1989, the General Plan designation for the Site and surrounding area had been Medium Density Urban (see Figure 15, "General Plan LUPAG Map-- 1989 Comprehensive Review Designations," on page 4-6).[5] The Medium Density designation is intended for "village and neighborhood" commercial (up to 3-stories). In 1992, the County Council redesignated the area to the present Low Density classification (see Figure 16 on page 4-7).[6] The

4. Hawaii County General Plan, Supporting Document, 1989, p. 80.
5. "Feasibility Study-- Waiakea Houselots", prepared by Planning Department, County of Hawaii, in response to a County Council request in Resolution No. 317-91, p. 16.

County Council took this action in response to concerns expressed by the old-time residents of the area to preserve the residential character of the area and prevent further encroachments of incompatible commercial and industrial uses.

Unlike the encroaching commercial and industrial uses, the proposed facility will be designed to fit with the surrounding residential character and will provide extensive landscaping. To be permitted, the Site needs to be rezoned to Commercial General. To conform with the General Plan, a Commercial General zoning requires a High Density Urban General Plan designation. Although the proposed amendment appears to be an isolated High Density designation, in actuality there are other areas in proximity to the Site that are zoned Commercial General but do not conform with the General Plan since these areas are designated Medium Density rather than High Density (see Figure 17 on page 4-8). In short, the High Density designation reflects an infilling land use pattern of higher density uses transitioning from Piilani Street towards Kekuanaoa; however, the proposed use can be distinguished from the existing encroaching commercial and industrial uses by its sensitivity to fit with the residential character.

6. Ordinance No. 92-115, Hawaii County.

FIGURE 15. General Plan LUPAG Map-- 1989 Comprehensive Review Designations

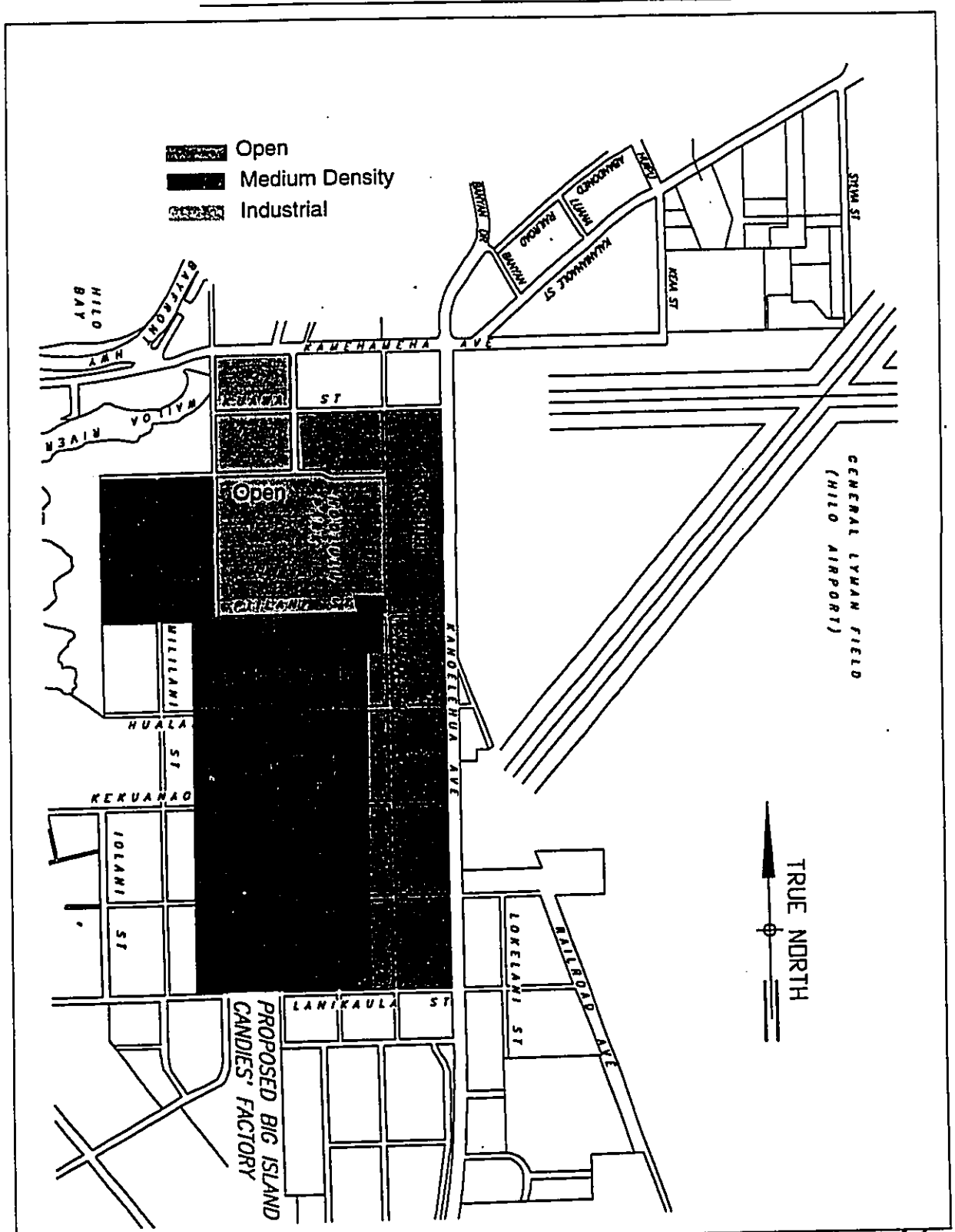


FIGURE 16. General Plan LUPAG Map-- Current Designations

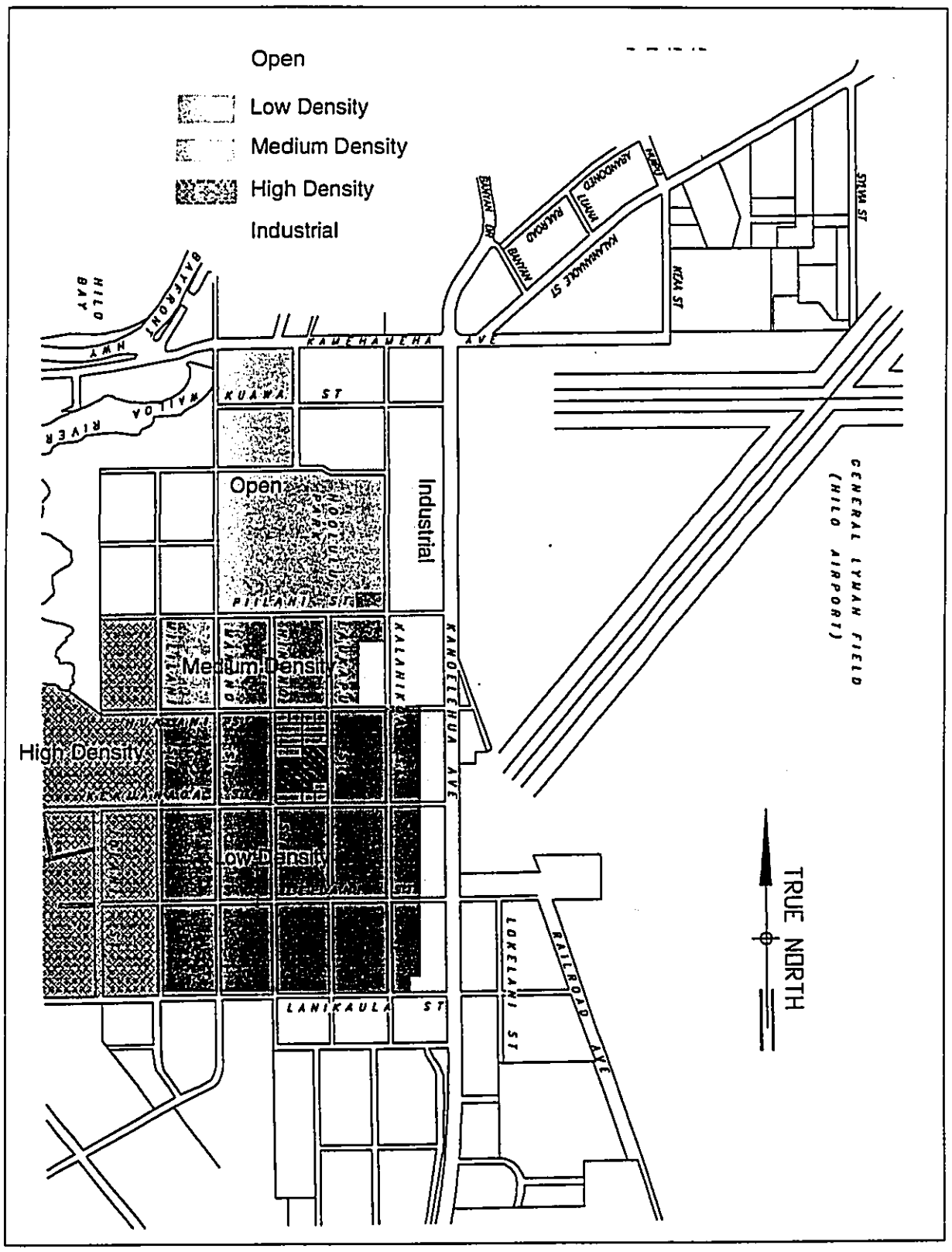
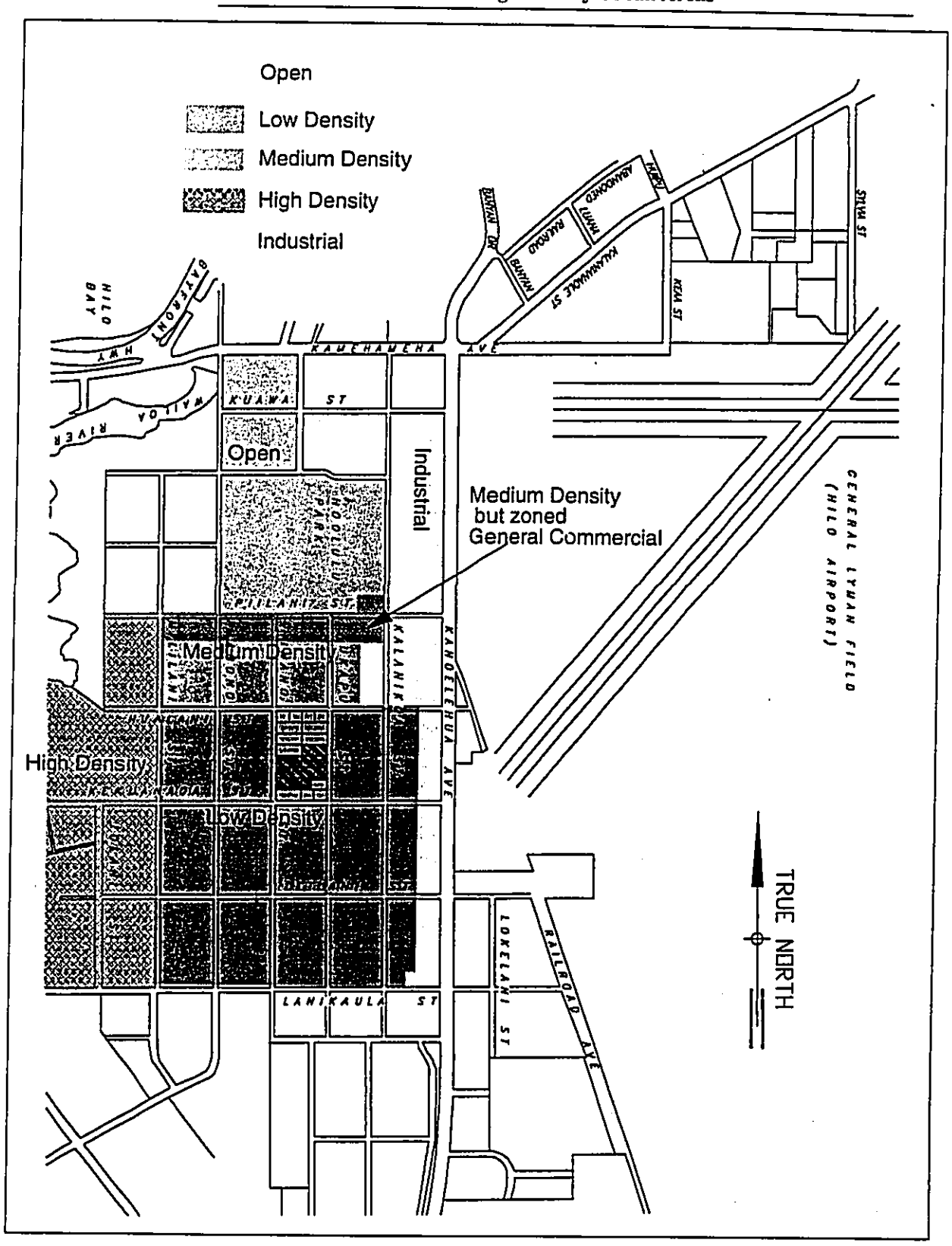


FIGURE 17. General Plan High Density Urban Areas



The proposed General Plan amendment conforms with the goals, policies, and standards of the Economic and Land Use Elements of the General Plan:

Economic Element:

Goals

- Provide residents with opportunities to improve their quality of life.
- Economic development and improvement shall be in balance with the physical and social environments of the island of Hawaii.
- The County of Hawaii shall strive for diversity and stability in its economic system.
- The County shall provide an economic environment which allows new, expanded, or improved economic opportunities that are compatible with the County's natural and social environment.

Policies

- The County of Hawaii shall strive for an economic climate which provides its residents an opportunity for choice of occupation.
- The County of Hawaii shall encourage the development of a visitor industry which is consistent with the social, physical, and economic goals of the residents of the County.
- The County shall require a study of the significant social and physical impact of large developments prior to approval.
- The County of Hawaii shall strive for diversification of its economy by strengthening existing industries and attracting new endeavors.

Discussion: The General Plan amendment furthers the County's goal of providing an economic environment which allows new or existing businesses, such as Big Island Candies, to expand and diversify the County's economic base, and thereby also increase the choice of occupations. The project's low-scale design makes it compatible with the surrounding environment with minimal social impact.

Land Use Element:

Goals

- Designate and allocate land uses in appropriate proportions and mix and in keeping with the social, cultural, and physical environments of the County.

Policies

• Zone urban- and rural- types of uses in areas with ease of access to community services and employment centers and with adequate public utilities and facilities.

• Promote and encourage the rehabilitation and use of urban and rural areas which are serviced by basic community facilities and utilities.

• Allocate appropriate requested zoning in accordance with the existing or projected needs of neighborhood, community, region and County.

• Incorporate innovations such as the "zone of mix" and "mixed use zones" into the Zoning Code.

• The county shall encourage the development and maintenance of communities meeting the needs of its residents in balance with the physical and social environment.

Land Use-- Commercial Development

Goals

• Provide for commercial developments that maximize convenience to users.

• Provide commercial developments that complement the overall pattern of transportation and land usage within the island's regions, communities, and neighborhoods.

Policies

• Commercial facilities shall be developed in areas adequately served by necessary services, such as water, utilities, sewers, and transportation systems. Should such services not be available, the development of more intensive uses should be in concert with a localized program of public and private capital improvements to meet the expected increased needs.

• Distribution of commercial areas shall be such as to best meet the demands of neighborhood, community and regional needs.

• The development of commercial facilities should be designed to fit into the locale with minimal intrusion while providing the desired services. Appropriate infrastructure and design concerns shall be incorporated into the review of such developments.

Standards

• Commercial development shall be located in areas adequately served by transportation, utilities, and other amenities.

• Off-street parking and loading facilities shall be provided.

• Commercial development shall maintain or improve the quality of the present environment through the consideration of visual, access, landscaping, and other design elements in their development.

• Preference shall be given to commercial lands with a reasonably level topography.

Courses of Action (South Hilo)

Appropriately located commercial zoned lands shall be allocated as the need arises.

Discussion: There is a need for commercial-zoned land in Hilo. The Site is an appropriate location for commercial use for the following reasons: the Site has been in nonconforming commercial use; existing public facilities such as sewer and water have adequate capacity to service the proposed project; the topography is level; the applicant will instruct bus operators to use specified routes to minimize intrusion into the local neighborhood; and the Site is conveniently located in proximity to major thoroughfares and the airport. The General Plan recognizes the desirability to renew old, underutilized areas rather than to sprawl into outlying areas. The General Plan also espouses the concept of mixing compatible commercial and residential uses to create a more dynamic community. Such mixed use zones are especially appropriate in "areas of economic transition, such as . . . older residential areas which are needed as sites for more intensive development,"[7] an apt description of the Site.

4.4 HILO COMMUNITY DEVELOPMENT PLAN

The Hilo Community Development Plan (CDP), adopted by Resolution in 1975, is intended to provide short and middle range implementation strategies for the goals, policies, and land use pattern presented in the General Plan. Although the Hilo CDP and its Zone Guide Map, adopted over 15 years ago, suggests a single-family residential designation (RS-10) for the

7. General Plan Support Document, p. 82.

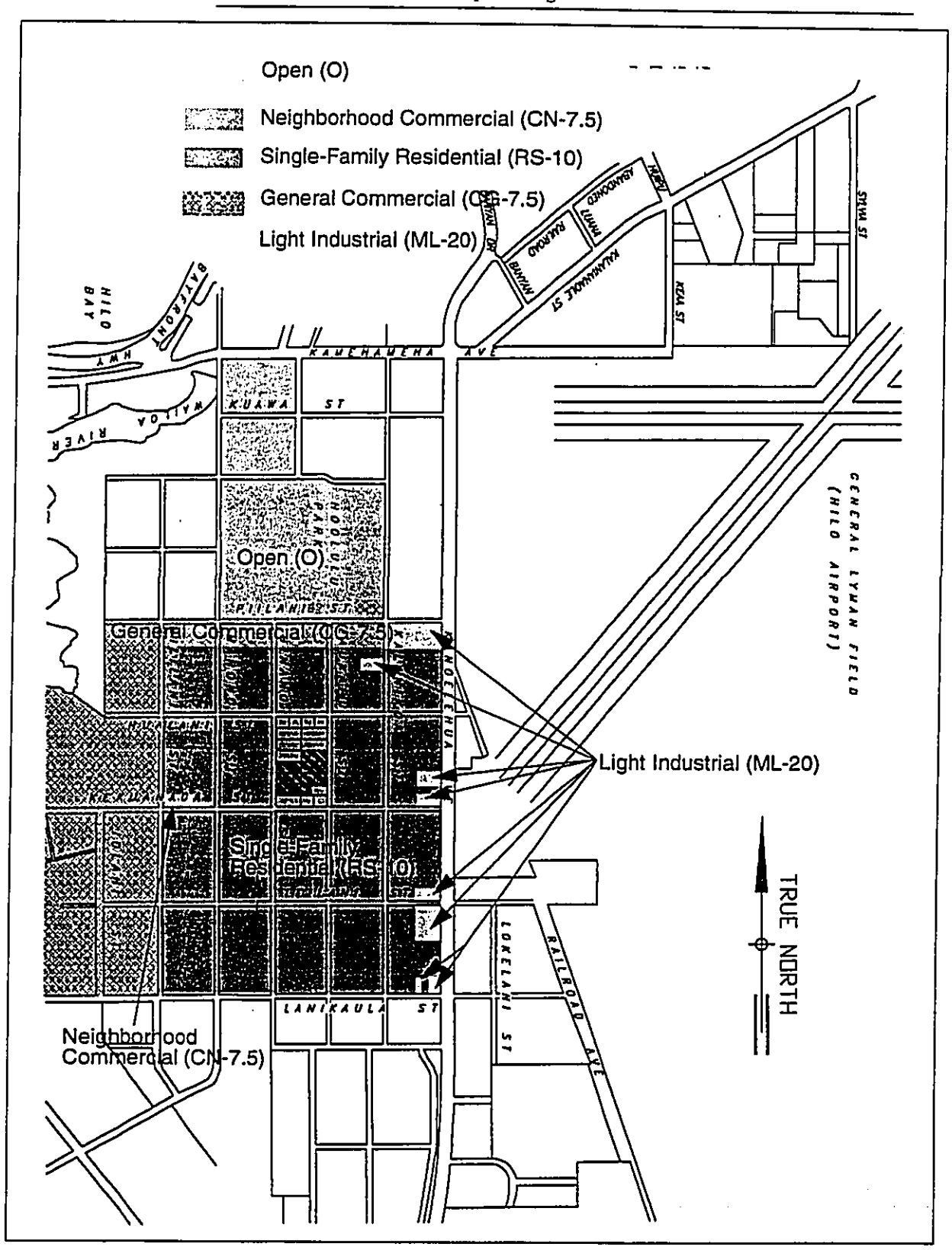
Site, the plan designated commercial areas in the Waiakea Houselots area probably in recognition of the transitional state of the area and its convenient proximity to major thoroughfares, downtown Hilo, and the airport.

4.5 HAWAII COUNTY ZONING AND SUBDIVISION

The existing County zoning designation for the Site is Single-Family Residential (RS-10). The project will require rezoning to General Commercial (CG-20). Permitted uses in the General Commercial district include retail uses conducted entirely within a building, nonnoxious types of manufacturing, and bakeries.[8] All projects within the General Commercial district require Plan Approval.[9] Since Plan Approval is a review of the detailed construction plans usually submitted for building permit approval, it provides assurance that any mitigation measures to assure compatibility with the surrounding neighbors will have been implemented. The several parcels that comprise the Site should be consolidated into one parcel.

8. *Hawaii County Code* §25-192.
9. *Hawaii County Code* §25-242.

FIGURE 18. **Hawaii County Zoning**



4.6 COASTAL ZONE MANAGEMENT AND SPECIAL MANAGEMENT AREA

The project is not located within the Special Management Area (SMA), and therefore does not require a SMA Permit. However, all actions within the State must comply with the objectives and policies of the Coastal Zone Management Act (CZM).[10]

The CZM objectives and policies that are pertinent to the project include:

> Scenic and open space resources:
>
> Encourage those developments which are not coastal dependent to locate in inland areas.[11]

Discussion: Since the project is not coastal-dependent, the proposed inland location is consistent with this policy.

> Coastal hazards:
>
> Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards.[12]

Discussion: The Hawaii County Civil Defense Agency notifies the general public of the tsunami evacuation zones and procedures through its publication in the telephone book. The project is located outside the evacuation zone (see Figure 9 on page 3-3).

10. The "coastal zone management area," at one time defined as the Special Management Areas (SMA) delineated by the counties, now includes all land areas in the State (*Hawaii Revised Statutes* §205A-1, -4(b)).
11. *Hawaii Revised Statutes* §205A-2(c)(3)(D).
12. *Hawaii Revised Statutes* §205A-2(c)(6)(A).

4.7 HANDICAPPED ACCESSIBILITY

As a commercial facility, the project design must conform with the American with Disabilities Act standards. Violations of this Act are enforced through litigation.

4.8 OTHER PERMITS AND APPROVALS

The project will require grading and building permits. Any improvements within the Hinano or Laukapu rights-of-way must conform with the requirements of Chapter 22, Streets and Sidewalks, of the Hawaii County Code. If drywells are required to drain the parking lot, the drywells may require an Underground Injection Control (UIC) Permit from the Department of Health (DOH). Since the limits of grading for the improvements will involve less than 5 acres, the non-point source controls under the NPDES Permit administered by DOH will not likely apply to the project. Prior to erection of a sign, the Department of Public Works must issue a sign permit.

TABLE 5: List of Permits and Approvals

Permit or Approval	Authority[a]	Approving Agency
FEDERAL		
ADA Design Guidelines	Americans with Disabilities Act	judiciary (enforcement by litigation)
STATE OF HAWAII		
Underground Injection Control (possibly)	HAR Chap. 11-23	Department of Health
COUNTY OF HAWAII		
General Plan Amendment	Ord. No. 89-142	County Council
Rezoning	HCC Chap. 25	County Council
Subdivision (consolidation) approval	HCC Chap. 23	Planning Department
Plan Approval	HCC Chap. 25	Planning Department

TABLE 5: List of Permits and Approvals

Permit or Approval	Authority[a]	Approving Agency
Grading Permit	HCC Chap. 10	Department of Public Works
Construction within County Right-of-Way Permit; Driveway Permit	HCC Chap. 22	Department of Public Works
Building Permit	HCC Chap. 5	Department of Public Works
Sign Permit	HCC Chap. 3	Department of Public Works

a. PC Rule= Rules of Practice & Procedure, Planning Commission, County of Hawaii; HCC= Hawaii County Code; HAR= Hawaii Administrative Rules

CHAPTER 5

ALTERNATIVES

The following alternatives avoid or reduce impacts resulting from the project.

5.1 NO PROJECT

Under this *status quo* alternative, the Site remains in its present condition and Big Island Candies does not build a new facility.

Advantages. The following impacts would be avoided for the surrounding residents:

- *Noise during the construction period.* This is a short-term impact that can be minimized by an expedited work schedule or controlled working hours.
- *Noise and traffic from tour buses.* The residents in the immediate vicinity of the Site were not concerned about the tour bus noise and traffic. The existing noise from overflight aircraft and Kekuanaoa Street are more significant noise sources.

Disadvantages. The following beneficial impacts would be foregone:

- The Site would continue to be underutilized by the present nonconforming commercial uses;
- Big Island Candies would not be able to expand and increase employment and market opportunities;
- The opportunity to introduce a compatible use that would diversify the activities in the area would be foreclosed. Some of the residents, especially the elderly in the area, look forward to the project for the convenient shopping and opportunity to meet some of the visitors.

5.2 ALTERNATIVE COMMERCIALLY-ZONED SITE LOCATION

Under this alternative, Big Island Candies would seek an alternative location that is already zoned commercial and therefore would not be in a residential area.

Advantages. The infrastructure, such as roads, should be capable of accommodating the proposed project. There should be no compatibility concerns with the other commercial neighbors.

Disadvantages. This is not a feasible alternative. There are no existing commercially-zoned properties that meet the area, accessibility, and aesthetic requirements of the project. If such a property were available, the Applicant would not be spending the time and money for the land use approvals attendant with the subject Site.

5.3 ALTERNATIVE DESIGNS

Under this alternative, the project would be permitted to be constructed on the Site, but changes would be made to the design to address particular concerns. Since the project has already been designed to fit with the surrounding residential character, no concerns have been expressed that require mitigation through design.

5.4 EVALUATION OF ALTERNATIVES

The low-scale, lushly landscaped project has been designed to mitigate potential concerns of locating a commercial project adjacent to residential uses. The area is already subject to a mix of residential and non-residential uses, the infrastructure has the capacity to accommodate the project, the area is conveniently situated to major roads and the airport, and the existing ambient noise levels are already relatively high due to the Kekuanaoa Street traffic and aircraft overflights. Because of these existing conditions and the acceptability of the surrounding residents to the project, the unavoidable impacts associated with the project (i.e., tour bus noise and traffic) are not major concerns and therefore do not justify serious consideration of the "no project" and "alternative site" alternatives.

CHAPTER 6

IMPACT SIGNIFICANCE ANALYSIS

6.1 RELATIONSHIP BETWEN SHORT-TERM USES AND MAINTENANCE OF LONG-TERM PRODUCTIVITY

The Site is already used for nonconforming commercial uses. The proposed project will enhance the productivity of the Site by restoring the gardens and reviving activity on the Site with a viable growing business.

6.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Since the Site has already been completely disturbed, the commitment of natural or archaeological resources is not an issue. The only irreversible commitment relates to infrastructure capacity, particularly road capacity. Expanding the width of Hinano Street is not likely without unpopular condemnation. The mitigation measures proposed for this project (improving the road shoulders and restricting tour bus traffic from the interior streets) must suffice.

6.3 UNAVOIDABLE ADVERSE IMPACTS

The following impacts are unavoidable:

- *Noise from tour buses.* This is not a significant impact because of the existing high ambient noise levels from aircraft overflight and Kekuanaoa traffic. Tour buses will be routed from Kekuanaoa and will be restricted from the interior neighborhood streets.
- *Turning encroachments of buses.* The right turns of the tour buses into and out from Hinano to Kekuanaoa Street will encroach onto the opposing lane. These turns can be made with caution timed with the gaps in the opposing traffic.
- *Dislocated business.* The existing plant nursery business located on the Site will have to relocate. However, since the lease is on a month-to-month term, the lease can be terminated irrespective of the project.

CHAPTER 7

UNRESOLVED ISSUES

There are no unresolved issues, provided the following mitigation measures are implemented:

Design Phase:

- Provide dense perimeter landscaping, especially around parking lots, to buffer noise.
- Incorporate existing large trees, especially along Hinano Street, into the landscaping plan to the extent feasible.
- Design the building with low-scale, residential character.
- Widen Hinano Street to 20' from the Kekuanoa/Hinano Street intersection to the project entrance.
- Improve the turning radius for the right turn corner from Kekuanaoa to Hinano Street to the extent possible within the existing right of way.

Construction Phase:

- Comply with the standards set forth in the Department of Health Community Noise Control regulation.

Operational Phase:

- Instruct the bus drivers to access the Site from Kekuanaoa Street and restrict driving through the neighborhood.

- Advise bus drivers to exercise caution when making right turns from Kekuanaoa Street to Hinano Street.
- Advise bus drivers to make left turns from Hinano Street to Kekuanaoa Street as the standard route to their next stop at Liliuokalani Gardens.
- Instruct bus drivers to turn off their engines and not to idle while waiting for their passengers.

CHAPTER 8

EIS PREPARERS AND CONSULTED PARTIES

8.1 PREPARERS OF THE EIS DOCUMENT

Roy Takemoto, J.D., M.A.	EIS author
Sidney Fuke & Associates (Sidney Fuke)	Community meetings; review EIS
M&E Pacific, Inc.	Traffic impact analysis report; preliminary engineering report

8.2 CONSULTED PARTIES

The consulted parties are listed in Appendix C, "Comments and Responses to the EIS Preparation Notice".

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APPENDIX A

Traffic Impact Analysis Report

BIG ISLAND CANDIES RELOCATION

TRAFFIC IMPACT ANALYSIS REPORT

By:

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June, 1996

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BIG ISLAND CANDIES RELOCATION
TRAFFIC IMPACT ANALYSIS REPORT

Big Island Candies, Inc., proposes to relocate their factory and sales outlet within Hilo, Hawaii. This report documents a study conducted to evaluate the traffic impacts at the proposed new site and to identify appropriate mitigating actions.

Project Description

Big Island Candies, Inc., is proposing to relocate its factory and sales outlet from the Kalanianaole Industrial Area to a larger facility on the site of the former Orchids of Hawaii. The 3.33 acre parcel is between Hinano and Laukapu Streets makai of Kekuanaoa Street. The existing and proposed locations are shown on Figure 1. Vehicular access to the site will be from Hinano Street only. The move is expected to be completed in late 1997.

Big Island Candies retails deluxe cookies and candies primarily to visitors but also to island residents. For the purposes of this study, it was assumed that current customer and employee traffic levels would remain unchanged. Also, the current employee work hours and retail sales hours would remain unchanged.

Employees report to work between 5:30 a.m. to 8:30 a.m. Most of the employees report at 7:15 a.m. and 8:15 a.m. They complete their work shifts between 1:30 p.m. and 6:00 p.m. with most of the employees finishing at 4:15 p.m. and 5:15 p.m. The current retail sales hours are from 8:30 a.m. to 5:00 p.m.

The primary route to the proposed site is expected to be via Kekuanaoa Street and Hinano Street. Tour buses and vans that bring visitors to the site will be instructed to use the primary route to minimize disruption on the residential neighborhood. Customers and employees coming by auto would not have route restrictions.

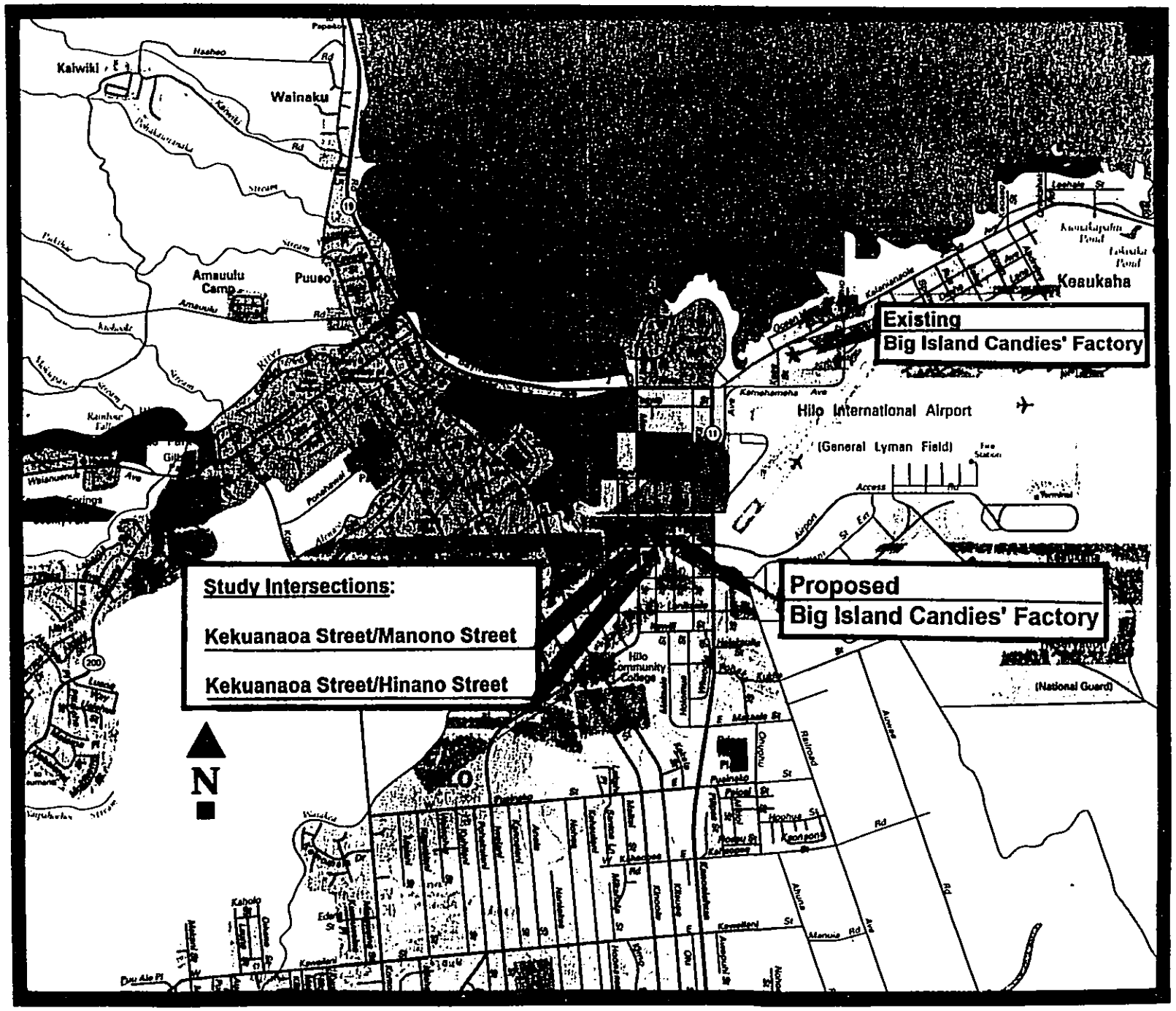


FIGURE 1

LOCATION MAP

Based on these conditions, the two key study intersections on Kekuanaoa Street were expected to be at Manono Street and Hinano Street. The greatest traffic impact, if any, would be on Hinano Street. However, Manono Street is a heavy traveled roadway that is the next parallel Road to Hinano Street. These two intersections are also identified on Figure 1.

Existing Conditions

Existing Roadway, traffic and customer traffic conditions were surveyed.

Kekuanaoa Street is a two lane collector road that is part of the primary access route between the airport and downtown Hilo. It is signed for 35 miles per hour. Manono Street is a two lane north-south roadway that provides the only through route between Kamehameha Avenue and Kekuanaoa Street in the Waiakea neighborhood. The intersection of the two streets is signalized. There are separate left turn lanes on both approaches of Kekuanaoa Street with advanced green turn signals. There are no separate turn lanes on the Manono Street approaches.

Hinano Street is another two lane north-south roadway that terminates at the Civic Center Auditorium. Its approaches to Kekuanaoa Street are stop controlled and do not have any separate turn lanes.

Turning movement traffic counts were taken by M&E Pacific, Inc., at the above two intersections to determine existing traffic conditions. The counts were taken on Thursday, June 6, 1996, during the entire morning from 7:00 a.m. to 11:00 a.m. (with a short break from 9:00 a.m. to 9:15 a.m.) to include the morning commuter period and the morning sales period. The afternoon count was taken from 3:30 p.m. to 5:30 p.m. The results of the traffic counts are graphically summarized on Figure 2 for the early morning, mid-morning, and afternoon peak hours. The numbers shown on the figure have been rounded to

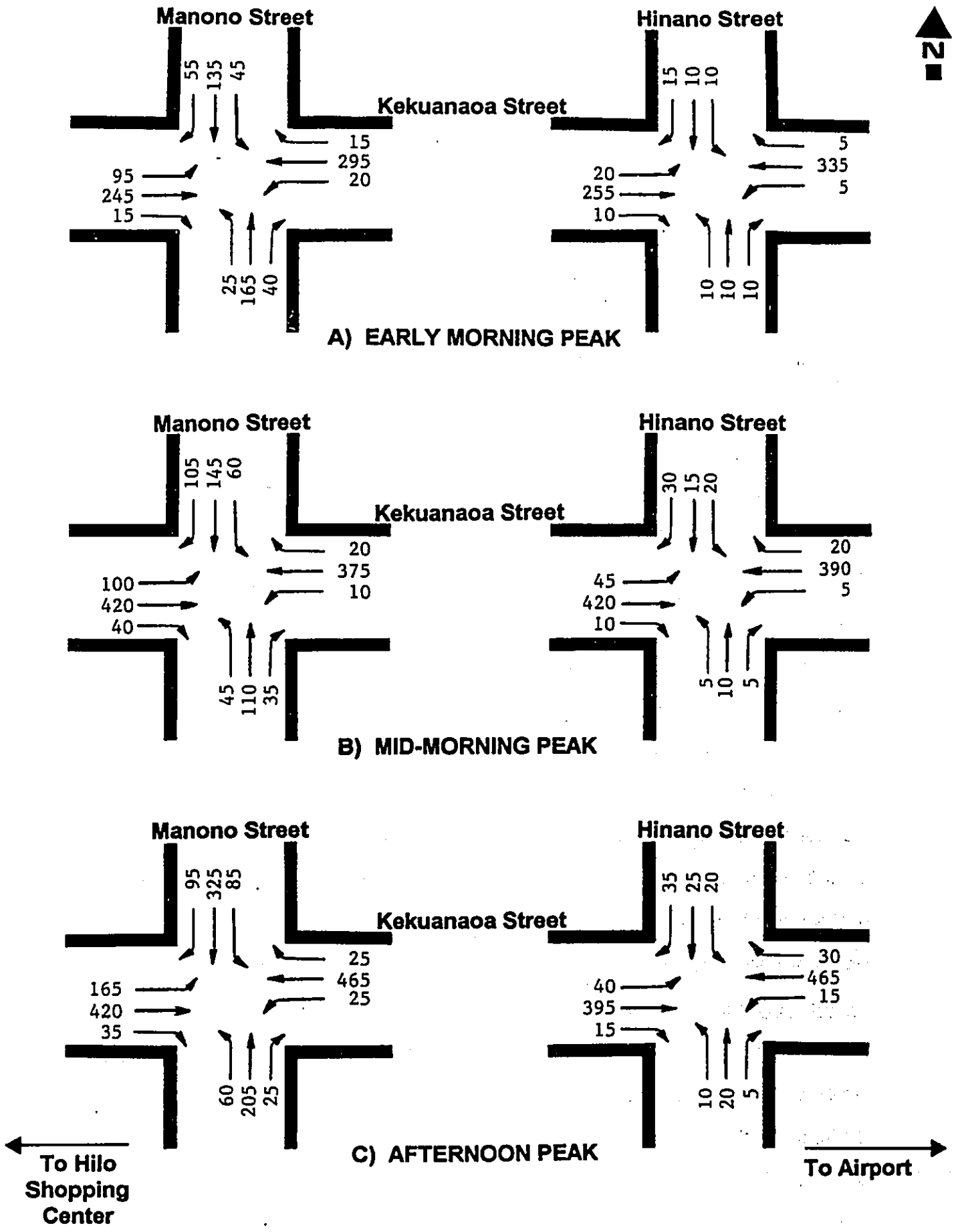


FIGURE 2
EXISTING TRAFFIC VOLUMES

the nearest five (5). The worksheets for the traffic counts are included in the Appendix.

The counts show that the cross traffic on Manono Street is much higher than that on Hinano Street, as was to be expected. On the other hand, the traffic volumes on Hinano Street can be considered very light. It is interesting to note that there appears to be only one peak on Kekuanaoa Street. The traffic volumes increase throughout the day until they reach a peak during the afternoon peak. Even the mid-morning peak hour volumes are greater than the early morning commuter peak hour volumes.

To determine existing traffic conditions at Big Island Candies, incoming and outgoing vehicular traffic were counted on Tuesday, June 4, 1996, at their sales outlet. Altogether, there were about 160 autos, 40 vans, and 13 buses counted during the entire retail sales period (with the exception of two short breaks). The results of the incoming vehicles are summarized graphically on Figure 3 for autos, vans and buses. In the opinion of the Big Island Candies management, the traffic on this day was slightly higher than normal.

The incoming traffic pattern seems to mirror the hourly traffic pattern on Kekuanaoa Street, in that auto and van traffic rises to a peak in the afternoon. Tour bus traffic appears to be heavier in the mid-morning. It should be noted that some of the incoming autos in the hour starting at 4:00 p.m. are probably not customers but are those picking up employees at the end of the work day.

Traffic Forecast Methodology

To determine future traffic conditions at the two intersections, the traffic which would be generated by the proposed project was added to the ambient traffic forecasts to obtain the total traffic forecasts. Traffic forecasts were developed for the early morning, mid-morning and afternoon peak hours for 1997 when the proposed project is slated for occupancy.

Forecasts of ambient traffic conditions are estimates of future traffic without the proposed project. There are no other major projects in the vicinity that could affect traffic volumes. Therefore, general growth factors were used to expand the existing traffic volumes shown on Figure 2.

The Hawaii County General Plan (November, 1989) shows three scenarios for population growth on Hawaii to the year 2005, based on different assumptions of visitor industry growth. The three annual growth rates for the South Hilo District were 0%, 1.7% and 3.3%. The mid-range forecast of 1.7% was used for this study. Therefore, the existing traffic volumes on Figure 2 were increased by 1.7% to obtain the ambient traffic forecast for the year 1997 and shown on Figure 4 rounded to the nearest five (5). The ambient traffic forecast volumes are very similar to the existing traffic volumes.

The traditional procedure of trip generation, distribution and assignment was used to estimate the number of vehicle trips which would be generated by the proposed project in the early morning, mid-morning and afternoon peak hours, the distribution of these trips, and the specific turning movements affected.

The trip generation characteristics of the proposed relocated project were based on existing trip generation characteristics. During the early morning peak, only the current 37 incoming employee trips can be expected. The mid-morning and afternoon traffic volumes were assumed to be the same as the traffic counts summarized on Figure 3. During the mid-morning peak, the inbound traffic was assumed to be 19 autos, 3 vans and 3 buses. The outbound traffic was assumed to be 14 autos, 4 vans and 3 buses. The afternoon peak was assumed to have 33 inbound autos and 3 vans. The outbound traffic was assumed to be 52 autos, 9 vans and 1 bus. As previously discussed, the afternoon traffic volumes include employee trips and their pickup rides as well.

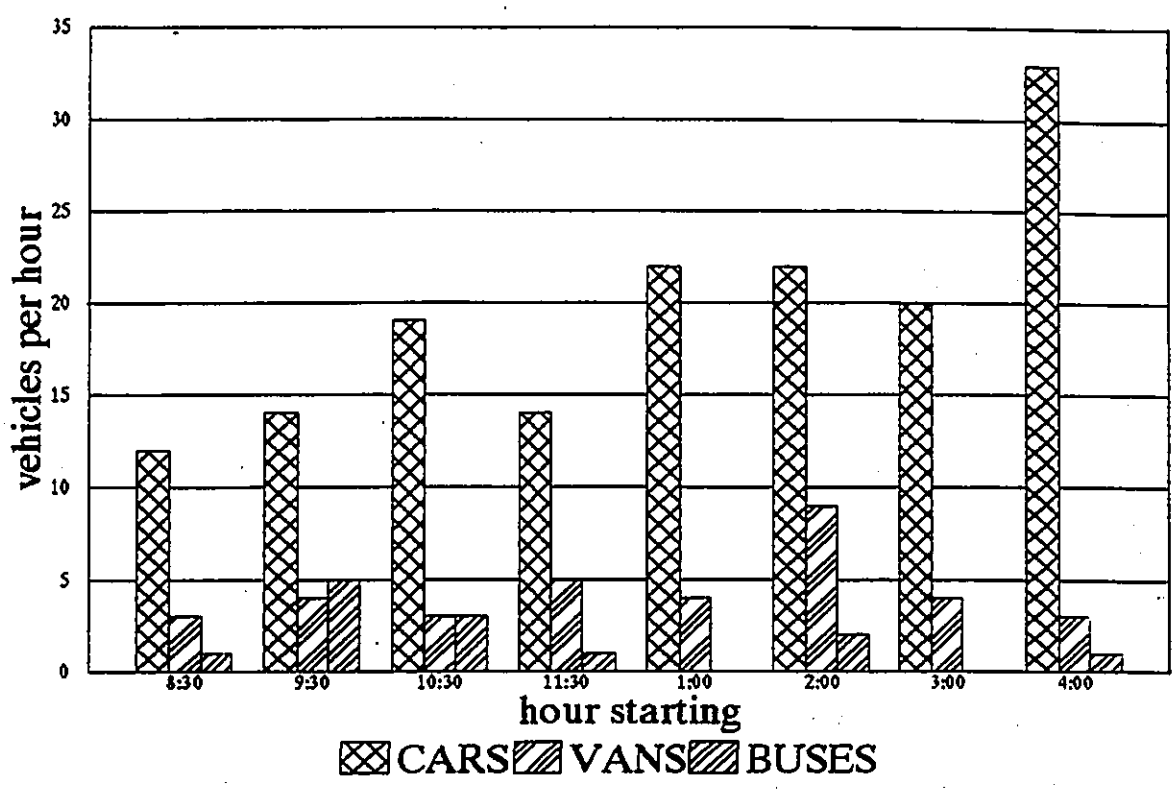


FIGURE 3

INCOMING HOURLY TRAFFIC AT BIG ISLAND CANDIES, INC. FACTORY

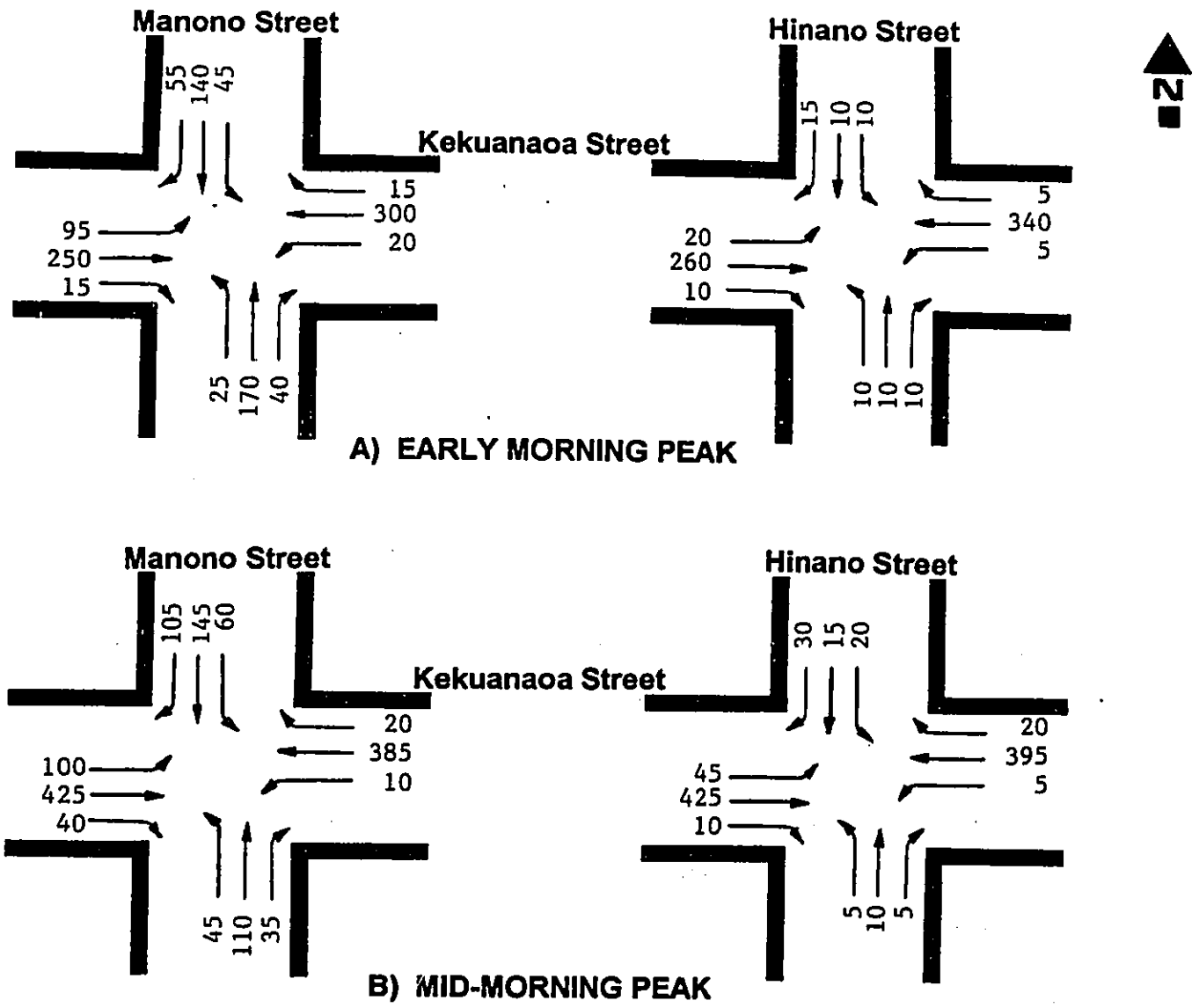


FIGURE 4
AMBIENT TRAFFIC FORECAST

Trip distribution for employee and customer auto trips were assumed to be evenly divided between three directions of travel: north, east and west, for all three time periods. North traffic was assumed to use Hinano and Manono Streets to travel north and would not affect any of the two study intersections. East traffic was assumed to use the east approach (to downtown Hilo) of Kekuanaoa Street and would pass through the Manono Street intersection. West traffic was assumed to use the west approach (to the airport) of Kekuanaoa Street and would only utilize the Hinano Street intersection.

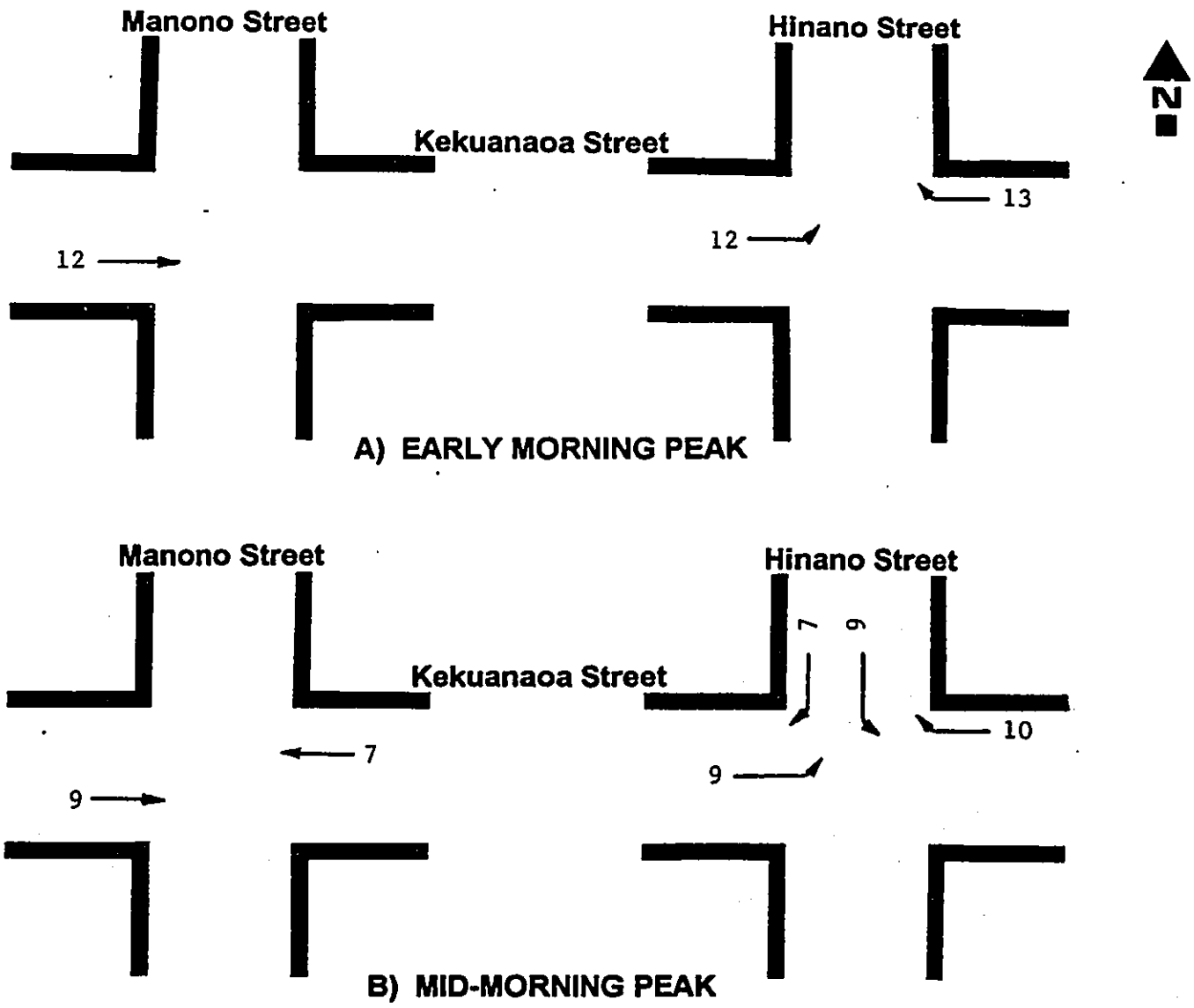
Vans and tour buses were evenly divided between the two approaches of Kekuanaoa Street from Hinano Street, since they would be asked to use these routes. The results of assigning the project generated trips to the above distribution patterns are shown on Figure 5 for the three time periods.

The ambient traffic forecast from Figure 4 was added with the project generated traffic assignment from Figure 5 to obtain the total traffic forecast shown on Figure 6.

Traffic Impact Analysis

The traffic impact of the proposed project was evaluated by analyzing the traffic levels of service (LOS) with the project against the without project conditions. A project can be considered to have an adverse traffic impact if a change to an undesirable level of service can be attributed to the project. If an adverse traffic impact is identified, then there would be a need for mitigating actions.

The methodologies for calculating levels of service at signalized and unsignalized intersections from the Transportation Research Board 1994 Highway Capacity Manual Update were used. Only the existing and with project forecast conditions were analyzed. The ambient traffic forecast was not analyzed since its volumes are very similar to the existing traffic volumes.



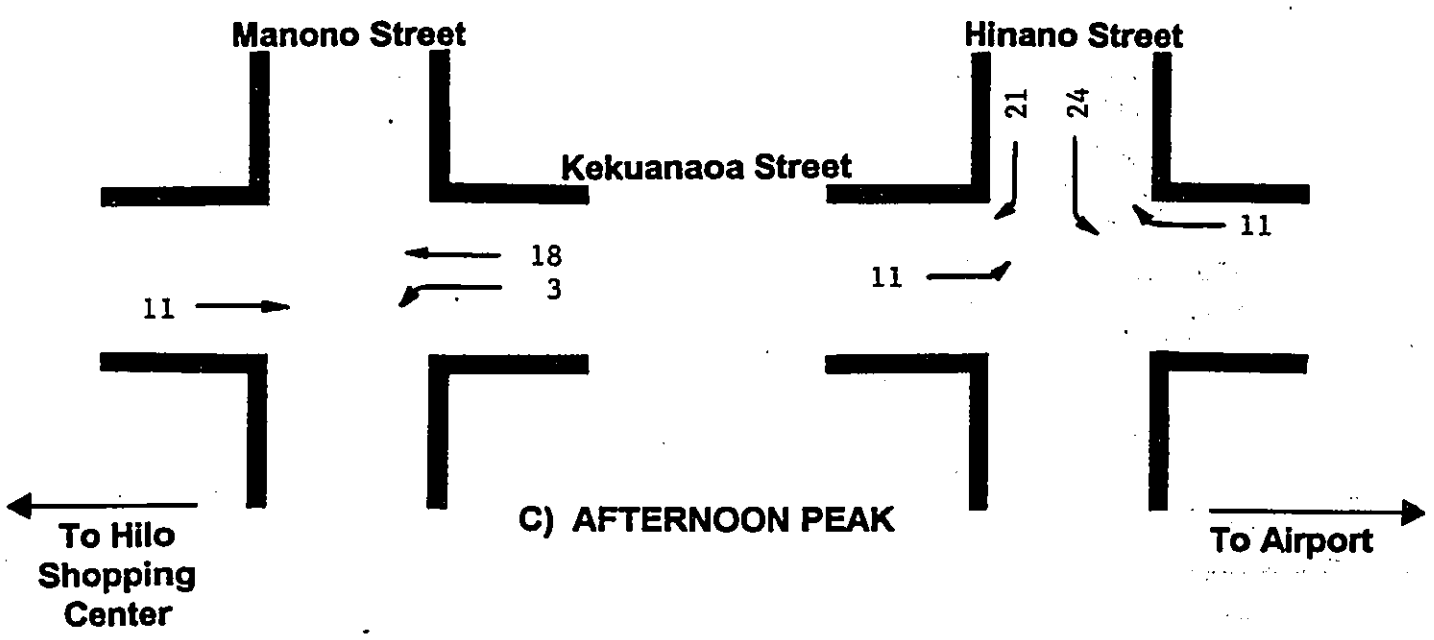


FIGURE 5
PROJECT GENERATED TRAFFIC

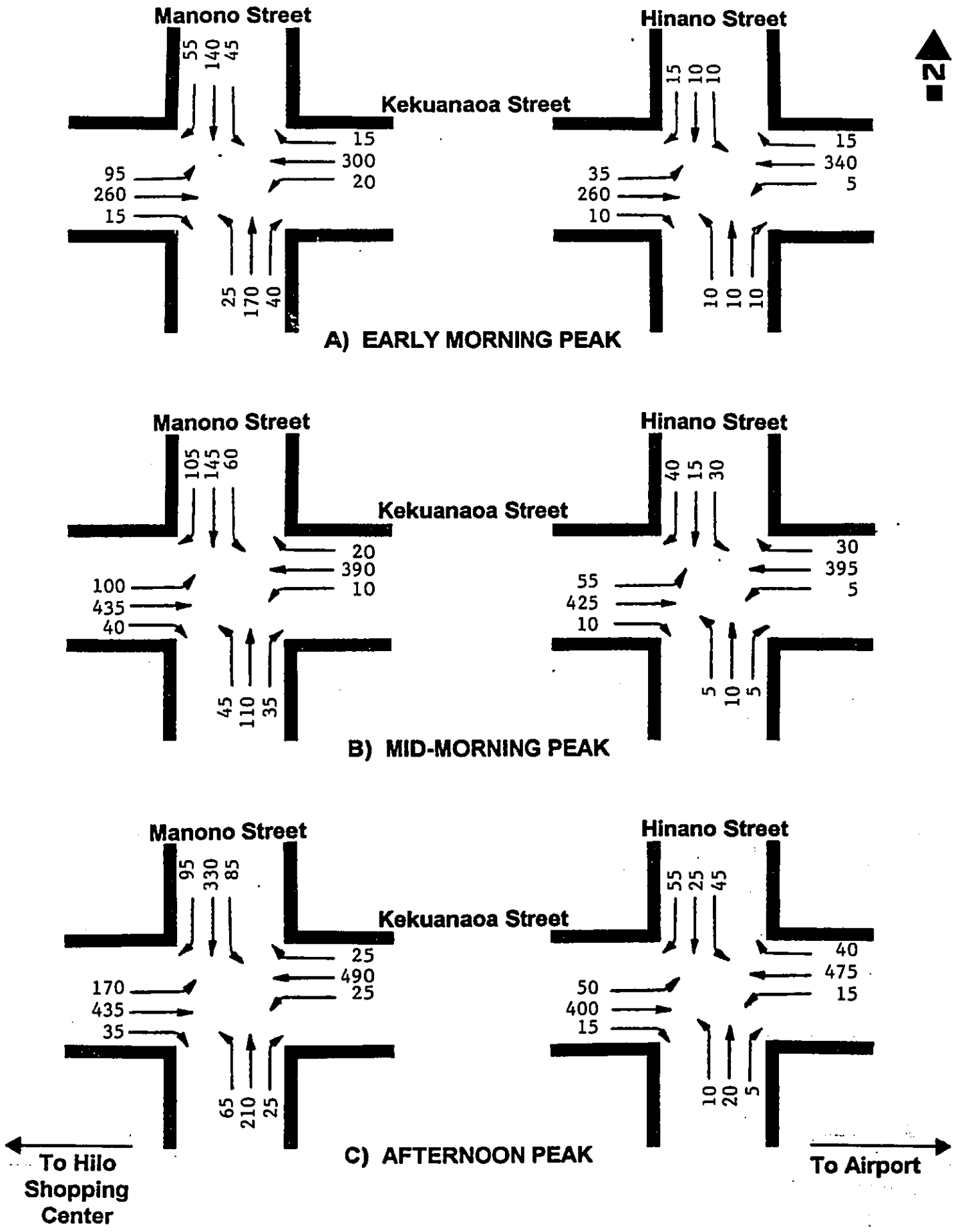


FIGURE 6
TOTAL TRAFFIC FORECAST

The Manono Street intersection was analyzed with the methodology for a signalized intersection which calculates the levels of service for each approach and the intersection as a whole based on the expected delay. The results range from level of service A (best with average delays less than five seconds) to F (worst with average delays over one minute). Traffic improvements should be considered for levels of service E and F conditions when average delays are longer than 40 seconds.

The Hinano Street intersection was analyzed with the methodology for an unsignalized intersection which calculates the levels of service for several critical movements (the outbound movements from the stop sign controlled side street and the left turn movements from the main through street) based on the expected delay. The results range from level of service A (best with average delays less than five seconds) to F (worst with average delays longer than 45 seconds). Traffic improvements should be considered for level of service F conditions.

The results of the analysis are shown on Table 1. During the early morning peak hour, both intersections showed no change in levels of service indicating no impact at all attributed to the project.

During the mid-morning peak hour, the levels of service at the Manono Street intersection do no change while the southbound approach of Hinano Street decreases from level B to C. This change does not imply an adverse traffic impact since level of service C is still acceptable. Also, the threshold between level of service B is an average delay of 10.0 seconds. The existing traffic is already 9.6 seconds, so a small increase in the average delay will be sufficient to cause a change in the level of service.

During the afternoon peak when traffic volumes are the highest, the levels of service at the Hinano Street intersection do not change while the northbound

Table 1

Level of Service Analysis

Signalized Intersection (Kekuanaoa Street at Manono Street

	Level of Service and Delay (Seconds) Existing	Forecast
Early Morning Peak Hour		
Kekuanaoa Street Eastbound	B (6.0)	B (6.1)
Kekuanaoa Street Westbound	B (6.5)	B (6.5)
Manono Street Northbound	B (12.7)	B (12.9)
Manono Street Southbound	B (13.3)	B (13.5)
Entire Intersection	B (9.1)	B (9.2)
Mid-Morning Peak Hour		
Kekuanaoa Street Eastbound	B (7.9)	B (8.4)
Kekuanaoa Street Westbound	B (7.3)	B (7.5)
Manono Street Northbound	B (12.6)	B (12.6)
Manono Street Southbound	C (17.2)	C (17.2)
Entire Intersection	B (10.4)	B (10.5)
Afternoon Peak Hour		
Kekuanaoa Street Eastbound	C (17.2)	C (19.5)
Kekuanaoa Street Westbound	C (18.1)	C (23.2)
Manono Street Northbound	C (23.8)	D (29.1)
Manono Street Southbound	E (46.1)	E (44.7)
Entire Intersection	D (25.4)	D (28.0)

Table 1 (Continued)

Unsignalized Intersection (Kekuanaoa Street at Hinano Street)

	Level of Service and Delay (Seconds) Existing	Forecast
Early Morning Peak Hour		
Hinano Street Northbound	B (6.8)	B (7.2)
Hinano Street Southbound	B (6.6)	B (6.9)
Kekuanaoa Street Eastbound, Left Turn	A (0.2)	A (0.4)
Kekuanaoa Street Westbound, Left Turn	A (0.0)	A (0.0)
Entire Intersection	(0.7)	(0.8)
Mid-Morning Peak Hour		
Hinano Street Northbound	C (10.1)	C (10.7)
Hinano Street Southbound	B (9.6)	C (10.7)
Kekuanaoa Street, Eastbound Left turn	A (0.3)	A (0.4)
Kekuanaoa Street, Westbound	A (0.0)	A (0.0)
Entire Intersection	(1.0)	(1.3)
Afternoon Peak Hour		
Hinano Street Northbound	C (13.1)	C (14.3)
Hinano Street Southbound	C (11.6)	C (15.9)
Kekuanaoa Street Eastbound, Left turn	A (0.3)	A (0.4)
Kekuanaoa Street Westbound Left turn	A (0.1)	A (0.1)
Entire Intersection	(1.5)	(2.4)

approach of Manono Street decreases from level C to D. This change does not imply an adverse traffic impact since level of service D is still acceptable.

Conclusion

The above traffic analysis indicated that the proposed relocation of Big Island Candies is not expected to have an adverse traffic impact. The two intersections studied have sufficient capacity to accommodate the additional traffic which would be generated by the proposed project. Additional traffic improvements are not required.

Traffic volumes on Hinano Street are currently very low between the Civic Center Auditorium and Kekuanaoa Street, which is a predominantly residential area. However, the additional auto traffic from the proposed project should not have an adverse effect on these residents. Tour buses will be asked to access the site from Kekuanaoa Street (south) rather than from the north to minimize traffic impacts.

APPENDIX A

ABSTRACT OF METHODOLOGY

for the

CAPACITY ANALYSIS FOR SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

ABSTRACT OF METHODOLOGY

for the

CAPACITY ANALYSIS FOR SIGNALIZED INTERSECTIONS

ABSTRACT OF METHODOLOGY
for the
LEVEL OF SERVICE ANALYSIS OF SIGNALIZED INTERSECTIONS

A very complex methodology is used to determine the capacity and level of service of signalized signals. The procedure is divided into the five modules shown on Figure 9-3. The input data required for the analysis is shown on Figure 9-4. The level of service criteria is shown below:

LEVEL OF SERVICE (LOS)
CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service	Stopped Delay Per Vehicle (Seconds)
A	≤ 5.0
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.1 to 60.0
F	≥ 60.0

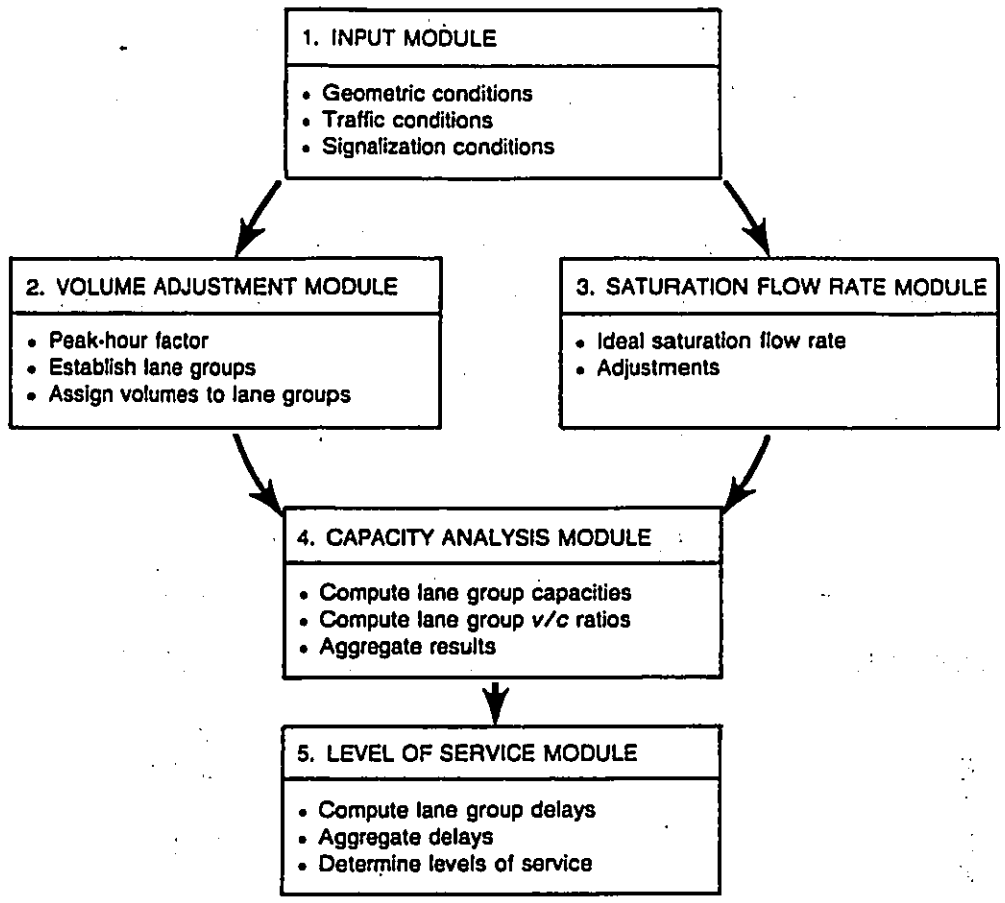


Figure 9-3. Operational analysis procedure.

TYPE OF CONDITION	PARAMETER	SYMBOL
Geometric conditions	Area Type	CBD, Other
	Number of Lanes	N
	Average Lane Widths, ft.	W
	Grades, %	%G
	Existence of Exclusive LT or RT Lanes	None
	Length of Storage Bay, LT or RT Lane	L_s
	Parking Conditions	Yes, No
Traffic conditions	Volumes by Movement, vph	V
	Ideal Saturation Flow Rate by Mov't, pcphgpl	s_o
	Peak Hour Factor	PHF
	Percent Heavy Vehicles	%HV
	Conflicting Pedestrian Flow Rate, peds/hr	PEDS
	Local Buses Stopping in Intersection	N_b
	Parking Activity, pkg maneuvers/hr	N_m
	Arrival Type (1-6)	AT
	Proportion of Vehicles Arriving on Green	P
Signalization conditions	Cycle Length, sec	C
	Green Time, sec	G
	Yellow change interval	Y
	All-red clearance interval	AR
	Actuated or Pretimed Operation	A or P
	Pedestrian Push-Button?	Yes, No
	Minimum Pedestrian Green	G_p
	Phase Plan	None

Figure 9-4. Input data needs for each analysis lane group.

ABSTRACT OF METHODOLOGY

for the

CAPACITY ANALYSIS FOR UNSIGNALIZED INTERSECTIONS

ABSTRACT OF METHODOLOGY
for the
LEVEL OF SERVICE ANALYSIS OF UNSIGNALIZED INTERSECTIONS

This abstract summarizes the procedures for analyzing the capacities of unsignalized intersections. These procedures are described in the Highway Capacity Manual, Special Report 209 (Third Edition, 1994) by the Transportation Research Board (TRB). This manual "is a collection of techniques for estimating highway capacity that have been judged, through consensus, as the best available at the time of publication." This manual does not set legal standards for highway design but the procedures have become widely accepted and used in the traffic engineering profession.

The capacity analysis procedure is based on a German method originally published in 1972 and translated in 1974, and modified for U. S. conditions by the TRB in 1985, and new data reflected in 1994. It is intended for two-way STOP- and YIELD-controlled intersection and calculates the capacities of movements which cross or turn through the major traffic stream. The capacity of each movement is based on two factors: the gap distribution in conflicting traffic streams and the gap acceptance behavior of drivers at such intersections.

The basic steps in methodology are as follows:

1) Define intersection geometry and traffic volumes.

2) Determine the "conflicting conflicts" through which every minor street movement and major street left turn must cross.

3) Determine the size of the gap in the conflicting stream needed by vehicles in each movement crossing a conflicting traffic stream.

4) Determine the capacity of the gaps in the major traffic stream to accommodate each of the subject movements that will utilize these gaps.

5) Adjust the capacities to account for impedance and the use of shared lanes.

6) Estimate average delay and determine level of service for each movement.

Tables and charts, as well as computer programs, have been developed to facilitate using this methodology.

INTERSECTION DATA

Key geometric factors include: number and use of lanes, channelization, percent grade, curb radii and approach angle, and sight distances. One hour volumes are specified by movement and converted to passenger cars per hour using the passenger car equivalents in TABLE 10-1.

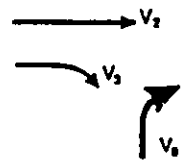
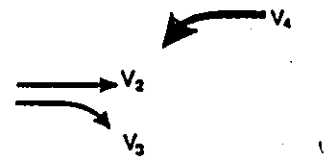
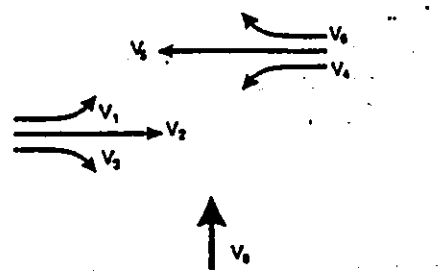
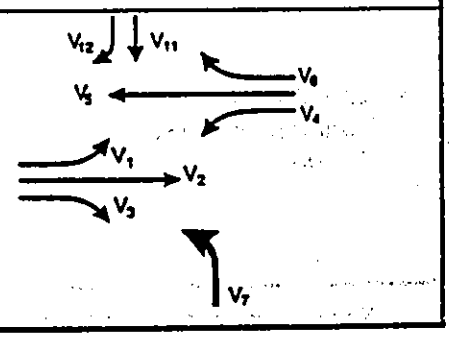
TABLE 10-1. PASSENGER-CAR EQUIVALENTS FOR TWSC INTERSECTIONS

TYPE OF VEHICLE	GRADE (%)				
	–4	–2	0	+2	+4
Motorcycles	0.3	0.4	0.5	0.6	0.7
Passenger Cars	0.8	0.9	1.0	1.2	1.4
SU/RVs[a]	1.0	1.2	1.5	2.0	3.0
Combination Vehicles[b]	1.2	1.5	2.0	3.0	6.0
All Vehicles[c]	0.9	1.0	1.1	1.4	1.7

[a] Single-unit trucks and recreational vehicles.
[b] Includes tractor-trailer combinations and buses.
[c] If vehicle composition is unknown, these values may be used as an approximation.

CONFLICTING TRAFFIC

The conflicting movements and turning movement faces is summarized on Figures 10-3(a) and 10-3(b). The right turn movement from the minor street faces the least number of conflicting movements, the left turn movement from the minor street the most.

Subject Movement	Conflicting Traffic, $V_{c,x}$	Illustration
1. RIGHT TURN from minor street ($V_{c,9}$)	$1/2(V_3)^{①} + V_2^{②}$	
2. LEFT TURN from major street ($V_{c,4}$)	$V_2 + V_3^{③}$	
3. THROUGH MOVEMENT from minor street ($V_{c,8}$)	$1/2(V_3)^{①} + V_2 + V_1 + V_6^{⑤} + V_5 + V_4$	
4. LEFT TURN from minor street ($V_{c,7}$)	$1/2(V_3)^{①} + V_2 + V_1 + 1/2(V_6)^{⑤} + V_5 + V_4 + 1/2(V_{11} + V_{12}^{④})$	

① Where a right-turn lane is provided on major street, and/or where V_3 is STOP-/YIELD-controlled, eliminate V_3

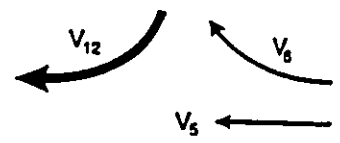
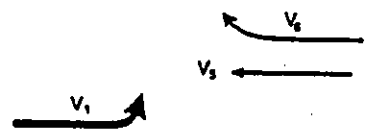
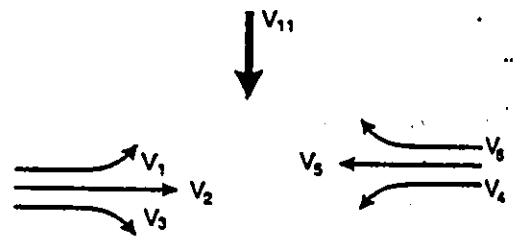
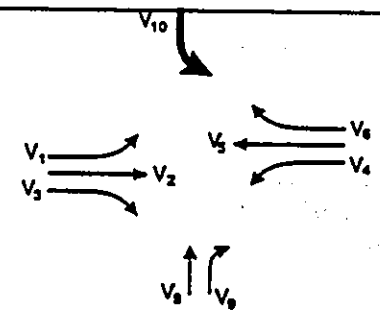
② V_2 includes only the volume in the right hand lane.

③ Where the right-turn is STOP- or YIELD-controlled, eliminate V_3 , V_6

④ V_{12} should be eliminated on multi-lane major streets.

⑤ Where a right-turn lane is provided on major street, and/or where V_6 is STOP-/YIELD-controlled, and/or on multi-lane major streets, eliminate V_6

Figure 10-3(a). Definition and computation of conflicting traffic volumes for two minor approaches.

Subject Movement	Conflicting Traffic, $V_{c,x}$	Illustration
5. RIGHT TURN from minor street ($V_{c,12}$)	$1/2(V_6)^{⑥}+V_5^{⑦}$	
6. LEFT TURN from major street ($V_{c,1}$)	$V_5 + V_6^{⑥}$	
7. THROUGH MOVEMENT from minor street ($V_{c,11}$)	$1/2(V_6)^{⑥} + V_5 + V_4 + V_3^{⑨} + V_2 + V_1$	
8. LEFT TURN from minor street ($V_{c,10}$)	$1/2(V_6)^{⑥} + V_5 + V_4 + 1/2(V_3)^{⑨} + V_2 + V_1 + 1/2(V_8 + V_9^{⑩})$	

⑥ Where a right-turn lane is provided on major street, and/or where V_6 is STOP-/YIELD-controlled, eliminate V_6

⑦ V_5 includes only the volume in the right hand lane.

⑧ Where the right-turn is STOP- or YIELD-controlled, eliminate V_6 , V_3

⑨ V_9 should be eliminated on multi-lane major streets.

⑩ Where a right-turn lane is provided on major street, and/or where V_3 is STOP-/YIELD-controlled, and/or multi-lane streets, eliminate V_3

Figure 10-3(b). Definition and computation of conflicting traffic volumes for two minor approaches.

CRITICAL GAP SIZE

"The 'critical gap' is defined as the median time headway between two successive vehicles in the major traffic stream that is accepted by drivers in a subject movement that must cross and/or emerge with the major street traffic." It is dependent upon a number of factors, including:

1) The type of maneuver being executed.
2) STOP or YIELD sign control.
3) The average running speed on the major street.
4) The number of lanes on the major street.
5) The geometrics and environmental conditions at the intersection.

The value of the critical gap is selected from TABLE 10-2. The basic critical gap is selected and adjustments and modifications made.

TABLE 10-2. CRITICAL GAPS t_g AND FOLLOW-UP TIMES t_f FOR TWSC INTERSECTIONS

VEHICLE MANEUVER	CRITICAL GAP t_g TWO-LANE MAJOR ROAD	CRITICAL GAP t_g FOUR-LANE MAJOR ROAD	FOLLOW-UP TIME t_f (SEC)
Left turn, major street	5.0	5.5	2.1
Right turn, minor street	5.5	5.5	2.6
Through traffic, minor street	6.0	6.5	3.3
Left turn, minor street	6.5	7.0	3.4

NOTE: The critical gap and follow-up time values presented in this table reflect data obtained on roadways where the average approach speed of the major street through vehicles approximated 30 mph. In cases where no better data are available, these same values may be used to approximate t_g and t_f for roadways with approach speeds other than 30 mph.

POTENTIAL CAPACITY FOR MOVEMENT

"The potential capacity is defined as the 'ideal' capacity for a specific movement," and is selected from Figures 10-4 and 10-5. It is based on the conflicting traffic volume and movement type. The result is read in passenger cars per hour.

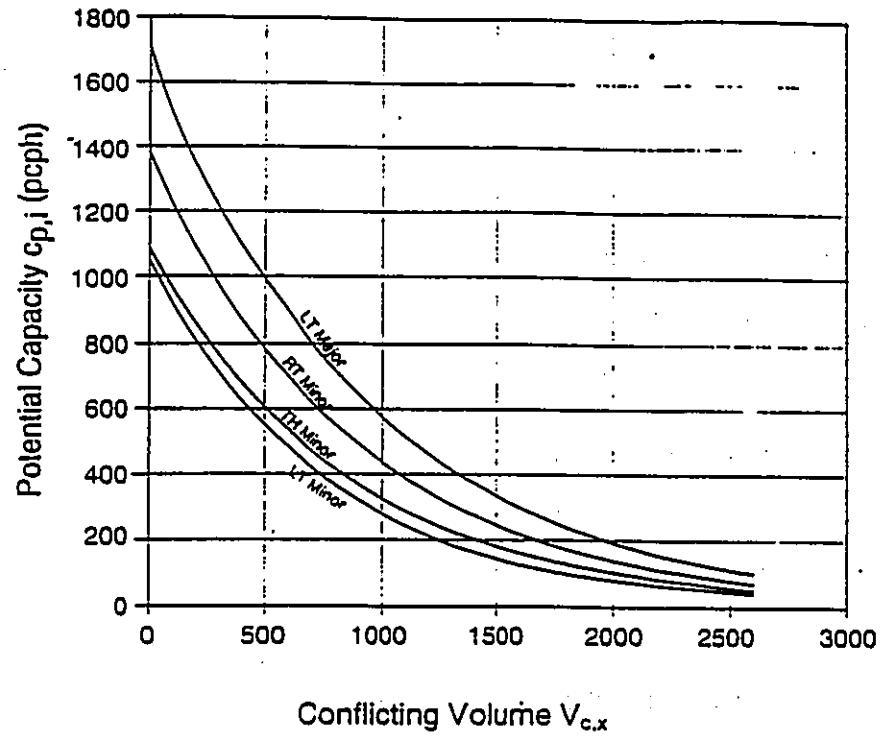


Figure 10-4. Potential capacity based on conflicting volume and movement type (two-lane roadways).

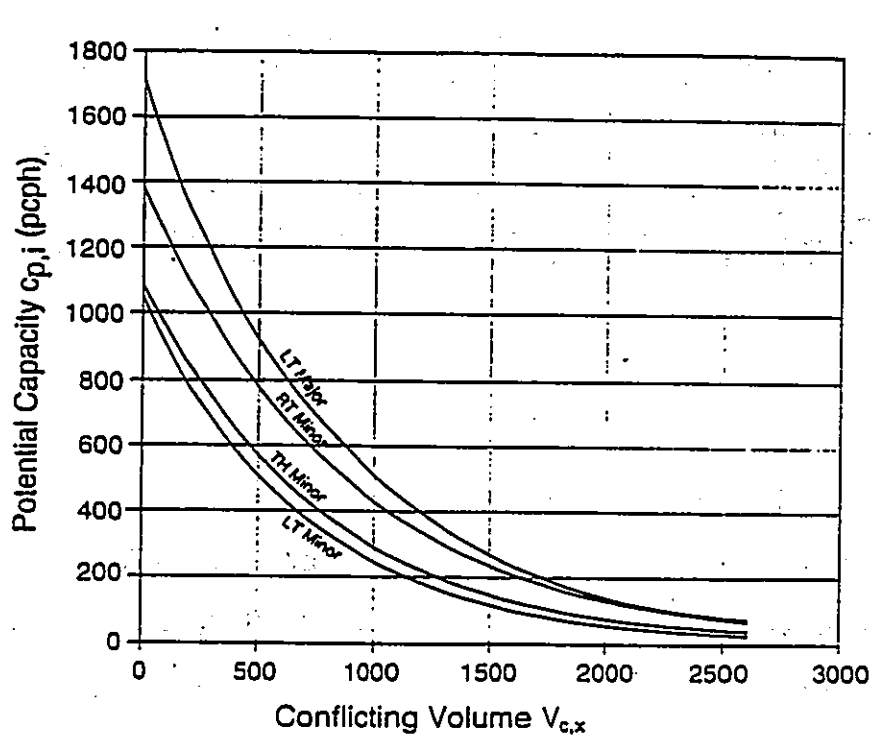


Figure 10-5. Potential capacity based on conflicting volume and movement type (four-lane roadways).

IMPEDANCE EFFECTS

The methodology assumes that vehicles use gaps at an unsignalized intersection in a prioritized manner. Thus, when traffic becomes congested in a high-priority movement, it can reduce the potential capacity of lower priority traffic movements. Given the priority of gap usage:

1) Left turn from the major street impede both through movements and left turns from the minor street.

2) Through movements from the minor streets impede left turns from the minor street.

The impact of impedance is addressed by multiplying the potential capacity of a movement by a series of impedance factors for each higher priority impeding movement. *Impedance factors are derived using Figure 10-6.*

SHARED LANE CAPACITY

The methodology has assumed to this point that each minor street movements has an exclusive lane. In reality, most minor street approaches have two or three movements sharing one lane. An equations used to compute the capacity of the shared lane.

LEVEL OF SERVICE CRITERIA

The above computations yield a capacity solution for each lane in the minor street approaches and for left turn movements from the major streets. The movement capacity and conflicting volumes for each movement are used to calculate the average total delay (seconds/vehicle) per Figure 10-7.

The level of service based on the average total delay is summarized on Table 10-3.

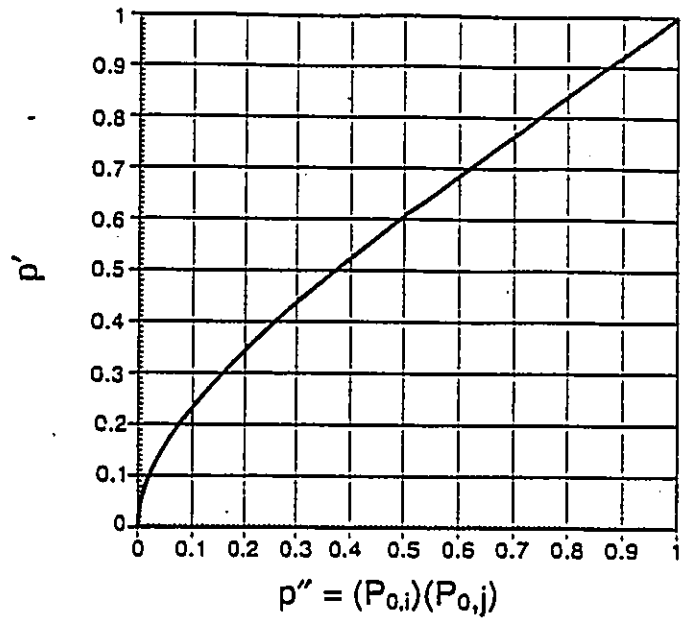


Figure 10-6. Adjustment to the major left, minor through impedance factor (2).

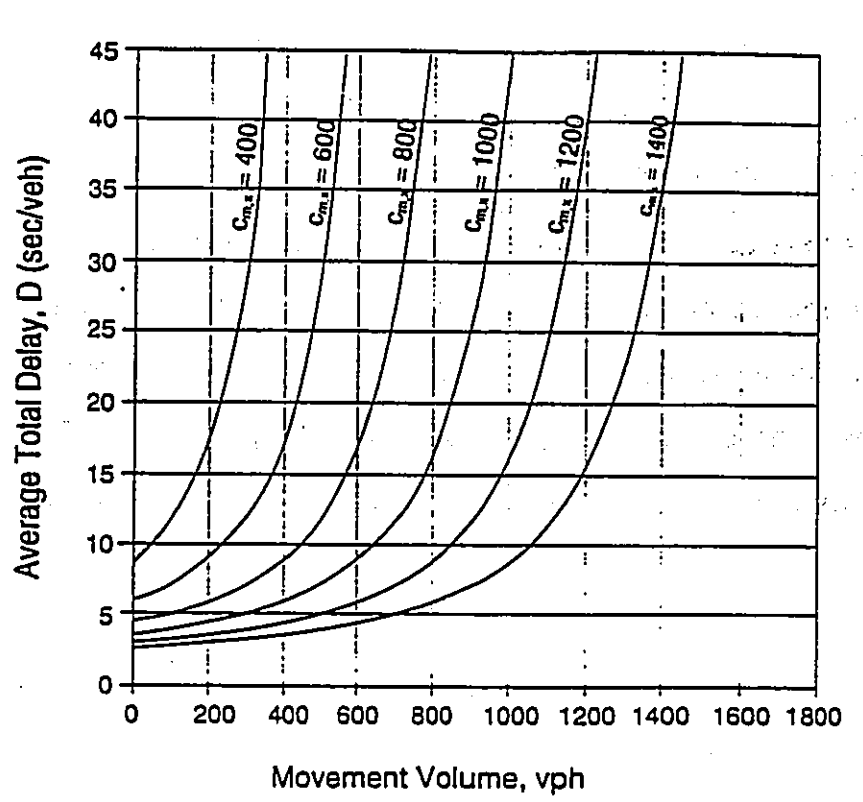


Figure 10-7. Average total delay based on conflicting volume and movement capacity (15-min analysis period).

TABLE 3 - LEVEL OF SERVICE CRITERIA

Level of Service	Average Total Delay (Seconds/Vehicle)
A	≤ 5
B	5.1 to 10.0
C	10.1 to 20.0
D	20.1 to 30.0
E	30.1 to 45.0
F	> 5

APPENDIX B

TRAFFIC COUNTS

1. Big Island Candies, Inc. Factory, Tuesday, June 4, 1996

2. Kekuanaoa Street/Manono Street Intersection, Thursday, June 6, 1996

3. Kekuanaoa Street/Hinano Street Intersection, Thursday, June 6, 1996

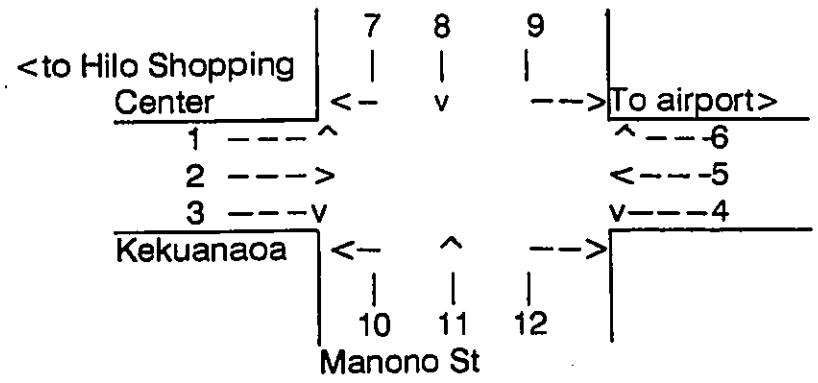
TRAFFIC TURNING MOVEMENT COUNT
BIG ISLAND CANDY RELOCATION

LOCATION: Big Island Candies, Inc. Factory
DATE: Tuesday, 4 JUN 96
TIME: 8:30 AM to 5:00 PM
WEATHER: sunny
RECORDER: f. hoeflinger

	CARS		VANS		BUSES		TOTAL	
TIME	In	Out	In	Out	In	Out	In	Out
PERIOD	1	2	3	4	5	6	7	8
8:30–8:45	1	4	1	1	0	0	2	5
8:45–9:00	3	2	0	0	0	0	3	2
9:00–9:15	4	4	1	1	0	0	5	5
9:15–9:30	4	2	1	0	1	0	6	2
9:30–9:45	3	4	1	1	2	0	6	5
9:45–10:00	4	2	1	2	2	3	7	7
10:00–10:15	4	2	0	0	1	0	5	2
10:15–10:30	3	8	2	1	0	2	5	11
10:30–10:45	7	3	2	3	0	1	9	7
10:45–11:00	4	4	1	1	1	1	6	6
11:00–11:15	6	5	0	0	1	0	7	5
11:15–11:30	2	2	0	0	1	1	3	3
11:30–11:45	6	7	2	0	0	1	8	8
11:45–12:00	2	6	0	0	0	0	2	6
12:00–12:15	5	1	1	0	1	0	7	1
12:15–12:30	1	4	2	2	0	1	3	7
8:30–12:30	59	60	15	12	10	10	84	82
1:00–1:15	1	3	0	0	0	0	1	3
1:15–1:30	7	2	1	0	0	0	8	2
1:30–1:45	8	7	1	1	0	0	9	8
1:45–2:00	6	9	2	2	0	0	8	11
2:00–2:15	7	5	0	0	0	0	7	5
2:15–2:30	7	4	3	1	1	0	11	5
2:30–2:45	4	2	1	1	0	1	5	4
2:45–3:00	4	8	5	7	1	0	10	15
1:00– 3:00	44	40	13	12	2	1	59	53
3:15–3:30	3	4	1	4	0	1	4	9
3:30– 3:45	6	2	1	4	0	0	7	6
3:45– 4:00	8	6	1	0	0	0	9	6
4:00– 4:15	10	24	0	4	1	0	11	28
4:15– 4:30	10	7	3	3	0	1	13	11
4:30– 4:45	10	9	0	2	0	0	10	11
4:45– 5:00	3	12	0	0	0	0	3	12
3:15–5:00	50	64	6	17	1	2	57	83
TOTAL	153	164	34	41	13	13	200	218

TRAFFIC TURNING MOVEMENT COUNT
BIG ISLAND CANDY RELOCATION

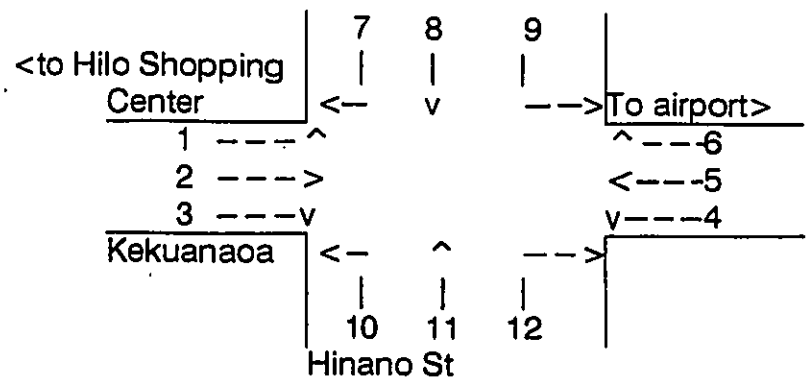
LOCATION: Kekuanaoa St/Manono St
DATE: Thursday, 6 JUN 96
TIME: see below .
WEATHER: cloudy in AM, sunny rest of day
RECORDER:



TIME PERIOD	MOVEMENT NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
7:00–7:15	20	61	7	2	58	3	10	23	7	4	43	11	249
7:15–7:30	31	56	4	7	67	5	10	26	9	6	30	16	267
7:30–7:45	23	61	2	4	98	5	11	40	5	7	60	5	321
7:45–8:00	22	68	3	6	73	3	22	47	23	8	34	9	318
8:00–8:15	18	57	1	4	78	2	17	60	15	9	45	4	310
8:15–8:30	20	60	9	3	66	7	13	32	10	3	21	9	253
8:30–8:45	22	72	7	5	112	2	23	49	18	11	25	12	358
8:45–9:00	25	85	14	8	94	1	10	47	19	13	28	5	349
7:00–9:00	181	520	47	39	646	28	116	324	106	61	286	71	2425
7:00–8:00	96	246	16	19	296	16	53	136	44	25	167	41	1155
8:00–9:00	85	274	31	20	350	12	63	188	62	36	119	30	1270
9:15–9:30	27	96	4	7	90	10	13	53	14	8	43	6	371
9:30–9:45	24	94	4	1	84	3	18	28	21	7	20	6	310
9:45–10:00	28	115	5	4	105	8	26	50	14	14	26	9	404
10:00–10:15	29	105	13	4	82	5	20	42	17	15	26	11	369
10:15–10:30	14	92	8	2	68	3	23	24	10	11	21	5	281
10:30–10:45	30	109	11	2	125	10	32	46	17	7	22	9	420
10:45–11:00	28	114	8	2	102	4	30	32	16	10	41	11	398
9:15–11:00	180	725	53	22	656	43	162	275	109	72	199	57	2553
10:00–11:00	101	420	40	10	377	22	105	144	60	43	110	36	1468
3:30– 3:45	43	115	7	8	134	10	23	81	25	21	45	10	522
3:45– 4:00	45	103	13	4	118	6	32	83	17	12	62	5	500
4:00– 4:15	52	103	10	5	114	4	26	83	18	18	49	6	488
4:15– 4:30	26	98	3	7	99	4	14	76	26	11	51	2	417
4:30– 4:45	59	131	11	15	138	6	24	92	17	15	66	7	581
4:45– 5:00	63	93	4	14	107	7	12	70	18	14	53	7	462
5:00– 5:15	57	90	20	5	106	7	21	39	11	5	51	7	419
5:15– 5:30	30	90	4	5	77	10	16	46	19	5	60	2	364
3:30– 5:30	375	823	72	63	893	54	168	570	151	101	437	46	3753
3:30– 4:30	166	419	33	24	465	24	95	323	86	62	207	23	1927

TRAFFIC TURNING MOVEMENT COUNT
BIG ISLAND CANDY RELOCATION

LOCATION: Kekuanaoa St/Hinano St
DATE: Thursday, 6 JUN 96
TIME: see below
WEATHER: cloudy in AM, sunny rest of day
RECORDER: russell f smith



TIME PERIOD	MOVEMENT NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
7:00–7:15	3	54	2	1	49	1	2	4	3	5	0	1	125
7:15–7:30	3	56	2	1	83	0	6	1	0	1	2	1	156
7:30–7:45	6	69	1	0	99	2	6	1	2	4	3	6	199
7:45–8:00	9	77	5	2	103	1	3	3	3	0	3	1	210
8:00–8:15	13	62	1	1	80	6	4	3	0	3	3	1	177
8:15–8:30	4	67	2	2	90	5	4	1	7	2	2	3	189
8:30–8:45	5	82	2	0	106	3	5	7	3	5	3	0	221
8:45–9:00	4	78	0	1	87	9	6	2	0	2	4	2	195
7:00–9:00	47	545	15	8	697	27	36	22	18	22	20	15	1472
7:00–8:00	21	256	10	4	334	4	17	9	8	10	8	9	690
8:00–9:00	26	289	5	4	363	23	19	13	10	12	12	6	782
9:15–9:30	5	79	3	1	79	8	7	6	7	3	3	2	203
9:30–9:45	8	89	3	1	96	3	9	3	1	2	6	4	225
9:45–10:00	4	86	3	1	82	5	5	5	2	2	3	2	200
10:00–10:15	13	102	2	2	95	4	4	5	3	2	1	1	234
10:15–10:30	6	105	3	2	95	3	9	1	5	2	2	1	234
10:30–10:45	10	103	2	1	101	6	7	3	5	0	1	1	240
10:45–11:00	15	110	2	1	98	7	11	5	6	2	5	3	265
9:15–11:00	61	674	18	9	646	36	52	28	29	13	21	14	1601
10:00–11:00	44	420	9	6	389	20	31	14	19	6	9	6	973
3:30– 3:45	15	101	2	4	143	7	11	5	5	2	3	1	299
3:45– 4:00	5	87	5	3	110	6	5	11	7	2	3	0	244
4:00– 4:15	8	94	3	4	112	7	8	4	6	1	6	1	254
4:15– 4:30	12	111	4	2	101	8	10	6	4	3	7	1	269
4:30– 4:45	10	96	2	1	116	13	16	15	2	3	3	4	281
4:45– 5:00	9	79	6	1	89	5	11	3	4	2	1	1	211
5:00– 5:15	11	73	1	3	92	4	11	4	4	2	4	2	211
5:15– 5:30	7	86	4	1	73	1	5	6	3	3	8	1	198
3:30– 5:30	77	727	27	19	836	51	77	54	35	18	35	11	1967
3:30– 4:30	40	393	14	13	466	28	34	26	22	8	19	3	1066

APPENDIX C

TRAFFIC CALCULATIONS

1) **SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS) CALCULATIONS**

Kekuanaoa Street/Manono Street Intersection

2) **UNSIGNALIZED INTERSECITON LEVEL OF SERVICE (LOS) CALCULATIONS**

Kekuanaoa Street/Hinano Street Intersection

TRAFFIC CALCULATIONS

1) SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS) CALCULATIONS

Kekuanaoa Street/Manono Street Intersection

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 06-11-1996
Center For Microcomputers In Transportation

Streets: (E-W) kekuanaoa st (N-S) manono st
Analyst: Wy File Name: MANOEXAM.HC9
Area Type: Other 6-11-96 am
Comment: existing am peak hour

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1		1	1			1	1		1	
Volumes	95	2		295	2	15	25	165	40	45	135	55
Lane Width	12.0			12.0				12.0			12.0	
RTOR Vols						0			10			15
Lost Time	3.00			3.00		3.00	3.00		3.00	3.00		3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0P				Green	20.0P		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 60 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	306	573	0.347	0.533	6.4	B	6.0	B
	TR	994	1864	0.291	0.533	5.9	B		
WB	L	443	830	0.061	0.533	5.1	B	6.5	B
	TR	996	1867	0.415	0.533	6.5	B		
NB	LTR	545	1486	0.578	0.367	12.7	B	12.7	B
SB	LTR	498	1358	0.604	0.367	13.3	B	13.3	B

Intersection Delay = 9.1 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.492

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 06-11-1996
Center For Microcomputers In Transportation

Streets: (E-W) kekuanaoa st (N-S) manono st
Analyst: Wy File Name: MANOEXMM.HC9
Area Type: Other 6-11-96 midmorn
Comment: existing midmorning peak hour

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1		1	1			1	1		1	
Volumes	100	4		275	2	20	45	110	35	60	145	105
Lane Width	12.0			12.0				12.0			12.0	
RTOR Vols						0			10			15
Lost Time	3.00			3.00		3.00	3.00		3.00	3.00		3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	8
EB Left	*				NB Left	*	
Thru	*				Thru	*	
Right	*				Right	*	
Peds					Peds		
WB Left	*				SB Left	*	
Thru	*				Thru	*	
Right	*				Right	*	
Peds					Peds		
NB Right					EB Right		
SB Right					WB Right		
Green	30.0P				Green	20.0P	
Yellow/AR	5.0				Yellow/AR	5.0	

Cycle Length: 60 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	187	350	0.595	0.533	10.9	B	7.9	B
	TR	990	1856	0.516	0.533	7.2	B		
WB	L	199	373	0.065	0.533	5.1	B	7.4	B
	TR	996	1867	0.529	0.533	7.4	B		
NB	LTR	465	1268	0.553	0.367	12.6	B	12.6	B
SB	LTR	500	1363	0.758	0.367	17.2	C	17.2	C

Intersection Delay = 10.4 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.661

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 06-11-1996
Center For Microcomputers In Transportation

Streets: (E-W) kekuanaoa st (N-S) manono st
Analyst: Wy File Name: MANOEXPM.HC9
Area Type: Other 6-11-96 midmorn
Comment: existing afternoon peak hour

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1			1			1			1	
Volumes	165	4			465	25	60	205	25	85	325	95
Lane Width	12.0				.0			12.0			12.0	
RTOR Vols						0			10			15
Lost Time					.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	8
EB Left	*	*			NB Left	*	
Thru		*			Thru	*	
Right		*			Right	*	
Peds					Peds		
WB Left	*	*			SB Left	*	
Thru		*			Thru	*	
Right		*			Right	*	
Peds					Peds		
NB Right					EB Right		
SB Right					WB Right		
Green	5.0P	25.0P			Green	27.0P	
Yellow/AR	3.0	5.0			Yellow/AR	5.0	

Cycle Length: 70 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	235	1787	0.779	0.186	20.6	C	17.2	C
	TR	717	1859	0.706	0.386	16.0	C		
WB	L	235	1787	0.123	0.186	8.4	B	18.1	C
	TR	720	1867	0.792	0.386	18.6	C		
NB	LTR	417	1006	0.840	0.414	23.8	C	23.8	C
SB	LTR	515	1243	1.000	0.414	46.1	E	46.1	E

Intersection Delay = 25.4 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.908

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 06-16-1996
Center For Microcomputers In Transportation

treets: (E-W) kekuanaoa st (N-S) manono st
nalyst: Wy File Name: MANOTOAM.HC9
rea Type: Other 6-6-96 am
omment: forecast am peak hour

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
o. Lanes	1	1			1			1			1	
olumes	95				00	15	25	170	40	45	140	55
ane Width	12				.0			12.0			12.0	
TOR Vols						0			10			15
ost Time					.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

hase Combination	1	2	3	4	5	6	7	8
3 Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
B Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
B Right					EB Right			
B Right					WB Right			
reen	30.0P				Green	20.0P		
ellow/AR	5.0				Yellow/AR	5.0		

ycle Length: 60 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	295	554	0.359	0.533	6.5	B	6.1	B
	TR	994	1864	0.308	0.533	6.0	B		
B	L	421	790	0.064	0.533	5.1	B	6.5	B
	TR	996	1867	0.422	0.533	6.6	B		
B	LTR	546	1488	0.590	0.367	12.9	B	12.9	B
B	LTR	498	1357	0.619	0.367	13.5	B	13.5	B

Intersection Delay = 9.2 sec/veh Intersection LOS = B
ost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.502

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 06-16-1996
Center For Microcomputers In Transportation

Streets: (E-W) kekuanaoa st (N-S) manono st
Analyst: Wy File Name: MANOTOMM.HC9
Area Type: Other 6-16-96 midmorn
Comment: forecast midmorning peak hour

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1		1	1			1	1		1	
Volumes	100			90		20	45	110	35	60	145	105
Lane Width	12			10				12.0			12.0	
RTOR Vols						0			10			15
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0P				Green	20.0P		
Yellow/AR	5.0				Yellow/AR	5.0		

Cycle Length: 60 secs Phase combination order: #1 #5

Intersection Performance Summary

Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB L	172	323	0.644	0.533	13.0	B	8.4	B
TR	991	1859	0.532	0.533	7.4	B		
WB L	187	350	0.070	0.533	5.2	B	7.5	B
TR	996	1867	0.549	0.533	7.5	B		
NB LTR	465	1268	0.553	0.367	12.6	B	12.6	B
SB LTR	500	1363	0.758	0.367	17.2	C	17.2	C

Intersection Delay = 10.5 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.691

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 06-16-1996
Center For Microcomputers In Transportation

Streets: (E-W) kekuanaoa st (N-S) manono st
Analyst: Wy File Name: MANOTOPH.HC9
Area Type: Other 6-16-96 midmorn
Comment: forecast afternoon peak hour

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1		1	1			1	1		1	
Volumes	170	435		190		25	65	210	25	85	330	95
Lane Width	12.0			12.0				12.0			12.0	
RTOR Vols						0			10			15
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*	*			NB Left	*		
Thru		*			Thru	*		
Right		*			Right	*		
Peds					Peds			
WB Left	*	*			SB Left	*		
Thru		*			Thru	*		
Right		*			Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	6.0P	26.0P			Green	30.0P		
Yellow/AR	3.0	5.0			Yellow/AR	5.0		

Cycle Length: 75 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB L	243	1787	0.778	0.200	21.6	C	19.5	C
TR	695	1861	0.751	0.373	18.7	C		
WB L	243	1787	0.119	0.200	9.4	B	23.2	C
TR	697	1867	0.859	0.373	23.9	C		
NB LTR	409	959	0.885	0.427	29.1	D	29.1	D
SB LTR	524	1228	0.992	0.427	44.7	E	44.7	E

Intersection Delay = 28.0 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.937

TRAFFIC CALCULATIONS

2) UNSIGNALIZED INTERSECITON LEVEL OF SERVICE (LOS) CALCULATIONS

Kekuanaoa Street/Hinano Street Intersection

File Name ..... HINAEXAM.HCO
Streets: (N-S) hinano st (E-W) kekuanaoa st
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... wy
Date of Analysis..... 6/11/96
Other Information..... ing am peak hour

Two-way Stop-contr ion

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0>	1<	0	0>	1<	0	0>	1<	0	0>	1	0
Stop/Yield			N			N						
Volumes	20	255	10	5	335	5	10	10	10	10	10	15
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)	0	0	0	0	0	0	0	0	0	0	0	0
SU/RV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
CV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
PCE's	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

WorkSheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	260	338
Potential Capacity: (pcph)	1022	933
Movement Capacity: (pcph)	1022	933
Prob. of Queue-free State:	0.99	0.98
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	265	340
Potential Capacity: (pcph)	1282	1181
Movement Capacity: (pcph)	1282	1181
Prob. of Queue-free State:	1.00	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-free State:	0.99	0.98
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	625	628
Potential Capacity: (pcph)	513	511
Capacity Adjustment Factor due to Impeding Movements	0.97	0.97
Movement Capacity: (pcph)	498	496
Prob. of Queue-free State:	0.98	0.98
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	635	632
Potential Capacity: (pcph)	454	456
Major LT, Minor TH Impedance Factor:	0.95	0.95
Adjusted Impedance Factor:	0.96	0.96
Capacity Adjustment Factor due to Impeding Movements	0.94	0.95
Movement Capacity: (pcph)	427	432

Intersection Performance Summary

Movement		FlowRate v(pcph)	MoveCap Cm(pcph)	SharedCap Csh(pcph)	Avg Total Delay		LOS	Delay By App
NB	L	12	427					
NB	T	12	498	563		6.8	B	6.8
NB	R	12	1022					
SB	L	12	432					
SB	T	12	496	589		6.6	B	6.6
SB	R	18	933					
EB	L	23	1181		3.1		A	0.2
WB	L	6	1282		2.8		A	0.0

Intersection Delay = 0.7

File Name HINAEXMM.HC0
Streets: (N-S) hinano st (E-W) kekuanaoa st
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst.....
Date of Analysis..... /96
Other Information.. ing midmorning peak hour

Two-way Stop-contr ion

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0>	1<	0	0>	1<	0	0>	1<	0	0>		0
Stop/Yield			N			N						
Volumes	45	420	10	5	390	20	5	10	5	20	15	30
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	95	.95
Grade		0			0			0			0	
HC's (%)	0	0	0	0	0	0	0	0	0	0	0	0
SU/RV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
CV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
PCE's	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1	1.1

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

WorkSheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	425	400
Potential Capacity: (pcph)	843	868
Movement Capacity: (pcph)	843	868
Prob. of Queue-free State:	0.99	0.96
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	430	410
Potential Capacity: (pcph)	1069	1093
Movement Capacity: (pcph)	1069	1093
Prob. of Queue-free State:	0.99	0.95
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-free State:	0.99	0.93
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	885	880
Potential Capacity: (pcph)	374	377
Capacity Adjustment Factor due to Impeding Movements	0.93	0.93
Movement Capacity: (pcph)	346	349
Prob. of Queue-free State:	0.97	0.95
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	898	882
Potential Capacity: (pcph)	320	327
Major LT, Minor TH Impedance Factor:	0.88	0.89
Adjusted Impedance Factor:	0.91	0.92
Capacity Adjustment Factor due to Impeding Movements	0.87	0.91
Movement Capacity: (pcph)	278	298

Intersection Performance Summary

Movement	FlowRate v(pcph)	MoveCap Cm(pcph)	SharedCap Csh(pcph)	Avg.Total Delay	LOS	Delay By App
NB L	6	278				
NB T	12	346	379	10.1	C	10.1
NB R	6	843				
SB L	23	298				
SB T	18	349	449	9.6	B	9.6
SB R	35	868				
EB L	52	1093		3.5	A	0.3
WB L	6	1069		3.4	A	0.0

Intersection Delay = 1.0

File Name ..... HINAEXPM.HCO
Streets: (N-S) hinano st (E-W) kekuanaoa st
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst.....
Date of Analysis.....6
Other Information.....ng afternoon peak hour

Two-way Stop-co.....on

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0>	1<	0	0>	1<	0	0>	1<	0	0>	1	0
Stop/Yield			N			N						
Volumes	40	395	15	15	465	30	10	20	5	20	25	35
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)	0	0	0	0	0	0	0	0	0	0	0	0
SU/RV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
CV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
PCE's	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

WorkSheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	402	480
Potential Capacity: (pcph)	866	791
Movement Capacity: (pcph)	866	791
Prob. of Queue-free State:	0.99	0.95
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	410	495
Potential Capacity: (pcph)	1093	996
Movement Capacity: (pcph)	1093	996
Prob. of Queue-free State:	0.98	0.95
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-free State:	0.98	0.94
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	952	945
Potential Capacity: (pcph)	345	348
Capacity Adjustment Factor due to Impeding Movements	0.91	0.91
Movement Capacity: (pcph)	315	318
Prob. of Queue-free State:	0.93	0.91
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	968	950
Potential Capacity: (pcph)	291	298
Major LT, Minor TH Impedance Factor:	0.83	0.85
Adjusted Impedance Factor:	0.87	0.88
Capacity Adjustment Factor due to Impeding Movements	0.82	0.88
Movement Capacity: (pcph)	240	261

Intersection Performance Summary

Movement		FlowRate v(pcph)	MoveCap Cm(pcph)	SharedCap Csh(pcph)	Avg.Total Delay	LOS	Delay By App
NB	L	12	240				
NB	T	23	315	316	13.1	C	13.1
NB	R	6	866				
SB	L	23	261				
SB	T	29	318	402	11.6	C	11.6
SB	R	41	791				
EB	L	46	996		3.8	A	0.3
WB	L	18	1093		3.3	A	0.1

Intersection Delay = 1.5

File Name HINATOAM.HC0
Streets: (N-S) hinano st (E-W) kekuanaoa st
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst.....
Date of Analysis..... 8/21/1996
Other Information..... forecast am peak hour

Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0>	1<	0	0>	1<	0	0>	1<	0	0>	1	0
Stop/Yield			N			N						
Volumes	35	260	10	5	340	15	10	10	10	10	10	15
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	95	.95
Grade		0			0			0			0	
HC's (%)	0	0	0	0	0	0	0	0	0	0	0	0
SU/RV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
CV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
PCE's	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

WorkSheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	265	348
Potential Capacity: (pcph)	1016	923
Movement Capacity: (pcph)	1016	923
Prob. of Queue-free State:	0.99	0.98

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	270	355
Potential Capacity: (pcph)	1275	1161
Movement Capacity: (pcph)	1275	1161
Prob. of Queue-free State:	1.00	0.96
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-free State:	0.99	0.96

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	660	658
Potential Capacity: (pcph)	491	493
Capacity Adjustment Factor due to Impeding Movements	0.95	0.95
Movement Capacity: (pcph)	467	469
Prob. of Queue-free State:	0.97	0.97

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	665	662
Potential Capacity: (pcph)	436	438
Major LT, Minor TH Impedance Factor:	0.93	0.93
Adjusted Impedance Factor:	0.94	0.94
Capacity Adjustment Factor due to Impeding Movements	0.93	0.93
Movement Capacity: (pcph)	403	408

Intersection Performance Summary

Movement	FlowRate v(pcph)	MoveCap Cm(pcph)	SharedCap Csh(pcph)	Avg.Total Delay	LOS	Delay By App
NB L	12	403				
NB T	12	467	535	7.2	B	7.2
NB R	12	1016				
SB L	12	408				
SB T	12	469	564	6.9	B	6.9
SB R	18	923				
EB L	41	1161		3.2	A	0.4
WB L	6	1275		2.8	A	0.0

Intersection Delay = 0.8

ile Name ..... HINATOMM.HCO
treets: (N-S) hinano st (E-W) kekuanaoa st
ajor Street Direction.... EW
ength of Time Analyzed... 60 (min)
nalyst.....
ate of Analysis..... 6
ther Information ... st midmorning peak hour
wo-way Stop-co... ion

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
o. Lanes	0>	1<	0	0>	1<	0	0>	1<	0	0>	1<	0
top/Yield			N			N						
olumes	55	425	10	5	395	30	5	10	5	30	15	40
HF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
rade		0			0			0			0	
C's (%)	0	0	0	0	0	0	0	0	0	0	0	0
U/RV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
V's (%)	0	0	0	0	0	0	0	0	0	0	0	0
CE's	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Adjustment Factors

ehicle aneuver	Critical Gap (tg)	Follow-up Time (tf)
eft Turn Major Road	5.00	2.10
ight Turn Minor Road	5.50	2.60
hrough Traffic Minor Road	6.00	3.30
eft Turn Minor Road	6.50	3.40

WorkSheet for TWSC Intersection

tep 1: RT from Minor Street	NB	SB
onflicting Flows: (vph)	430	410
otential Capacity: (pcph)	838	858
ovement Capacity: (pcph)	838	858
rob. of Queue-free State:	0.99	0.95
tep 2: LT from Major Street	WB	EB
onflicting Flows: (vph)	435	425
otential Capacity: (pcph)	1064	1075
ovement Capacity: (pcph)	1064	1075
rob. of Queue-free State:	0.99	0.94
H Saturation Flow Rate: (pcphpl)	1700	1700
T Saturation Flow Rate: (pcphpl)	1700	1700
ajor LT Shared Lane Prob. of Queue-free State:	0.99	0.92
tep 3: TH from Minor Street	NB	SB
onflicting Flows: (vph)	915	905
otential Capacity: (pcph)	361	365
apacity Adjustment Factor due to Impeding Movements	0.91	0.91
ovement Capacity: (pcph)	328	331
rob. of Queue-free State:	0.96	0.95
tep 4: LT from Minor Street	NB	SB
onflicting Flows: (vph)	928	908
otential Capacity: (pcph)	307	316
ajor LT, Minor TH Impedance Factor:	0.86	0.87
djusted Impedance Factor:	0.89	0.90
apacity Adjustment Factor due to Impeding Movements	0.84	0.90
ovement Capacity: (pcph)	259	284

ile Name ..... HINATOPM.HCO
treets: (N-S) hinano st (E-W) kekuanaoa st
ajor Street Direction.... EW
ength of Time Analyzed... 60 (min)
nalyst.....
ate of Analysis.....6
ther Informati...st afternoon peak Hour

wo-way Stop...ion

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
o. Lanes	0>	1<	0	0>	1<	0	0>	1<	0	0>	1.	0
top/Yield			N			N						
olumes	50	400	15	15	475	40	10	20	5	45	25	55
HF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
rade		0			0			0			0	
HC's (%)	0	0	0	0	0	0	0	0	0	0	0	0
U/RV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
V's (%)	0	0	0	0	0	0	0	0	0	0	0	0
CE's	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Intersection Performance Summary

Movement		FlowRate v(pcph)	MoveCap Cm(pcph)	SharedCap Csh(pcph)	Avg.Total Delay	LOS	Delay By App
EB	L	6	259				
EB	T	12	328	359	10.7	C	10.7
EB	R	6	838				
WB	L	35	284				
WB	T	18	331	428	10.9	C	10.9
WB	R	46	858				
NB	L	64	1075		3.6	A	0.4
SB	L	6	1064		3.4	A	0.0

Intersection Delay = 1.3

WorkSheet for TWSC Intersection

tep 1: RT from Minor Street	NB	SB
onflicting Flows: (vph)	408	495
otential Capacity: (pcph)	860	777
ovement Capacity: (pcph)	860	777
rob. of Queue-free State:	0.99	0.92
tep 2: LT from Major Street	**WB**	**EB**
onflicting Flows: (vph)	415	515
otential Capacity: (pcph)	1087	974
ovement Capacity: (pcph)	1087	974
rob. of Queue-free State:	0.98	0.94
H Saturation Flow Rate: (pcphpl)	1700	1700
T Saturation Flow Rate: (pcphpl)	1700	1700
ajor LT Shared Lane Prob. of Queue-free State:	0.97	0.92
tep 3: TH from Minor Street	**NB**	**SB**
onflicting Flows: (vph)	988	975
otential Capacity: (pcph)	331	336
apacity Adjustment Factor due to Impeding Movements	0.89	0.89
ovement Capacity: (pcph)	296	300
rob. of Queue-free State:	0.92	0.90
tep 4: LT from Minor Street	**NB**	**SB**
onflicting Flows: (vph)	1008	980
otential Capacity: (pcph)	276	287
ajor LT, Minor TH Impedance Factor:	0.81	0.82
djusted Impedance Factor:	0.85	0.86
apacity Adjustment Factor due to Impeding Movements	0.78	0.86
ovement Capacity: (pcph)	216	246

Intersection Performance Summary

ovement		FlowRate v(pcph)	MoveCap Cm(pcph)	SharedCap Csh(pcph)	Avg.Total Delay	LOS	Delay By App
B	L	12	216				
B	T	23	296	292	14.3	C	14.3
B	R	6	860				
B	L	52	246				
B	T	29	300	371	15.9	C	15.9
B	R	64	777				
B	L	58	974		3.9	A	0.4
B	L	18	1087		3.4	A	0.1

Intersection Delay = 2.4

APPENDIX B

Preliminary Engineering Report

BIG ISLAND CANDIES RELOCATION

PRELIMINARY ENGINEERING REPORT

Prepared by:

M & E Pacific, Inc.
1001 Bishop Street, Suite 500 Pauahi Tower
Honolulu, Hawaii 96813

July 1996
(Revised)

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LIST OF TABLES

BIG ISLAND CANDIES RELOCATION
PRELIMINARY ENGINEERING REPORT

INTRODUCTION

Big Island Candies, Inc. is planning to relocate their operations by constructing a new retail factory complex at a larger site within Hilo, Hawaii. This report documents a preliminary engineering analysis conducted to evaluate the adequacy of the existing infrastructure at the new location to support the company's activities, to identify civil related site improvements, and to estimate the cost for making those improvements.

PROJECT DESCRIPTION

The project involves relocating the factory and sales outlet for Big Island Candies, Inc. from their present location in the Kalanianaole Industrial Area to an irregular shaped parcel (3.34 acres) between Hinano and Laukapu Streets makai of Kekuanaoa Street. See Figure No. 1, Location Map for relative locations. According to the Tax Map Key, the specific designations of the parcels are TMK: 2-2-34: 67, 68, 69, 76, 77, 104, & 106. Except for several existing structures left on the site by its former occupant (Orchids of Hawaii) that will be integrated into the layout of the new complex, the property is currently vacant.

SITE ANALYSIS

Roadways and Accessibility:

Existing Conditions - According to a recent Traffic Impact Analysis Report (see Reference No. 1, Appendix A-2), approximately 160 cars, 40 vans, and 13 busses can be expected to visit the outlet during an average retail day. The present plan is to have all the busses access the new facility from Hinano Street to minimize traffic through this predominantly residential area. The referenced report also forecasts that the increased traffic volume resulting from Big Island Candies' relocation will not have any adverse impacts on the surrounding streets; however, there may be a minor accessibility problem for bus traffic, due to the narrow width of Hinano Street and the existing radii of the curves at the intersection of Hinano and Kekuanaoa Streets. Hinano Street is a two lane, two-way street with an overall width of only 16-feet; this means each lane is only 8 feet wide. Standard tour busses have an overall width of 8.5 feet, which makes them 6-inches wider than the existing traffic lane on Hinano Street. The distance from the intersection of Kekuanaoa and Hinano Streets to the driveway entrance of the new Big Island Candies Factory is approximately 200 feet. A problem results when two busses meet in this narrow section of Hinano Street from opposite directions. Since their combined width of 17-feet exceeds the available roadway width of 16-feet, they can not pass each other safely. According to AASHTO design policies (see Reference No. 2, Appendix A-2), the minimum turning radius for a standard 40-foot long bus to make a right-hand, 90-degree turn from one 12-foot lane to another 12-foot lane is 40-feet. The radius of the existing curve on the east side of Hinano Street is 40-feet (Figure No. 2A); however, a bus making a right-hand turn onto Hinano Street from Kekuanaoa Street is going from a 12-foot wide lane into an 8-foot wide lane. This means a bus turning onto Hinano Street can not complete the turn if another vehicle is stopped at the corner or approaching within 25-feet of the

(K.T.)N:\CANDY\CANDY2 July 9, 1996 2:25PM

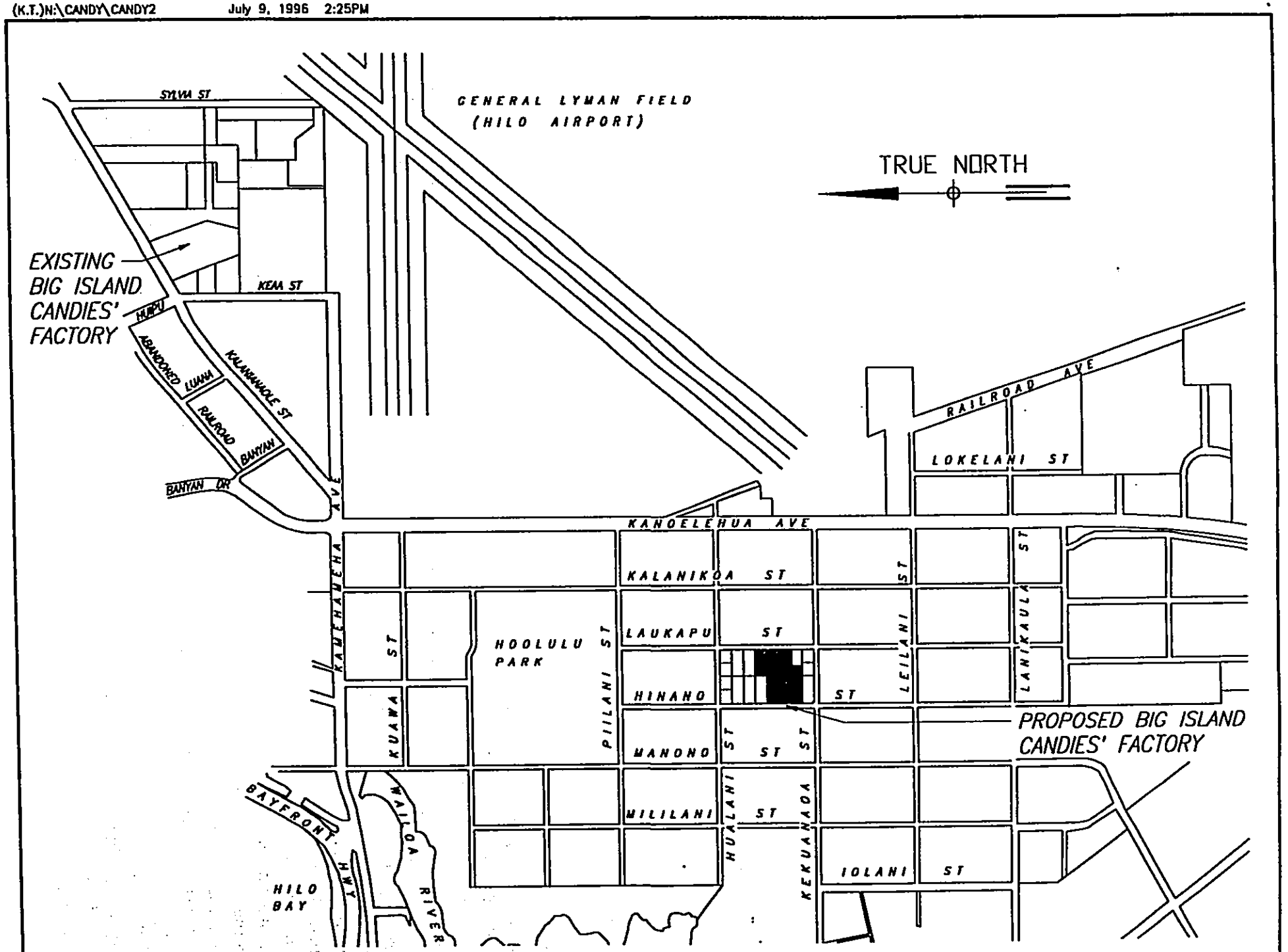
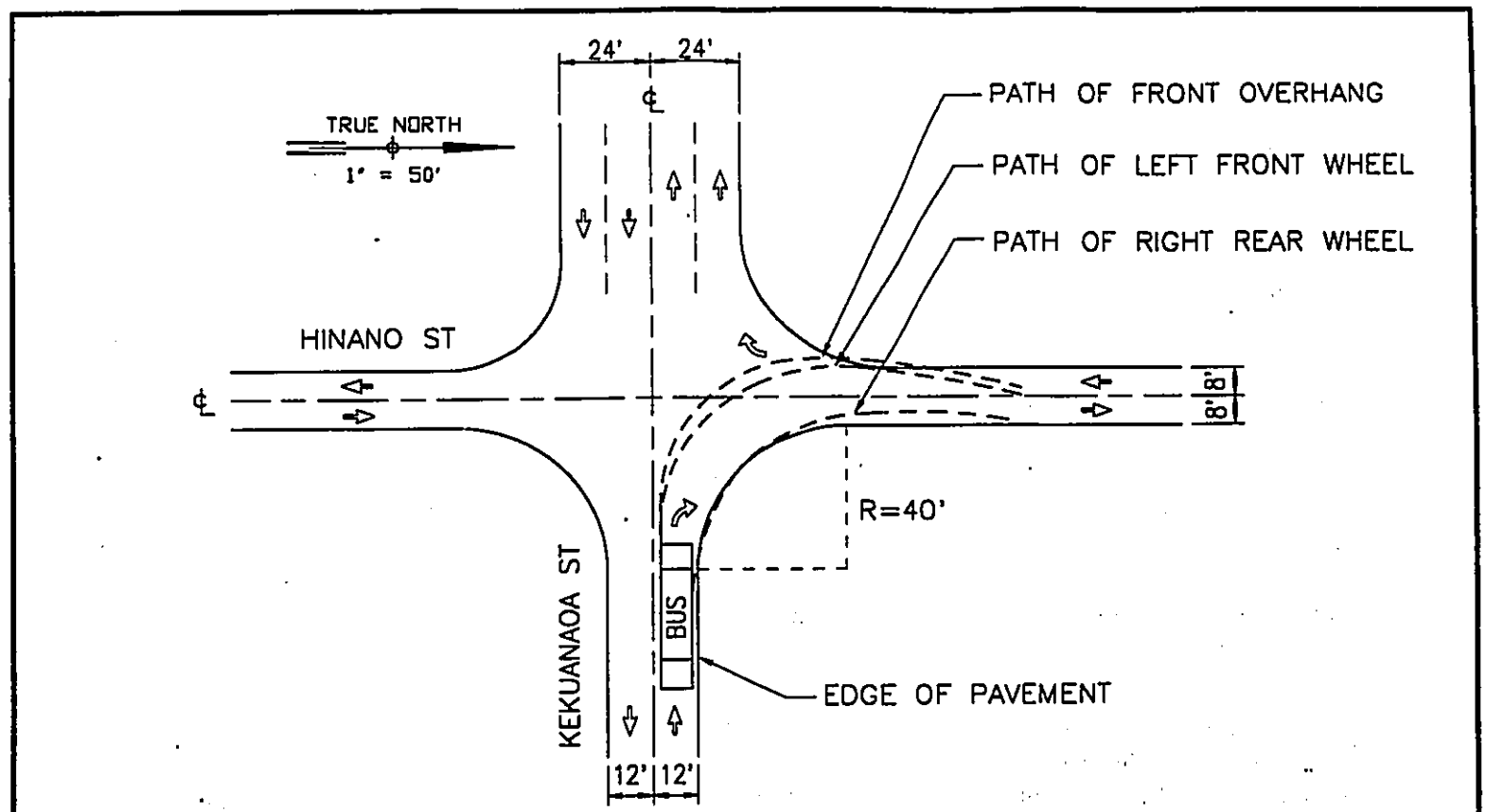
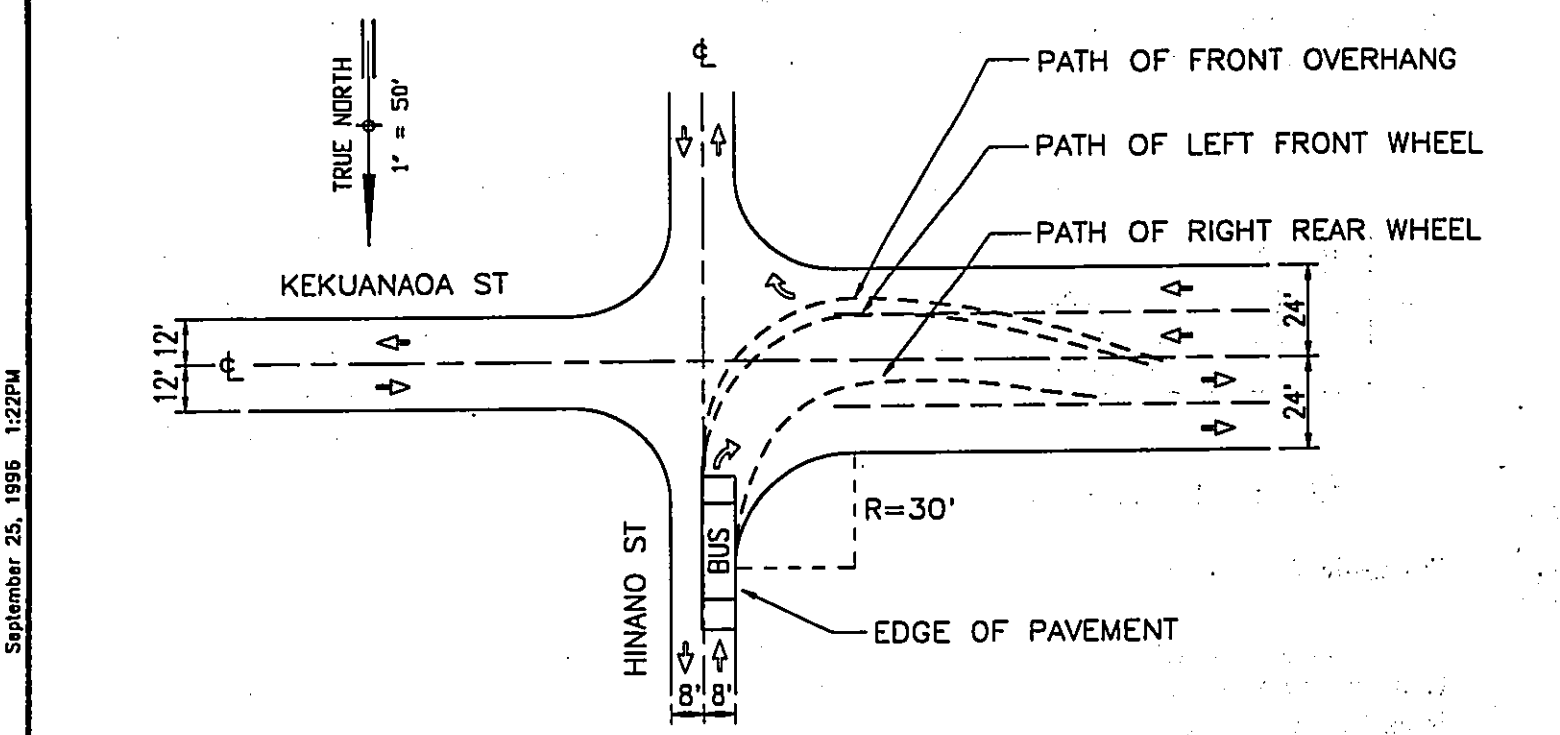


FIGURE NO. 1
Location Map



A. Righthand turn from Kekuanaoa St. onto Hinano St.



B. Righthand turn from Hinano St. onto Kekuanaoa St.

FIGURE NO. 2
Effects of Curb Turning Radius

(RA)N:\CANDY\CANDY-IN September 25, 1995 1:22PM

intersection. The existing curve radius on the west side of Hinano Street is 30-feet (see Figure No. 2B) and a bus making a right-hand turn onto Kekuanaoa Street may occasionally encroach into on-coming traffic, since Kekuanaoa Street has two 12-foot lanes in both directions at this point. Both right-hand and left-hand turns onto Kekuanaoa Street from Hinano Street should not pose a problem considering the small number of full size busses currently scheduled to visit this new facility. The relatively low speed limits on the adjoining streets will also help to minimize potential conflicts resulting from the bus traffic. Figures No. 2A and 2B graphically show the effects of the curb radius on a bus during right-hand turning maneuvers.

Required Improvements - The County does not have any future plans for roadway improvements in the vicinity of Hinano and Kekuanaoa Streets; however, a proposal to widen the first 200 feet of Hinano Street by 1 foot to increase the lane widths to the standard 8.5 feet should be considered. This minor roadway improvement would eliminate the encroachment problem for busses making turns onto Hinano Street and it will provide the minimum lane widths to allow busses to pass safely from opposite directions.

Cost Considerations - The primary costs associated with roadways and accessibility involves site preparation and construction of three new parking areas, with a combined capacity of 82 stalls for cars, vans, and busses. Site preparation includes, the costs for clearing, grubbing, and demolition of any unwanted vegetation; and construction of the new parking lot. The area proposed for the relocation project is shown on Figure No. 3 and a site plan depicting the layout of the new facilities is shown on Figure No. 4. The estimated costs for site preparation and parking areas are presented below in Table No. 1;

TABLE NO. 1
ESTIMATED COSTS FOR ON-SITE IMPROVEMENTS

Item No.	Description	Quantity	Unit Cost	Total Cost*
1	Site Preparation	3.34 acres	$4,000/acre	$13,400
2	Construct Parking Lot, w/ curbing, painting, etc.		Lump Sum	$78,000
			Total	$91,400

*Estimated costs are rounded to hundreds of dollars.

Domestic Water System:

Existing Conditions - There is domestic water service available to the proposed site from two existing 6-inch diameter service mains which run parallel to the property lines; one 6-inch line is east of the property on Laukapu Street and the other 6-inch line is to the west along Hinano Street. The approximate location of these water lines is shown on Figure No. 3. These water mains are operated and maintained by the County of Hawaii, Department of Water Supply (DWS). According to information provided by Big Island Candies, their present operation uses about 125,000 of water per month, which implies an average daily demand of 4,166 gallons. Table No. 2 below shows the estimated water demands according to the guidelines in the DWS

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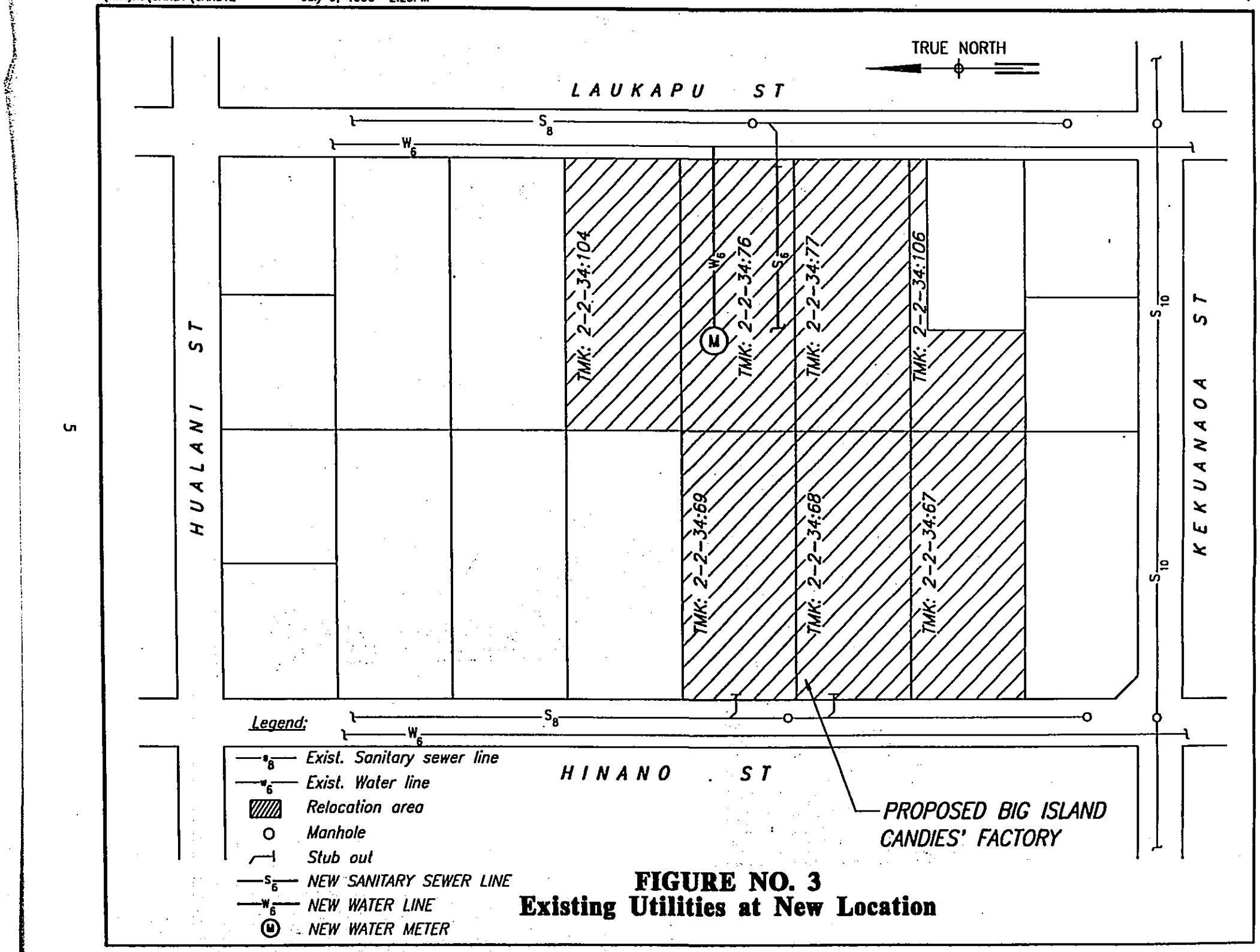


FIGURE NO. 3
Existing Utilities at New Location

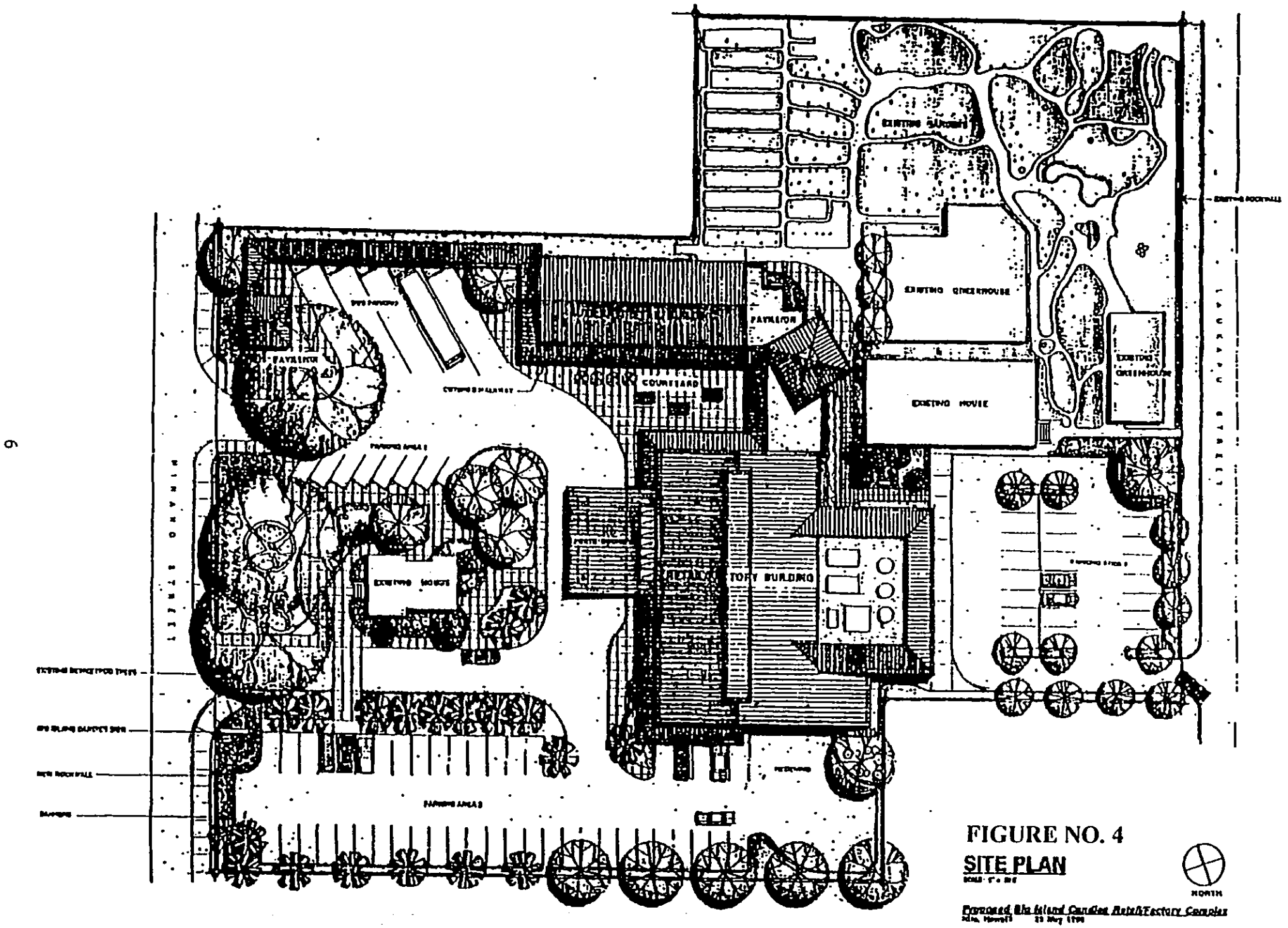


FIGURE NO. 4

SITE PLAN

Proposed Big Island Candies Retail/Factory Complex

Water System Standards (Reference No. 3, Appendix A-2), which indicates the existing water system will have the capacity to meet the anticipated water demands for the new complex.

TABLE NO. 2
ESTIMATED WATER DEMANDS*

Average Daily Demand (1)	10,020 gpd
Maximum Daily Demand (2)	15,030 gpd
Peak Hour Demand (2)	50,100 gpd
Fire Flow Demand (3)	2,000 gpm/2 hrs
Daily Usage Estimate (4)	4,166 gpd

* Normal water demands shown in gallons per day (gpd); fire flow demands shown in gallons per minute (gpm) and duration in hours.

Notes:
(1) Per DWS *Water System Standards Vol. 1*, Table 15, Domestic Consumption Guidelines, the average daily demand for commercial operations is 3000 gals/acre.
(2) Per DWS *Water System Standards Vol. 1*, Table 17, Demand Factors, the maximum daily demand is 1.5 x average daily demand and the peak hour demand is 5 x average daily demand.
(3) According to DWS, a reduction in the fire flow demand to 1,500 gpm/2 hrs can be approved (by letter) from the Fire Department if a sprinkler system is installed.
(4) Based on current monthly water usage of 125,000 gallons for daily operations.

Required Improvements - The primary improvement for the water system is the connection of the lateral water service lines from the new facility to one of the existing DWS water mains noted above. Since the new facility will have a fire sprinkler system, the new water connection must be a 6-inch diameter line and it will require a separate fire flow meter, in addition to a normal service meter.

Cost Considerations - For the purposes of this cost estimate, it was assumed that the new service lateral was connected to the existing 6-inch diameter water main on Laukapu Street. The estimated costs are shown below in Table No. 3;

TABLE NO. 3
ESTIMATED COSTS FOR WATER CONNECTION

Item No.	Description	Quantity	Unit Cost	Total Cost*
1	Trenching/Backfill	200 LF	$35/LF	$7,000
2	New 6" dia. water line, w/ meters & appurtenances.	200 LF	Lump Sum	$35,700
			Total	$42,700

*Estimated costs are rounded to hundreds of dollars.

Sanitary Sewer System:

Existing Conditions - There are three County of Hawaii sewer lines near the proposed site; there is an existing 8-inch diameter sewer main running parallel to the property on both Laukapu and Hinano Streets. In addition, there is a 10-inch diameter sewer line south of the proposed site that runs parallel to Kekuanaoa Street. All three lines are dependent on gravity flow to dispose of the wastewater. The approximate location of all existing sewer lines is shown on Figure No. 3. According to the Department of Wastewater, the two existing 8-inch lines have sufficient capacity to carry the estimated wastewater disposal demands of the proposed complex.

Required Improvements - The primary improvement for the sanitary sewer system is the connection of a lateral service line from the new facility to either of the existing 8-inch County sewer lines noted above. Based on standard sewerage flows for this type of establishment, (see Reference No. 5, Appendix A-2), the anticipated average daily sewerage flows are shown below in Table No. 4;

TABLE NO. 4
AVERAGE DAILY SEWERAGE FLOW*

Employees (1)	2,800 gpd
Visitors (2)	3,000 gpd
Total Average Daily Flow	5,800 gpd

*Flows shown in gallons per day (gpd)

Notes:
(1) Flows based on 80 employees at 35 gallons per day per person per shift.
(2) Flows based on 600 visitors (average) at 5 gallons per person per day.

Cost Considerations - For estimating purposes, it was assumed that a new 6-inch diameter lateral service line will be used to tie into the existing 8-inch County sewer line on Laukapu Street. Furthermore, it was also assumed that the new service lateral will include a 4-inch diameter clean-out and all necessary appurtenances. The estimated costs for this installation are shown below in Table No. 5;

TABLE NO. 5
ESTIMATED COSTS FOR WASTEWATER CONNECTION

Item No.	Description	Quantity	Unit Cost	Total Cost*
1	Trenching/Backfill	200 LF	$45/LF	$9,000
2	New 6" dia. sewer line, w/ various appurtenances	200 LF	Lump sum	$25,300
			Total	$34,300

*Estimated costs are rounded to hundreds of dollars.

Storm Drainage System:

Existing Conditions - Presently, the property does not have its own storm drainage system installed on the site to collect and dispose of rainfall runoff.

Required Improvements - The proposed construction on this site will significantly increase the amount of runoff generated by a typical storm in the Hilo area. The roofs for the new building and walkways, plus the large paved areas will reduce the site's ability to absorb surface water directly into the soil and remove the runoff by the process of infiltration. Current storm water regulations require the installation of an on-site catchment and disposal system to keep the volume of runoff at or below preconstruction levels. Two types of storm drainage systems are acceptable to the County of Hawaii; a seepage pit type system and a drywell type system. Storm drainage calculations to determine the quantity of additional runoff and to estimate the number of drainage structures are presented in Appendix A-1.

Cost Considerations - The estimated costs for installing a new storm drainage disposal system are shown below in Table No. 6;

TABLE NO. 6
ESTIMATED COSTS FOR STORM DRAINAGE SYSTEMS

Item No.	Description	Quantity	Unit Cost	Cost*
1	. Seepage Pit (3' dia. x 3' deep)	1	$4,000	$4,000
2	Drywell (depth varies)	3	$15,000	$45,000
			Total	$49,000

*Estimated costs are rounded to hundreds of dollars.

SUMMARY OF ESTIMATED COSTS FOR SITE IMPROVEMENTS

A composite summary of the estimated costs for the previously outlined site improvements is provided below in Table No. 7;

TABLE NO. 7
SUMMARY OF ESTIMATED COSTS

Item	Cost
Site Preparation	$13,400
Parking Lot	$78,000
Water Connection	$42,700
Wastewater Connection	$34,300
Storm Drainage System	$49,000
Total Estimated Cost	$217,400

APPENDIX A-1
STORM DRAINAGE CALCULATIONS

The following calculations use the *rational method* (Q = CIA) and the diagrams (Plates) in Reference No. 7 to determine the amount of rainfall runoff on the site to make a preliminary estimate for the new storm drainage requirements.

Basic Assumptions:

Total Area of the Site is 3.34 acres; reference Plate 1, Intensity of 1-hour rainfall for a ten-year storm (Tm = 10 years) is 5-inches per hour (1-hour rainfall, i = 5 in/hr); slope on the site is relatively flat, S = 0 to 2%.

Existing Conditions:

The existing site is primarily grassed with some structures (roofs) and minor paving for sidewalks and driveways; therefore an average rational coefficient (C) was determined for use in the rational method equation. To calculate the existing runoff, the area was considered to drain from the middle with half of the runoff going towards Laukapu Street and the other half towards Hinano Street.

Area 1 (to Laukapu Street), A1 = 1.79 acres; Area 2 (to Hinano Street), A2 = 1.55 acres

Time of Concentration (Plate 3), Tc1 = 24 minutes; Tc2 = 21 minutes

Intensity (Plate 4), I1 = 6.1 in/hr; I2 = 6.8 in/hr

Rational coefficient, C1 = 0.16; C2 = 0.18

Q1 = C1 x I1 x A1 = 0.16 x 6.1 in/hr x 1.79 acres = 1.75 cubic feet per second (cfs)

Q2 = C2 x I2 x A2 = 0.18 x 6.8 in/hr x 1.55 acres = 1.90 cubic feet per second (cfs)

Total existing runoff for site = Exist = Q1 + Q2 = 1.75 cfs + 1.90 cfs = 3.64 cfs.

Developed Conditions:

The developed site will keep the existing structures and construct a large building with three adjoining parking lots; see Figure No. 4 for a Proposed site plan of the new complex. Once again the area was divided into two parts with approximately one-third of the area draining towards Laukapu Street and two-thirds draining towards Hinano Street. New average values for rational coefficient were determined based on the increased roof areas and new paved surfaces.

Area 1 (to Laukapu Street), A1 = 1.19 acres; Area 2 (to Hinano Street), A2 = 2.15 acres

Time of Concentration (Plate 3), Tc2 = 24 minutes; Tc2 = 8 minutes

Intensity (Plate 4), I1 = 7.6 in/hr; I2 = 10.5 in/hr

Rational coefficient, C1 = 0.44; C2 = 0.82

Q1 = Ca x I1 x A1 = 0.44 x 7.6 in/hr x 1.19 acres = 4.02 cubic feet per second (cfs)

Q2 = C2 x I2 x A2 = 0.82 x 10.5 in/hr x 2.15 acres = 18.51 cubic feet per second (cfs)

Total developed runoff for site = Qnew = Q1 + Q2 = 4.02 cfs + 18.51 cfs = 22.53 cfs.

New Storm Drainage Requirements:

To meet current storm water regulations, the site will require an on-site drainage disposal system to capture the difference between the existing and developed runoff conditions; therefore the amount of runoff that must be retained on site equals;

Qretained = Qnew - Qexist = 22.53 cfs - 3.64 cfs = 18.89 cfs

Drainage Structures:

Seepage Pit Type - a seepage pit constructed of a perforated concrete pipe, 3 feet in diameter and 3 feet deep and supplemented with 4-inch diameter perforated PVC pipes to enhance the infiltration rate can retain up to approximately 2 cfs.

Drywell Type - a standard drywell type structure with a depth ranging from 20 feet to 60 feet can retain up to 6 cfs.

Conclusion:

A combination of seepage pits and drywells can be installed to retain and dispose of the additional runoff created from the new construction on this site. A network of drain inlets can be installed to deliver the excess runoff to three drywells and one seepage pit installed around the perimeter of the property.

APPENDIX A-2
LIST OF REFERENCES

Reference No.	Description
1	Big Island Candies Relocation Traffic Impact Analysis Report, dated June 1996, by M & E Pacific, Inc.
2	AASHTO - A Policy on Geometric Design of Highways and Streets, 1990 edition; pages 706-706.
3	Water System Standards Volume 1, Department of Water Supply, County of Hawaii, dated 1985.
4	Water Master Plan, Island of Hawaii, Department of Water Supply, dated December 1980.
5	Department of Health Administrative Rules, Chapter 11-62, adopted August 30, 1991.
6	*Waiakea Houselots Interceptor Sewers - Plan and Profile Sheets*, dated October 1, 1992.
7	Storm Drainage Standard, Department of Public Works, County of Hawaii, dated October 1970.

APPENDIX C

Comments and Responses to the EIS Preparation Notice

COMMENTS AND RESPONSES TO THE EIS PREPARATION NOTICE

The EIS Preparation Notice (EISPN) was published in the July 23, 1996 OEQC Environmental Notice. This publication date triggered the start of the 30-day Consultation Period, which officially ended on August 22, 1996.

The EIS Consultant consulted and/or sent the EISPN to the agencies and organizations listed below who may have had a potential stake or interest in the project. The written comments and respective responses are reproduced in this Appendix. Those letters with "no comment" or "no impact", or those letters that merely provided information rather than raising a concern, are grouped together at the end of the Appendix and were not sent a response.

Agency/Organization	Commented; Sent Response	Commented; No Response Necessary	Did not send written comments
Federal			
U.S. Army Corps of Engineers			X
State			
Department of Accounting and General Services		X	
Department of Health			X
Department of Land and Natural Resources			X
Office of State Planning			X
Department of Transportation	X		
Office of Environmental Quality Control	X		
County			
Planning Department			X
Department of Public Works	X		
Department of Water Supply	X		
Fire Department	X		
Police Department		X	
Organizations & Individuals			
Legislators and Councilpersons			X
Waiakea Houselots Lower Association	X		
Waiakea Houselots Upper Association			X
Adjacent landowners			X

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
HWY-PS
2.1511

AUG 14 1996

Ms. Virginia Goldstein
Director
Planning Department
County of Hawaii
25 Aupuni Street, Room 109
Hilo, Hawaii 96720

Attention: Ms. Alice Kawaha

Dear Ms. Goldstein:

Subject: Environmental Impact Statement (EIS) Preparation Notice for the Big Island Candies Retail and Production Center, Hilo, Hawaii, TMK: 3rd/2-2-34: 67-69, 76, 77, 104, 106

Thank you for requesting our comments on the subject EIS Preparation Notice. We would like to be provided with a Traffic Impact Assessment Report addressing necessary measures to mitigate project traffic impacts at Kanoelehua Avenue intersections with Hualani Street and Kekuanaoa Street.

Very truly yours,

KAZU HAYASHIDA
Director of Transportation

c: Roy R. Takemoto, Land Use Consultant

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

September 17, 1996

Mr. Kazu Hayashida, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, HI 96813-5097

RE: Big Island Candies Retail and Production Center-- EIS Preparation Notice
Waiakea, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the EIS Preparation Notice for the subject project. The Draft EIS will include a Traffic Impact Analysis Report (TIAR) as an appendix and summarize the findings and mitigation measures in the body of the EIS.

We will forward you a copy of the Draft EIS when it is available. We would appreciate your comments on the EIS, particularly the TIAR.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

BENJAMIN J. CAYETANO
GOVERNOR

GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

August 22, 1996

Ms. Virginia Goldstein
Hawaii County Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

Dear Ms. Goldstein:

Subject: EIS Preparation Notice for the Big Island Candies Retail and Production Center, Hilo, Hawaii

Thank you for the opportunity to review the subject document. We have the following comments.

1. Please describe in more detail the activities and uses associated with the neighboring parcels.

2. Please describe the social impacts of having a retail and production facility in a residential area.

3. Please fully describe the impacts associated with tourists visiting the facility.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Gary Gill
Director

c: Roy Takemoto

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

September 17, 1996

Mr. Gary Gill, Director
Office of Environmental Quality Control
220 S. King Street, Fourth Floor
Honolulu, HI 96813

RE: Big Island Candies Retail and Production Center-- EIS Preparation Notice
Waiakea, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the EIS Preparation Notice for the subject project. The Draft EIS will address your comments as follows:

1. The DEIS will contain an aerial photograph to depict the surrounding land uses.
2. The DEIS will include a section on social impacts.
3. The social impact section will assess the impact of tourist visitations on the surrounding residential neighborhood.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

Stephen K. Yamashiro
Mayor

Donna Fay K. Kiyosaki
Chief Engineer

Jiro A. Sumada
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

August 21, 1996

ROY R TAKEMOTO
LAND USE CONSULTANT
P O BOX 10217
HILO HAWAII 96720

SUBJECT : DRAFT ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE FOR BIG ISLAND CANDIES RETAIL AND PRODUCTION CENTER
Waiakea, South Hilo, Hawaii
TMK: 2-2-034: 067, 068, 069, 076, 077, 104 & 106

We acknowledge receipt of your letter concerning the subject matter, and provide you with the following comments:

1. All building construction shall conform to all requirements of code and statutes of the County of Hawaii.
2. Any work along Hinano Street or Laukapu Street, which is a County right-of-way, shall be in conformance with Chapter 22, Streets and Sidewalks, of the Hawaii County Code. On street parking will not be allowed on either Street.
3. All development generated runoff shall be disposed on site and shall not be directed toward any adjacent properties.
4. All earthwork and grading shall be in conformance with Chapter 10, Erosion and Sediment Control, of the Hawaii County Code.
5. The subject properties are found within Flood Zone "X," according to the Flood Insurance Rate Map dated September 16, 1988.
6. Any construction within known watercourses shall be in conformance with Chapter 27, Flood Control, of the Hawaii County Code.
7. Sewer line connections shall conform to the rules and regulations of the Department of Public Works, Wastewater Division.

8. A solid waste management plan shall conform to the rules and regulations of the County of Hawaii, Solid Waste Division.
9. A traffic impact analysis report may be required to enable proper design of ingress and egress.
10. Improvements shall be located beyond the future road widening setback established by the Planning Department.

Should there be any questions concerning this matter, please feel free to contact Mr. Casey Yanagihara in our Engineering Division at (808)961-8327.

Galen M. Kuba, Division Chief
Engineering Division

KG

xc : Planning Department

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

September 17, 1996

Mr. Galen Kuba, Division Chief
Engineering Division
Department of Public Works
County of Hawaii
25 Aupuni Street, Rm 202
Hilo, HI 96720-4252

RE: Big Island Candies Retail and Production Center-- EIS Preparation Notice
Waiakea, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the EIS Preparation Notice for the subject project. The Draft EIS will include a preliminary engineering report and traffic analysis report to address the concerns identified in your letter.

We will forward you a copy of the Draft EIS when it is available. You will have an opportunity to review that document and provide additional comments.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 969-1421 • FAX (808) 969-6996

August 12, 1996

TO: Planning Department

FROM: Milton D. Pavao, Manager

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE FOR THE BIG ISLAND CANDIES RETAIL AND PRODUCTION CENTER TAX MAP KEY 2-2-034:067, 068, 069, 076, 077, 104, and 106

We have reviewed the subject Environmental Impact Statement Preparation Notice.

Based on the prevailing water situation in the area, water can be made available from an existing 6-inch waterline along Hinano Street and Laukapu Street.

For your information, the subject property is serviced by one 1½-inch meter and two ¾-inch meters.

To assist us in evaluating the facilities charge and meter size for the proposed project, we request the anticipated maximum daily water usage and peak hour demand as recommended by a professional engineer, registered in the State of Hawaii, and it must be submitted for our review and approval.

Upon completion of our review of the above, we will submit our comments and requirements.

The applicant should be aware that this memorandum should not be construed as a water commitment. In other words, unless a water commitment is officially effected, water availability is subject to change depending on the water situation.

Should there be any questions, the applicant may contact our Water Resources and Planning Section at 961-8660.

Milton D. Pavao, P.E.
Manager

WA:rls

Copy - Mr. Roy R. Takemoto

... Water brings progress...

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

September 17, 1996

Mr. Milton Pavao, Manager
Department of Water Supply
County of Hawaii
25 Aupuni Street
Hilo, HI 96720

RE: Big Island Candies Retail and Production Center– EIS Preparation Notice
Waiakea, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the EIS Preparation Notice for the subject project. We appreciate the information regarding the existing water service to the property. The Draft EIS will include a copy of the preliminary engineering report prepared by M&E Pacific, Inc. The report will provide the anticipated maximum daily water usage and peak hour demand.

We will forward you a copy of the Draft EIS when it is available. You will have an opportunity to review that document and provide additional comments.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

Stephen K. Yamashiro
Mayor

Nelson M. Tsuji
Fire Chief

Edward Bumatay
Deputy Fire Chief

County of Hawaii
FIRE DEPARTMENT
777 Kilauea Avenue • Mall Lane, Room 6 • Hilo, Hawaii 96720-4239
(808) 961-8297 • Fax (808) 961-8296

August 1, 1996

To: Virginia Goldstein, Planning Director
Attention: Alice Kawaha

From: Nelson H. Tsuji, Fire Chief

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
BIG ISLAND CANDIES RETAIL & PRODUCTION CENTER
WAIAKEA, SOUTH HILO DISTRICT, HAWAII
TAX MAP KEY: 3RD/2-2-34:67, 68, 69, 76, 77, 104, 106

The Fire Department's requirements as stated in the Fire Code are:

"Fire Apparatus Access Roads

"Sec. 10.207. (a) General. Fire apparatus access roads shall be provided and maintained in accordance with the provisions of this section.

"(b) Where Required. Fire apparatus access roads shall be required for every building hereafter constructed when any portion of an exterior wall of the first story is located more than 150 feet from fire department vehicle access as measured by an unobstructed route around the exterior of the building.

"EXCEPTIONS: 1. When buildings are completely protected with an approved automatic fire sprinkler system, the provisions of this section may be modified.

"2. When access roadways cannot be installed due to topography, waterways, nonnegotiable grades or other similar conditions, the chief may require additional fire protection as specified in Section 10.301 (b).

"3. When there are not more than two Group R, Division 3 or Group H Occupancies, the requirements of this section may be modified, provided, in the opinion of the chief, fire-fighting or rescue operations would not be impaired.

"More than one fire apparatus road may be required when it is determined by the chief that access by a single road may be impaired by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

"For high-piled combustible storage, see Section 81.109.

"(c) Width. The unobstructed width of a fire apparatus access road shall meet the requirements of the appropriate county jurisdiction.

"(d) Vertical Clearance. Fire apparatus access roads shall have an unobstructed vertical clearance of not less than 13 feet 6 inches.

"EXCEPTION: Upon approval vertical clearance may be reduced, provided such reduction does not impair access by fire apparatus and approved signs are installed and maintained indicating the established vertical clearance.

"(e) Permissible Modifications. Vertical clearances or widths required by this section may be increased when, in the opinion of the chief, vertical clearances or widths are not adequate to provide fire apparatus access.

"(f) Surface. Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with a surface so as to provide all-weather driving capabilities." (20 tons)

"(g) Turning Radius. The turning radius of a fire apparatus access road shall be as approved by the chief." (45 feet)

"(h) Turnarounds. All dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with approved provisions for the turning around of fire apparatus.

"(i) Bridges. When a bridge is required to be used as access under this section, it shall be constructed and maintained in accordance with the applicable sections of the Building Code and using designed live loading sufficient to carry the imposed loads of fire apparatus.

"(j) Grade. The gradient for a fire apparatus access road shall not exceed the maximum approved by the chief." (15%)

"(k) Obstruction. The required width of any fire apparatus access road shall not be obstructed in any manner, including parking of vehicles. Minimum required widths and clearances established under this section shall be maintained at all times.

"(l) Signs. When required by the fire chief, approved signs or other approved notices shall be provided and maintained for fire apparatus access roads to identify such roads and prohibit the obstruction thereof or both."

"INSTALLATION AND MAINTENANCE OF FIRE-PROTECTION, LIFE-SAFETY SYSTEMS AND APPLIANCES

"Installation

"Sec. 10.301. (a) Type Required. The chief shall designate the type and number of fire appliances to be installed and maintained in and upon all buildings and premises in the jurisdiction other than private dwellings. This shall be done according to the relative severity of probable fire, including the rapidity with which it may spread. Such appliances shall be of a type suitable for the probable class of fire associated with such building or premises and shall have approval of the chief.

"(b) Special Hazards. In occupancies of an especially hazardous nature or where special hazards exist in addition to the normal hazard of the occupancy, or where access for fire apparatus is unduly difficult, additional safeguards may be required consisting of additional fire appliance units, more than one type of appliance, or special systems suitable for the protection of the hazard involved. Such devices or appliances may consist of automatic fire alarm systems, automatic sprinkler or water spray systems, standpipe and hose, fixed or portable fire extinguishers, suitable asbestos

blankets, breathing apparatus, manual or automatic covers, carbon dioxide, foam, halogenated and dry chemical or other special fire-extinguishing systems. Where such systems are installed, they shall be in accordance with the applicable Uniform Fire Code Standards or standards of the National Fire Protection Association when Uniform Fire Code Standards do not apply.

"(c) Water Supply. An approved water supply capable of supplying required fire flow for fire protection shall be provided to all premises upon which buildings or portions of buildings are hereafter constructed, in accordance with the respective county water requirements. There shall be provided, when required by the chief, on-site fire hydrants and mains capable of supplying the required fire flow.

"Water supply may consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of providing the required fire flow.

"The location, number and type of fire hydrants connected to a water supply capable of delivering the required fire flow shall be protected as set forth by the respective county water requirements. All hydrants shall be accessible to the fire department apparatus by roadways meeting the requirements of Section 10.207.

"(d) Fire Hydrant Markers. When required by the chief, hydrant locations shall be identified by the installation of reflective markers.

"(e) Timing of Installation. When fire protection facilities are to be installed by the developer, such facilities including all surface access roads shall be installed and made serviceable prior to and during the time of construction. When alternate methods of protection, as approved by the chief, are provided, the above may be modified or waived.

"(f) All fire alarm systems, fire hydrant systems, fire extinguishing systems (including automatic sprinklers), Class I, II, III (combination standpipe system) and combined systems, basement inlet pipes, and other fire protection systems and appurtenances thereto shall meet the approval of the fire department as to installation and location and shall

be subject to periodic tests as required herein. Plans and specifications shall be submitted to the fire department for review and approval prior to installation."

"Premises Identification

"Sec. 10.208. (a) General. Approved numbers or addresses shall be placed on all new and existing buildings in such position as to be plainly visible and legible from the street or road fronting the property. Said numbers shall contrast with their background.

"(b) Street or Road Signs. When required by the chief, a street or road shall be identified with approved signs."

NELSON H. TSUJI
Fire Chief

NMT/mo

cc: Roy R. Takamoto

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

September 17, 1996

Mr. Nelson Tsuji, Fire Chief
Fire Department
County of Hawaii
777 Kilauea Avenue
Mall Lane, Room 6
Hilo, HI 96720-4239

RE: Big Island Candies Retail and Production Center-- EIS Preparation Notice
Waiakea, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the EIS Preparation Notice for the subject project. The Draft EIS will confirm the applicable requirements for the project to comply with the Fire Code, particularly the Fire Department's approval of the following:

- Plans and specifications for fire protection facilities (e.g., automatic sprinklers);
- Fire flow design standard for a sprinkler system;
- Testing of installed fire protection system;
- Plainly visible premises identification from the street fronting the property.

We will forward you a copy of the Draft EIS when it is available. You will have an opportunity to review that document and provide additional comments.

Please call me if you have any questions.

Respectfully,
Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

Waiakea Houselots
Lower Association
484 Kanoelehua Avenue
Hilo, Hawaii 96720
August 01, 1996

Mr. Allan Ikawa, President
BIG ISLAND CANDIES
500 Kalanianaole Avenue
Hilo, Hawaii 96720

Dear Mr. Ikawa:

Thank you for inviting representatives of the Waiakea Houselots Lower Association (Kumiai) to the luncheon meeting on June 7, 1996, at KK Tei to announce your plans to relocate your operation to the former Oda Orchides of Hawaii site. The president, immediate past president, secretary and former president (a neighbor across Hinano Street) represented the Kumiai.

The Kumiai representatives had no objection to your proposed project and informed you that the Board of Directors will be meeting in October. Report will be given accordingly.

Presently the Kumiai is informed of the Environmental Impact Statement Preparation Notice (7/21/96), The EIS is to be completed in September 1996. On the EISPN I make the following comments.

1. Air Quality and Noise (3.1.7)
   Could the factory noise be addressed?

2. Roads and Traffic (3.3.1)
   Should there be information available on the Kanoelehua Avenue outbound lane project and its Kekuanaoa Street access improvement, comments could be included. Kekuanaoa Street is improved from Manono Street to Hinano Street.

Thank you again for informing the Kumiai of your relocation plans to the Oda property. The Kumiai will appreciate receiving a copy of the completed EIS.

Sincerely,

Arthur T. Isemoto, President
Waiakea Houselots Lower Ass'n

cc: Sidney Fuke & Associates
Roy R. Takemoto

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

September 17, 1996

Mr. Arthur Isemoto, President
Waiakea Houselots Lower Association
484 Kanoelehua Avenue
Hilo, HI 96720

RE: Big Island Candies Retail and Production Center– EIS Preparation Notice
Waiakea, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the EIS Preparation Notice for the subject project. Your comments will be addressed in the Draft EIS as follows:

1. Air Quality and Noise. Because the proposed production area will be entirely enclosed and air-conditioned, any factory noise will not be audible beyond the property line. This relatively quiet operation can be confirmed by standing outside the existing Big Island Candies facility.

2. Roads and Traffic. We will request the civil engineer for the project to research the proposed plans for Kekuanaoa Street improvements from Hinano Street to Kanoelehua Avenue. The Draft EIS will include the findings.

We appreciate your support of the project and look forward to the kumiai Board of Directors' official expression of support after your October meeting. We will send you a copy of the Draft EIS when it is available. You will have an opportunity to review that document and provide additional comments.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

(P)1481.6

AUG 14 1996

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Attention: Ms. Alice Kawaha

Gentlemen:

Subject: Big Island Candies Retail and Production Center
Waiakea, South Hilo District, Hawaii
TMK 2-2-34:67, 68, 69,. 76, 77, 104, 106
Draft Environmental Assessment

Thank you for the opportunity to review the subject document. We have no comments to offer.

If there are any questions, please have your staff contact Mr. Ralph Yukumoto of the Planning Branch at 586-0488.

Very truly yours,

JERRY NISHIDA
Acting State Public Works Engineer

RY:jy
cc: Mr. Roy Takemoto, Land Use Consultant

Stephen K. Yamashiro
Mayor

Wayne G. Carvalho
Police Chief

James S. Correa
Deputy Police Chief

County of Hawaii
POLICE DEPARTMENT

349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-2702

August 5, 1996

TO : VIRGINIA GOLDSTEIN, PLANNING DIRECTOR

ATTN : ALICE KAWAHA

FROM : WAYNE G. CARVALHO, POLICE CHIEF

SUBJECT : ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE FOR THE BIG ISLAND CANDIES RETAIL AND PRODUCTION CENTER, WAIAKEA, SOUTH HILO DISTRICT, HAWAII
TMK: 3RD/2-2-34:67, 68, 69, 76, 77, 104, 106

We have reviewed the Environmental Impact Statement Preparation Notice for the above project and have no objections or concerns to offer at this time.

Thank you for the opportunity to comment.

EO:lk

cc: Mr. Roy R. Takemoto

APPENDIX D

Comments and Responses to the Draft EIS

COMMENTS AND RESPONSES TO THE DRAFT EIS

The Draft EIS was published in the October 8, 1996 OEQC Environmental Notice. This publication date triggered the start of the 45-day Review Period, which officially ended on November 22, 1996.

The Draft EIS was sent to various agencies, organizations, individuals, and libraries listed in the OEQC-approved Distribution List included in this Appendix. The written comments and respective responses are reproduced in this Appendix. Those letters with "no comment" or "no impact", or those letters that merely provided information rather than raising a concern, are grouped together at the end of the Appendix and were not sent a response.

Agency/Organization	Commented; Applicant Sent Response	Commented; No Response Necessary	Did not send written comments
Federal			
U.S. Army Corps of Engineers		X	
U.S. Department of the Interior, Fish and Wildlife Service			X
State			
Office of Hawaiian Affairs		X	
Department of Accounting and General Services		X	
Department of Health			X
Department of Land and Natural Resources		X	
Department of Land and Natural Resources, Historic Preservation Division		X	
Department of Business, Economic Development, and Tourism			X
Department of Business, Economic Development, and Tourism, Energy Office			X
Department of Hawaiian Home Lands			X
Office of State Planning			X
Department of Transportation		X	
Office of Environmental Quality Control	X		
UH Environmental Center			X

Agency/Organization	Commented; Applicant Sent Response	Commented; No Response Necessary	Did not send written comments
County			
Planning Department			X
Department of Public Works	X		
Department of Water Supply	X		
Civil Defense			X
Organizations & Individuals			
Legislators and Councilpersons			X
Waiakea Houselots Lower Association	X		
Waiakea Houselots Upper Association			X
Patricia Tummons	X		

DRAFT EIS FOR BIG ISLAND CANDIES RETAIL & PRODUCTION FACILITY
DISTRIBUTION LIST

I.	**Federal**	
A.	Soil Conservation Service	
B.	U.S. Army Corps of Engineers, Pacific Ocean Division	1
C.	U.S. Department of Interior, Fish and Wildlife Service	1
D.	U.S. Geological Survey	
II.	**State**	
A.	Office of Hawaiian Affairs	1
B.	Department of Accounting and General Services	1
C.	Department of Health	1
D.	Department of Land and Natural Resources	3
E.	Department of Transportation	1
F.	Office of State Planning	1
G.	OEQC	5
H.	DBEDT	1
I.	DLNR Historic Preservation Division	1
J.	DBEDT Library	1
K.	DBEDT Energy Office	1
L.	Department of Hawaiian Home Lands	1
III.	**County**	
A.	Planning Department	1
B.	Department of Public Works	1
C.	Civil Defense	1
D.	Department of Water Supply	1
IV.	**Organizations and Individuals**	
A.	Waiakea Houselots Lower Association	1
A.	Waiakea Houselots Upper Association	1
D.	County Council	8
V.	**Media**	
A.	Hawaii Tribune Herald	1
B.	West Hawaii Today	1
C.	Honolulu Advertiser	1
D.	Pacific Business News	1
E.	Honolulu Star Bulletin	1
VI.	**Libraries**	
A.	Hilo Regional Library	1
B.	UH Hamilton	1
C.	Legislative Reference Bureau	1
D.	State Main Library	1
E.	UH Hilo Library	1
VI.	**UH**	
A.	Environmental Center	2
TOTAL		***46***

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

GARY GILL
DIRECTOR

November 20, 1996

Ms. Virginia Goldstein
Hawaii County Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

Dear Ms. Goldstein:

Subject: Draft EIS for the Big Island Candies Retail and Production Center, Hilo, Hawaii

Thank you for the opportunity to review the subject document. We have the following comments.

1. Please provide data on the extent of odors, especially from ethanol, that will be emitted from the proposed facility. Will there be any visible smoke from the proposed facility? How will the odors and smoke visibility impact the neighbors, and public health?

2. Please estimate the level of noise that will be generated by buses frequenting the facility. How do they conform with the latest noise rules developed by the Department of Health?

3. Please fully evaluate the capability of the County of Hawaii to prohibit tour busses from driving along narrow residential streets. In addition to the noise and air emission impacts, the narrowness of the streets and tight turning radii makes driving tour busses difficult.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Gary Gill
Director

c: Roy Takemoto

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

December 4, 1996

Mr. Gary Gill, Director
Office of Environmental Quality Control
State Office Tower
235 S. Beretania Street, Room 702
Honolulu, HI 96813-2437

RE: Big Island Candies Retail and Production Facility– Draft EIS
Waiakea, South Hilo District, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the Draft EIS for the subject project. The following responds to your comments:

1. *Air Quality (odors, smoke).* In telephone conversations with the Department of Health, neither the Sanitation Branch nor the Food & Drug Branch was aware of any ethanol emission problems with bakeries. The Big Island Candies operations do not produce smoke or offensive odors (there is baking aroma). The Sanitation Branch confirmed that scrubbers are not required for bakery-type operations like Big Island Candies; scrubbers are required only for cooking operations that produce smoke or oily emissions.

2. *Noise.* Recently, the Department of Health extended coverage of the Community Noise Control rules (*Hawaii Administrative Rules* Chapter 11-46) to the neighbor islands (effective September 23, 1996). However, these rules do not apply to mobile sources such as vehicles. A separate set of rules apply to vehicular noise (*Hawaii Administrative Rules* Chapter 11-42), but these rules are effective only on Oahu. In a telephone conversation with the Department of Health Noise & Radiation Branch, buses have not had any problems meeting the standards set forth in Chapter 11-42. In Waikiki, where complaints have been received on buses, the problems arise from buses idling to keep the air conditioning on while waiting for the passengers. As a mitigation measure, Big Island Candies will instruct the tour bus drivers to turn off their engines while waiting.

3. *Bus Route Restrictions.* The typical next stop for tour buses after stopping at Big Island Candies is Liliuokalani Gardens. Bus drivers take the easiest route. From the proposed site to Liliuokalani Gardens, the easiest route is a left turn from Hinano to Kekuanaoa, left from Kekuanaoa to Kanoelehua, and straight through along Kanoelehua to Banyan Drive. Big Island Candies will instruct and monitor the tour buses to follow this route. If problems do arise, the County has the power to legally restrict certain vehicles on designated roads pursuant to *Hawaii County Code* §24-166 (Restricted use of highways by certain vehicles).

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

DEPARTMENT OF PUBLIC WORKS
COUNTY OF HAWAII
HILO, HAWAII

DATE: December 2, 1996

Memorandum

TO: PLANNING DEPARTMENT

FROM: GALEN M. KUBA, Division Chief
Engineering Division

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT
BIG ISLAND CANDIES RETAIL AND PRODUCTION FACILITIES
Waiakea, South Hilo, Hawaii
TMK: 2-2-034: 067, 068, 069, 076, 077, 104 & 106

We acknowledge receipt of the subject report from the Office of Environmental Quality Control (OEQC) and provide you with the following comments:

1. Although the 45-day comment period ended November 22, 1996, we confirmed with the State OEQC and consultant Roy Takemoto that our comments will be transmitted on, or about December 2, 1996.

2. Buses turning right from Kekuanoa to Hinano swinging into the oncoming lane on Hinano is unacceptable whether or not a conflict is encountered. Similarly, buses turning right from Hinano to Kekuanoa swinging into oncoming traffic is unacceptable. Intersection improvements should be required as existing right-of-way radii of 20 feet are insufficient to accommodate minimum bus turning radius of 40 feet. Improvements should consist of shoulder and drainage improvements meeting with the approval of the DPW.

3. Instructing tour bus operators to restrict their routes to the site via Kekuanoa Street to Hinano Street will not be effective. Legal restrictions will be required.

4. The DPW recommends widening Hinano Street pavement to a minimum width of 20 feet at a length of 400 feet from Kekuanoa Street and should consist of shoulder and drainage improvements meeting with the approval of the DPW.

5. Comments made to Draft Environmental Impact Statement Preparation Notice dated August 21, 1996 are still applicable.

Should there be any questions concerning this matter, please feel free to contact Mr. Casey Yanagihara in our Engineering Division at (808)961-8327.

KG

copy: OEQC
Big Island Candies, Inc.
Roy R. Takemoto

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

December 4, 1996

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

RE: Big Island Candies Retail and Production Facility-- Draft EIS
Waiakea, South Hilo District, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the Draft EIS for the subject project. The following responds to your comments.

1. *Acceptance of Comments.* Although your comments were received after the end of the 45-day review period which ended on November 22, your comments have been incorporated into the Final EIS. Thank you for accommodating our request for an advance draft of your major concerns.

2. *Intersection Improvements.* The Applicant proposes to improve the curve radius of the right turn corner from Kekuanaoa to Hinano Street to the extent possible within the existing right of way. If additional area is required to create a wider turn, the County will have to negotiate or condemn the necessary land area since the Applicant will not own that corner lot. Since the next tour bus stop after Big Island Candies is typically Liliuokalani Gardens, the tour buses will usually turn left from Hinano to Kekuanaoa Street and drive straight down Kanoelehua Avenue to Banyan Drive. Because of the very infrequent, if any, right turns by tour buses, and the presence of a right-turn pocket lane from Kekuanaoa to Hinano Street where oncoming cars can edge into if necessary to accommodate a bus swing in the event any buses do turn right, it does not seem that improvements are necessary to the curve radius of the right turn corner from Hinano to Kekuanaoa Street.

3. *Tour Bus Route Restrictions.* Besides the mandates from Big Island Candies discouraging the tour buses from driving through the interior neighborhood streets, the bus drivers would likely avoid those streets just for practical reasons. Should complaints arise, the County can legally restrict the tour buses through the Hawaii County Traffic Code (*Hawaii County Code* §24-166, -293).

4. *Hinano Street Pavement Widening.* The Final EIS will incorporate the Applicant's agreement to widen the pavement width from 16' to 20' along Hinano Street from the Kekuanaoa intersection to the project's entrance, a distance of approximately 400', including shoulder and drainage improvements in accordance with County requirements.

5. *EIS Preparation Notice Comments.* Your comments to the EIS Preparation Notice have been incorporated into the Final EIS (see the Summary, Section 3.3 (Public Facilities, Utilities, and Services), and Table 5 (List of Permits)).

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 969-1421 • FAX (808) 969-6998

November 4, 1996

TO: Planning Department

FROM: Milton D. Pavao, Manager

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT
BIG ISLAND CANDIES RETAIL AND PRODUCTION CENTER
TAX MAP KEY 2-2-34:67, 68, 69, 76, 77, 104, AND 106

We have reviewed the subject Environmental Impact Statement.

For your information, the property is serviced by two existing ⅝-inch meters and one 1½-inch meter.

The existing 1½-inch meter is of adequate size to accommodate the anticipated maximum daily water demand of 4,166 gallons of water per day or 7 equivalent units and peak-hour demand of 50,100 gallons per day or 35 gallons per minute.

We suggest you consult with the Fire Department for fire-flow requirements.

Should there be any questions, the applicant may contact our Water Resources and Planning Section at 961-8660.

Milton D. Pavao, P.E.
Manager

WA:cmk

copy - Mr. Roy R. Takemoto ✓
Big Island Candies, Inc.

... Water brings progress...

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

December 4, 1996

Mr. Milton Pavao, Manager
Department of Water Supply
County of Hawaii
25 Aupuni Street
Hilo, HI 96720

RE: Big Island Candies Retail and Production Facility-- Draft EIS
Waiakea, South Hilo District, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the Draft EIS for the subject project. We appreciate your confirmation of the availability of water based on the estimates of maximum daily and peak hour demands provided in the Draft EIS. The applicant will pay the facilities charge based on 7 equivalent units or the charge for a 1½ meter, whichever is more, at the appropriate time if rezoning is approved to obtain water commitments.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

Waiakea Houselot
Lower Association
484 Kanoelehua Avenue
Hilo, Hawaii 96720
October 21, 1996

Mr. Allan Ikawa, President
BIG ISLAND CANDIES
500 Kalanianaole Avenue
Hilo, Hawaii 96720

Dear Mr. Ikawa:

This is a follow-up to our August 3, 1996 letter on your proposal to purchase the Shigeru K. Oda Trust property.

The Board of Directors of the 'Kumiai' met on October 20, 1996 to discuss the proposal to purchase parcels TMK: 2-2-34-67, 68,69,71,77,104 and 106 by Allan and Irma Ikawa to be leased to the B.I.C. operation.

The Board of Directors submits the following actions taken.

a. Meet the requirements set forth in the EISPN.
b. Concern on the narrow Hinano Street subjected to the tour bus movement with possible private car parking thereon.
c. Improvement at Hinano/Kekuanaoa intersection for the bus turning movement.
d. Possibility of curb and sidewalk improvement as extension of Manono-Hinano section of Kekuanaoa Street.
e. Adjacent property owners input.
f. Receipt of the completed Draft EIS.

Thank you for allowing the 'Kumiai' to review and comment on your proposed project.

Sincerely,

Arthur T. Isemoto, President
Waiakea Houselots Lower Ass'n

cc: Sidney Fuke & Associates
Roy R. Takemoto
Land Use Consultant

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

December 4, 1996

Mr. Arthur Isemoto, President
Waiakea Houselots Lower Association
484 Kanoelehua Avenue
Hilo, HI 96720

RE: Big Island Candies Retail and Production Facility-- Draft EIS
Waiakea, South Hilo District, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the Draft EIS for the subject project. Although your written comments imply that your comments were based on the EIS Preparation Notice rather than the Draft EIS, you confirmed in a telephone conversation that you indeed did receive the Draft EIS, that you had reviewed it, and that your comments are basically the same as set forth in the written correspondence dated October 21, 1996.

The following responds to your comments.

1. *Enforcement of Mitigation Measures.* The County enforces pertinent mitigation requirements mentioned in the EIS by incorporating these requirements as conditions of any rezoning approval. As an adopted ordinance, the zoning conditions have the force and effect of law.

2. *Hinano Street Width; On-Street Parking.* In response to comments from the County Department of Public Works, the applicant will widen the pavement width of Hinano Street from the existing 16' to 20' for a distance of approximately 400' from the Kekuanaoa-Hinano intersection to the project's entrance driveway. The 10' travel lanes should adequately accommodate the 8.5'-wide buses. The applicant will also improve the curve radius to the extent possible within the existing right-of-way of the right turn from Kekuanaoa to Hinano Street. This improvement, together with the expanded pavement width, should allow buses to turn without being affected by parked vehicles. Nevertheless, the County has indicated in their comments that a no-parking restriction may be imposed along Hinano Street in this vicinity.

3. *Hinano-Kekuanaoa Intersection Improvements.* The applicant will improve the turning radius for right turns from Kekuanaoa to Hinano Street. Since the buses will usually turn left from Hinano to Kekuanaoa to their next stop at the Liliuokalani Gardens via Banyan Drive, right turn movements will be infrequent, if any. The County recently made improvements to this corner, and there appears to be sufficient room to accommodate a turn especially due to the additional lane width of a right-turn pocket from Kekuanaoa into Hinano Street.

4. *Curb/Sidewalk Improvements.* Improvements required of the applicant should be directly related and proportional to the anticipated impacts caused by the project; to require otherwise would be an unfair burden on the applicant that should be more properly paid by general tax revenues. In this context, since the project will not significantly increase pedestrian traffic along Kekuanaoa Street, it does not seem appropriate to require the applicant to provide sidewalk/curb improvements along Kekuanaoa Street.

5. *Adjacent Owners Input*. As the EIS consultant, I surveyed the owner-occupants surrounding the project site. Their input is documented in the EIS under the social impact section. None of the owner-occupants interviewed expressed any objection to the project.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

187-C Hokulani Street
Hilo HI 96720

Nov. 7, 1996

Planning Department
County of Hawai'i
25 Aupuni Street
Hilo HI 96720

To whom it may concern:

Re: EIS for Big Island Candies Retail and Production Facility
TMK 2-2-34: 67, 68, 69, 76, 104, 106

I offer the following comments on this project.

Poor justification for project: On page 1 of the summary, reasons given for the proposed relocation of Big Island Candies are as follows: unattractiveness, low visibility, small site, inefficient layout, difficult traffic egress. Of those five, it would seem that at least three remain at the proposed new site. Foliage on the site makes the new site more attractive than the present one -- although that shortcoming could be easily surmounted with some landscaping at the present location. The proposed new location also suffers from poor visibility (it is in the middle of a residential neighborhood), inefficient layout (with a house in the center of the grounds), and, as described elsewhere in the EIS, problems related to traffic management -- particularly the narrow streets not designed to handle tour-bus traffic.

Questionable mitigation on road impacts: On the page 4 chart showing mitigation measures, it is stated that the "narrow width of Hinano Street to accommodate buses" shall be mitigated by improving road shoulders. For what distance? Presumably, the impact extends the entire length of Hinano Street that buses will be traveling (at least between Kekuanaoa and Pi'ilani streets). Will this entire stretch be modified to accommodate tour buses? If so, the scope of the EIS should be amended to include this. If not, then the proposed mitigation does not go nearly far enough.

Spurious distinction between renters and owner-occupants: Much is made in the EIS of the fact that the percent of nearby houses occupied by their owners is decreasing. But people who can afford only to rent houses deserve to have the same respect that owner-occupants receive. In many places, the EIS appears to imply that a high degree of rental tenants means that the residential character of the neighborhood can be discounted or is otherwise less worthy of protection. As a renter, I am concerned by this attitude. The views of landowners are not the only ones that should count in determining the proper zoning of an area.

Traffic impacts: The EIS describes some of the impacts that the anticipated traffic increases will have on nearby intersections. It describes these as not "significant." However, the EIS goes on to describe conflicts that would inevitably occur when buses try to make a right turn from Kekuanaoa into Hinano. "The bus will have to swing into the oncoming lane on Hinano Street." According to the diagram of this turn (page 3-18), the bus tires will actually go off the pavement on the opposite side of Hinano Street. Similarly, when buses make a right turn from Hinano into Kekuanaoa, they will swing into oncoming traffic. There is little to be done about this, according to the EIS, except perhaps to pave the shoulder along Hinano street.

Nothing is proposed in the EIS to mitigate the inconvenience that will inevitably be imposed upon the public traveling down Kekuanaoa or Hinano. In Honolulu, for example, the public is often inconvenienced by tour buses making wide turns on narrow streets. So far, people in Hilo have been free of this. I think this is a selling point for people who want to live in Hilo, as I do. Sacrificing it to the interest of a candy factory hardly seems a good deal for the public.

Social Impact: There is little discussion in the EIS of the historic character of the Waiakea houselot area. Its architectural vernacular -- employing high-built houses and frequent use of stone porches, among other things -- is unique to Hilo and is disappearing quickly. Rather than having the county General Plan amended to hasten the demise of this historic neighborhood, I would support efforts to preserve it, as was the intention of the 1992 plan amendment downzoning this area.

The existing use of the site, as a nursery, does not conflict with the low-key residential use. The commercial traffic generated by the nursery is orders of magnitude less than that anticipated in the EIS for the candy factory. Having a nursery in the heart of a residential area, in fact, is a convenience to nearby residents and encourages home gardening. There is no similar beneficial effect that could be anticipated from a candy factory. (Indeed, if it encourages residents to increase their consumption of sweets and fats, it may have a net negative impact on their health and welfare.)

I note that the president of the Waiakea Houselots Lower Association indicates his organization has no objection to the proposed project. However, that letter was written in advance of preparation of the EIS, which discloses more fully the traffic impacts. I cannot speak for the association, but I do wonder if the full scope of traffic impacts was disclosed to them at the time of the meeting between the candy factory owners and the association.

Unaddressed impacts: Finally, I wonder if there isn't something more planned for the site than what is disclosed in the EIS. On the conceptual site plan there is depicted the factory with its retail space, but also an "auxiliary retail building" of 4,000 square feet. What is proposed for this? Without this information, the disclosures contained in the EIS are inadequate and insufficient to meet Chapter 343 requirements.

Sincerely,

Patricia Tummons

cc. ~~Planning Dept~~ Roy Takeuchi

ROY R. TAKEMOTO
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721
Phone/Fax (808)959-0189

December 4, 1996

Ms. Patricia Tummons
187-C Hokulani Street
Hilo, HI 96720

RE: **Big Island Candies Retail and Production Facility-- Draft EIS**
Waiakea, South Hilo District, Hawaii (TMK 3rd/2-2-34:67, 68, 69, 76, 77, 104, 106)

On behalf of Big Island Candies, Inc., thank you for taking the time to review and comment on the Draft EIS for the subject project. The following responds to your comments.

1. *Project Justification*. The applicant would not invest the substantial financial capital required to develop the site if it did not meet the applicant's needs. Based on the applicant's survey of available lots, the applicant selected the proposed site because of the convenient location, landscaping potential, and adequate size to construct a building that could accommodate the applicant's present and future growth plans. The inefficient layout referred to in the Draft EIS pertained to the existing building. The proposed new building will remedy those deficiencies. The existing houses on the proposed site do not affect the building layout; nevertheless, the applicant may decide to remove those houses rather than keep them. Because the site is located just one lot away from Kekuanaoa Street, the project will be adequately visible. Traffic egress from the proposed site will be significantly better than the existing site primarily because the stop lights at the Kekuanaoa/Manono intersection and the Kekuanaoa/Kanoelehua intersection provide sufficient gaps in the traffic flow for the buses to make left turns from Hinano to Kekuanaoa Street.

2. *Mitigation of Road Impacts*. The applicant will comply with the Department of Public Works' comment to widen the pavement width from 16' to 20' along Hinano Street from the Kekuanaoa intersection to the project's entrance, a distance of approximately 400'. Since the tour buses will infrequently, if at all, drive any further along Hinano Street than the project site, there is no need to widen the entire length of Hinano Street.

3. *Distinction Between Renters and Owner-Occupants*. The focus on owner-occupants was to get an indication of the transiency of the neighborhood; there was no intent to ignore or slight renters. As the number of owner-occupants decrease, there is a greater tendency towards nonresidential uses becoming mixed with residential uses. As discussed in the Draft EIS, the Waiakea Houselots area is becoming increasingly more transient. The Waiakea Houselots is a convenient location for businesses. The mix of uses along Hinano Street is a prime example-- credit unions, restaurant, industrial uses, and offices. In 1992, the County "downzoned" the area upon the vocal insistence of the then owner-occupants who desired to live out their lives in peace in the neighborhood that they have lived for all these years. Since 1992, the number of owner-occupants has significantly declined. Of those that remained, none of those interviewed for the subject Draft EIS perceived the project in the same manner as the more onerous industrial uses that were the subject of their discontent in 1992. Owner-occupants share the same concerns as renters with any proposed development-- noise, traffic, aesthetics. Therefore, the opinions of the

owner-occupants should reflect some of the views of renters.

4. *Traffic Impacts*. The EIS discusses two types of traffic and road impacts. One type of impact relates to the volume of traffic. In that regard, the EIS documented the insignificance of the project's impact to the projected ambient volume of traffic, and the adequate capacity of the intersections to accommodate that projected traffic volume. The second type of impact relates to the geometrics of the road design. The Final EIS will incorporate the County Department of Public Works' comments to widen the pavement width of Hinano Street from 16' to 20', as well as to improve the turning radius of the right turn from Kekuanaoa to Hinano Street. These improvements will accommodate the turning bus without going off the pavement. The bus will still swing into the opposing lane on Hinano Street, but given the infrequent bus trips and the low traffic volume along Hinano Street, this is an acceptable condition. As noted in your comments, the swing of buses into the opposing lane is a common occurrence in Honolulu and a tradeoff traffic engineers make to avoid "overdesigning" an intersection with excessively wide, more expensive, and pedestrian-unfriendly intersections (the wider the curve radius, the longer the pedestrian crossing). Hilo has very few intersections with 40' curve radii, which is the minimum to accommodate a bus without encroaching on the opposing lane. The only reason Hilo drivers have not experienced more encroaching turning buses is because of the significantly less number of buses than Honolulu.

5. *Social Impact*. We agree that the stone porches characteristic of the older Hilo homes have a very charming value. The project respects the residential character of the surrounding uses with its low-scale architectural design and landscaped gardens. The State Historic Preservation Division confirmed that the homes on the site, which are similar to the homes in the surrounding neighborhood, do not have historic value.

6. *Unaddressed Impacts*. Because the project is in the early conceptual stages, the applicant has not selected specific tenants for the proposed retail space. For purposes of assessing potential impacts, the EIS evaluated traffic, parking, and other impacts associated with potentially four businesses that could occupy this auxiliary retail building at 1,000 s.f. per leasable bay. The Final EIS will incorporate this information to further describe the auxiliary retail building.

Please call me if you have any questions.

Respectfully,

Roy Takemoto
Land Use Consultant

cc: Planning Department, County of Hawaii
Big Island Candies, Inc.
Sidney Fuke & Associates

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
FORT SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

November 15, 1996

Planning and Operations Division

Ms. Virginia Goldstein, Director
County of Hawaii
Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

Dear Ms. Goldstein:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement (DEIS) for the Big Island Candies Retail and Production Facility, Hilo, Hawaii (TMK 2-2-34: 67-77, 104, and 106). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act of 1960 and to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

a. Based on the information provided, a DA permit will not be required for the project.

b. The flood hazard information provided on page 3-2 of the DEIS is correct.

Sincerely,

Lawrence O. Muraoka

Lawrence O. Muraoka, P.E.
Acting Chief, Planning
and Operations Division

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1865

November 11, 1996

Mr. Roy Takemoto
Land Use Consultant
P.O. Box 10217
Hilo, HI 96721

Dear Mr. Takemoto:

Thank you for the opportunity to review the Draft Environmental Assessment (DEA) for the Big Island Candies Retail and Production Facility at Waiakea, South Hilo District, Island of Hawaii. Big Island Candies, Inc. proposes to construct a facility for its retail and production operations in an 3.4 acre parcel owned by the Shigeru K. Oda Trust and located on Kalanianaole Street in an industrial area on the way to Hilo Harbor.

After reviewing the DEA and supporting documentation, the Office of Hawaiian Affairs has no objections to the proposed development. Based on the information contained in the DEA, the construction apparently bears no significant long-term adverse impacts on adjacent urban and commercial areas. Furthermore, no known archaeological remains exist and the proposed construction will neither significantly affect scenic resources nor air quality or noise level. Please contact me, or Linda K. Delaney, the Land and Natural Resources Division Officer (594-1938), or Luis A. Manrique (594-1755), should you have any questions on this matter.

Sincerely yours,

Martha Ross

Martha Ross
Deputy Administrator

LM:lm

(P)1681.6

NOV 4 1996

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

Subject: Big Island Candies Retail and Production Facility
Waiakea, South Hilo District, Hawaii
TMK 2-2-34:67, 68, 69, 76, 77, 104, 106
Draft Environmental Impact Statement

Thank you for the opportunity to review the subject document. We have no comments to offer.

If there are any questions, please have your staff contact Mr. Ralph Yukumoto of the Planning Branch at 586-0488.

Very truly yours,

GORDON MATSUOKA
State Public Work Engineer

RY:jy
cc: Big Island Candies
Mr. Roy Takemoto, Land Use Consultant
OEQC

BENJAMIN J CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P O BOX 621
HONOLULU, HAWAII 96809

MICHAEL D WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT S COLOMA-AGARAN

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCE MANAGEMENT

NOV 27 1996

Ref.:LD-AJ

Sidney Fuke
100 Pauahi Street
Hilo, Hawaii 96720

File No. A150

Dear Mr. Sidney Fuke:

SUBJECT: Draft Environmental Impact Statement (DEIS)
Applicant: Big Island Candies, Inc.
Request: Construct a facility for its retail & production operations
Tax Map Key: 2-2-34:67, 68, 69, 77, 104 & 106

We have reviewed the subject application and would like to offer the following comments.

Water and Land Development, Land Division:

We confirm that the proposed project site is located in Zone X; an area determined to be outside of the 500-year flood plain.

Thank you for the opportunity to review and provide comments for the subject application. Should you have any questions, please contact Al Jodar at 587-0424 of our Land Division in Honolulu.

HAWAII:Earth's Best!

Aloha,

for MICHAEL D. WILSON

cc: Roy Takemoto

I:\WETDATA\OAHU\AL\LTR\CONSO.WI

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

November 1, 1996

Ms. Virginia Goldstein, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

LOG NO: 18411
DOC NO: 9610PM22

Dear Ms. Goldstein:

SUBJECT: Draft Environmental Impact Statement: Big Island Candies Retail and Production Facility
Hilo, South Hilo, Hawaii Island
TMK: 2-2-34: 67, 68, 69, 76, 77, 104 and 106

It is unlikely that there are any significant historic sites remaining in the proposed project area because of ground disturbances related to previous land uses, which has included office space, a plant nursery and residences. We thus believe that the proposed project will have "no effect" on significant historic sites.

If you have any questions please contact Patrick McCoy (587-0006).

Sincerely,

DON HIBBARD, Administrator
State Historic Preservation Division

PM:jk

cc: Big Island Candies, Inc.
✓Roy Takemoto

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

IN REPLY REFER TO
HWY-PS
2.2530

NOV 14 1996

Ms. Virginia Goldstein
Director
Planning Department
County of Hawaii
25 Aupuni Street, Room 109
Hilo, Hawaii 96720

Dear Ms. Goldstein:

Subject: Draft Environmental Impact Statement (EIS) for the
Big Island Candies Retail and Production Center, Hilo, Hawaii
TMK: 2-2-34: 67-69, 76-77, 104, 106

Thank you for requesting our comments on the subject Draft EIS. Based on the EIS Traffic Impact Analysis Report, we do not anticipate adverse impacts to State highway facilities.

Very truly yours,

KAZU HAYASHIDA
Director of Transportation

c: Mr. Sidney Fuke, Big Island Candies, Inc.
✓ Mr. Roy R. Takemoto, Land Use Consultant

APPENDIX E

Redlined Pages Showing Changes Made to the Draft EIS

Noise

Because of the Site's proximity to a major roadway (Kekuanaoa Street), the ambient noise level from the traffic is quite high (equals or exceeds 65 $L_{dn)}$. The Site is also subject to aircraft noise due to its proximity to the airport. The average day/night noise level from aircrafts in the vicinity of the Site is approximately $60L_{dn}$.

Socio-economic Characteristics

Based on real property tax records, less than half of the 57 lots in the immediate vicinity of the Site are still owner-occupied. Of the owner-occupied lots, 92% are elderly. Several owner-occupants residing closest to the Site were interviewed. None of them opposed the project. A spot-check of real property tax records indicates that property tax assessed values for parcels used for single-family residences located immediately adjacent to commercially-zoned areas, as well as single-family residences located within the commercial zoning district, had the same tax assessed value as a single-family residence parcel in the interior blocks surrounded entirely by other single-family residential uses.

Infrastructure and Public Facilities

Kekuanaoa Street is a two-lane County collector road. Hinano Street is a two-lane County roadway with a 40' wide right-of-way (with planned street widening to 50' in accordance with the City of Hilo Zoning Map). Approximately 160 cars, 40 vans, and 13 buses can be expected to visit the project during an average retail day. This projected volume will not affect the level of service of the Kekuanaoa intersections at Hinano and Manono Streets. The turning radius of tour buses will cause buses to encroach on the opposing traffic lanes when making right turns from Kekuanaoa to Hinano Street and from Hinano to Kekuanaoa Street. There are adequate capacity of water and wastewater facilities in the area to accommodate the project.

Impacts and Mitigation

The potential impacts and proposed mitigation measures are summarized in the following table. The mitigation measures have been sorted according to when the mitigation measure should be implemented-- i.e., during the design or construction phase, during the operational phase, or in the process of permit compliance.

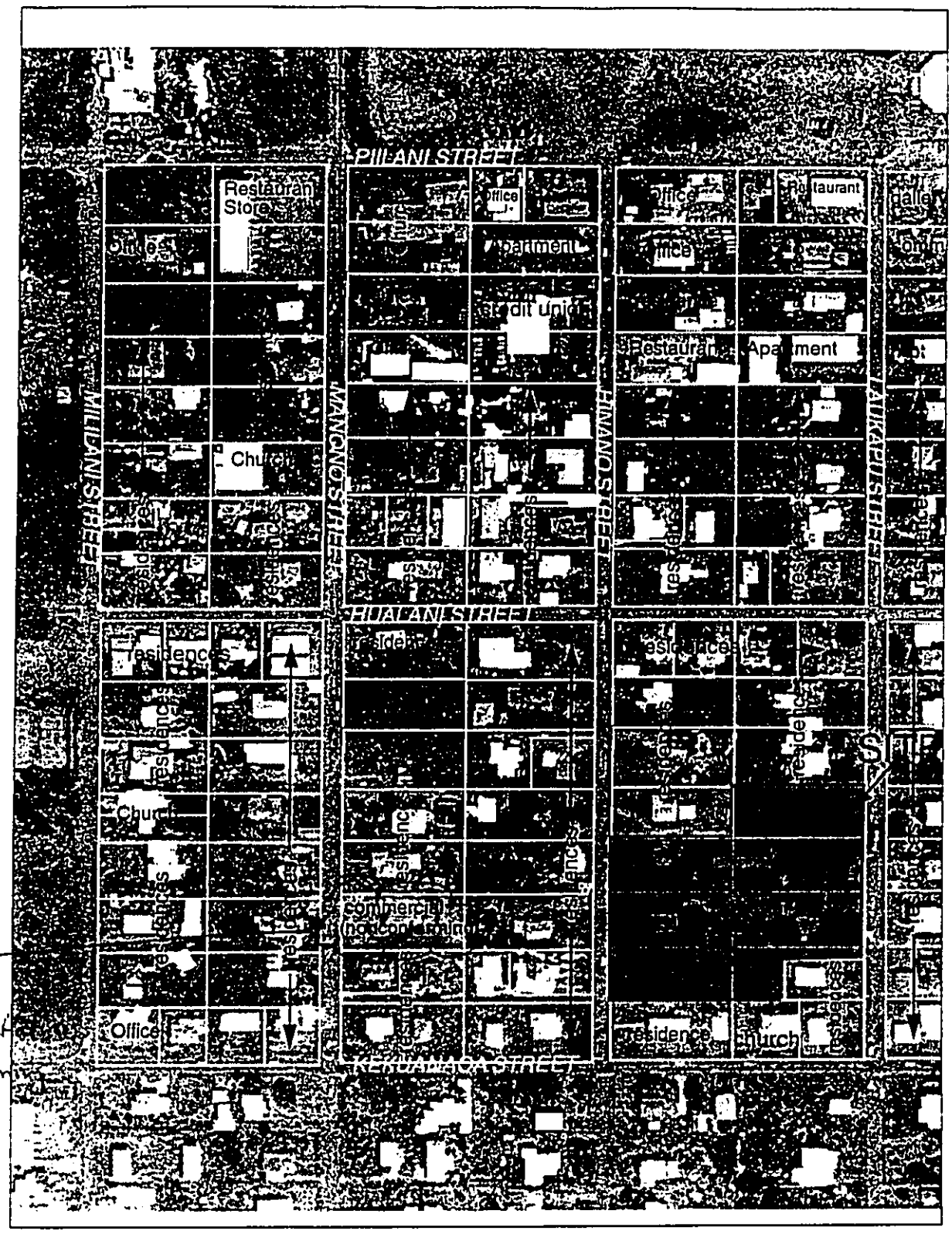
Mitigation Measures Related to Design/Construction (Monitored at Plan Approval)

Impacts/Concerns	Suggested Mitigation Measures	Consultant	EIS §
Noise impact from onsite vehicular traffic on neighbors	Design dense perimeter landscaping, especially around parking lots.	Landscape Architect	§3.1.7
Scenic character of existing large trees, especially along Hinano Street	Incorporate the trees into the landscaping plan to the extent feasible.	Landscape Architect	§3.1.4
Design compatibility with surrounding residences	Design low-scale, residential character buildings	Architect	§3.1.8
Narrow width of Hinano Street to accommodate buses	Expand pavement width to 20' from Kekuanaoa/Hinano intersection to project entrance (approx. 400') in accordance with County requirements; provide additional 5' along Site's Hinano Street frontage for street widening purposes.	Civil engineer	§3.3.1
Tight turning radius for bus right turns from Kekuanaoa to Hinano Street	Expand the curve radius to the extent possible within the existing right-of-way in accordance with County requirements.	Civil engineer	§3.3.1
Construction noise	Specify in the construction documents compliance with standards in the Community Noise Control regulations (HAR 11-46).	Architect/ Contractor	§3.1.7
Solid waste management	Prepare solid waste management plan.	Civil engineer	§3.3.7
Onsite containment of development-generated runoff	Provide drainage improvements in accordance with County requirments (e.g. drywells).	Civil engineer	§3.3.4

Mitigation Measures Related to Operations (Monitored by Applicant)

Impacts/Concerns	Suggested Mitigation Measures	EIS §
Bus noise and narrow width of interior streets	Instruct bus drivers to access Site from Kekuanaoa Street and restrict driving through neighborhood	§3.1.7 §3.3.1
Onsite bus noise	Instruct bus drivers to turn off engines and not to idle while waiting for passengers.	§3.1.7
Right-turn swing of buses into opposing lane	Advise bus drivers to exercise caution when making right turns from Kekuanaoa to Hinano Street; encourage left turns from Hinano to Kekuanaoa Street.	§3.3.1

FIGURE 4. Surrounding Uses



Corrected existing use from residential to nonconforming Commercial

in the main building will focus on candy and baked products, this auxiliary retail area will sell other types of products (e.g., t-~~shirts).~~shirts). The Applicant has not determined the specific uses or tenants for this retail space. The 4,000 s.f. auxiliary building has space for up to four retail businesses at 1,000 s.f. per bay.

The total gross floor area of the main building is approximately 29,700 s.f.; together with the auxiliary retail building the total gross floor area of the project is approximately 33,700 s.f. The ground floor footprint (including the auxiliary retail) totals approximately 19,075 s.f., which results in a lot coverage of only 13%. Most of the land area of this low scale project will be used for landscaped open space and parking. In keeping with the residential character of the surrounding area, the height of the building is 35', which is the height limit for the residential zoning district.

Visitors will be able to leisurely roam through the greenhouses and gardens, or relax in the covered pavilion that overlooks the gardens.

2.3.3 Proposed Operations

Normal hours for production operations will be from 7:30 a.m. to 4:00 p.m., Monday through Friday, with possible exceptions during peak holiday periods. Retail operations will be from 8:30 a.m. to 5:00 p.m., seven days a week.

BIC currently employs 75 persons full-time. An additional 15 persons are employed seasonally or part-time especially during peak periods. With the new facility, there may be an additional 20 full-time positions. The number of employees working on a shift at any given time will be a projected maximum of 62 persons.

2.4 TIMETABLE AND COST

The estimated construction start is mid-1997, with completion a year later in mid-1998. The estimated construction cost is $2,000,000.

3.1.4 Flora/Fauna

Setting

The Site has been used for commercial and residential purposes; the only vegetation on the Site are introduced landscaping plants.

Impacts and Mitigation

None. The Site has been entirely previously disturbed and is not a natural habitat for any rare or endangered species. The existing tall trees on the Site, especially along Hinano Street, have been incorporated into the landscaping plan.

3.1.5 Historic/Archaeological Resources

Setting

Because the entire Site had been previously disturbed, any surface or subsurface archaeological remains are unlikely. The existing structures on or near the Site are not historically ~~significant.~~significant, as confirmed by the State Historic Preservation Division.[4]

Impacts and Mitigation

None.

3.1.6 Water Resources

Setting

The Hilo area is underlain by basal groundwater. The nearest stream is Wailoa River located approximately 1800' from the Site.

Impacts and Mitigation

None.

4. See letter from Don Hibbard, Administrator, State Historic Preservation Division, dated 11/1/96 (included in Appendix D).

3.1.7 Air Quality and Noise

Setting

Because of the Site's proximity to a major roadway (Kekuanaoa Street), the ambient noise level from the traffic is quite high (equals or exceeds 65 L_{dn}). The Site is also subject to aircraft noise due to its proximity to the airport. The average day/night noise level from aircrafts in the vicinity of the Site is approximately 60L_{dn}.[5]

Impacts

Air Quality. Because all operations will occur within an enclosed facility, the processing operations will not generate any noise or offensive odor (there will be baking aroma). Although the Office of Environmental Quality Control raised concerns with ethanol emissions from bakeries,[6] neither the Sanitation Branch nor the Food and Drug Branch of the Department of Health was aware of any such problems. The Sanitation Branch confirmed that scrubbers would not be required for bakery-type operations like Big Island Candies; scrubbers are required only for cooking operations that produce smoke or oily residue (e.g., BBQ).[7]

~~Because all operations will occur within an enclosed facility, the processing operations will not generate any noise or odor.~~ *Noise.* An unavoidable noise impact will be the visitor traffic to the Site, especially buses. However, the traffic noise should not be significantly greater than the visitor traffic to the Site generated by the previous floricultural use. On a busy day, approximately 15-20 buses could arrive mostly within the later morning hours (9:30 a.m. to 12:00 p.m.) (see Figure 13, "Incoming Hourly Traffic at Big Island Candies," on page 3-16). The increased noise from the buses should not be significantly greater than the existing ambient noise from

5. Belt Collins & Associates. Noise Exposure Map Report: General Lyman Field, Hilo, Hawaii, prepared for State of Hawaii, Department of Transportation, October 1988, p. 2-46 (ambient background noise levels), fig. 4-1 (aircraft noise contour map).
6. See letter from Gary Gill, director, dated 11/20/96 (included in Appendix D).
7. Telephone conversation with Food & Drug Branch and Sanitation Branch of the Honolulu office, as well as the Sanitation Branch of the Hilo office, on 11/29/96.

Kekuanaoa Street and the frequent aircraft overflights to which the residents in the area are already exposed.

Although the Department of Health recently extended coverage of the Community Noise Control regulations to the neighbor islands,[8] these rules do not apply to vehicular noise. A separate set of regulations apply to vehicular noise,[9] but these regulations only apply to Oahu. The Department of Health Noise and Radiation Branch indicated that buses have not had any problems meeting the standards set forth in those regulations. In Waikiki, where complaints have been received, the problems arise from buses idling to keep the air conditioning on while waiting for the passengers.[10]

The Airports Division of the State Department of Transportations uses $60L_{dn}$ as the acceptable noise limit for residential areas. Because of the commercial nature of the project, and the enclosed facilities, the project is not as sensitive to the aircraft noise as a typical residence.

~~The residents within the vicinity of the Site will also be exposed to noise impacts during construction.~~

The residents within the vicinity of the Site will also be exposed to noise impacts during construction. The Department of Health Community Noise Control regulation applies to construction activity.

Mitigation

Design Phase. Landscaping plans should maximize the density of the perimeter landscaping especially along the boundary of the parking lots to buffer and minimize vehicular noise from impacting upon the immediately adjacent neighbors.

8. *Hawaii Administrative Rules* Chapter 11-46, effective September 23, 1996.
9. *Hawaii Administrative Rules* Chapter 11-42.
10. Telephone conversation with the Noise and Radiation Branch Honolulu office on 11/29/96.

Construction Phase. Construction documents should require that the contractor notify the neighbors of the work schedule. This schedule should either expedite the duration of construction with extended working hours, or limit the working hours to reasonable weekday time ~~periods.~~periods. The Department of Health Community Noise Control regulation provides standards and enforcement measures to ensure that the noise from construction is not excessive.

Operational Phase. ~~Big Island Candies should instruct tour bus drivers to use Kekuanaoa Street, and not drive through the neighborhood. Since there are no legal means to prohibit tour buses from using these interior County streets, the only means to enforce this mitigation measure is through the courtesy of the individual bus drivers and Big Island Candies' goodwill to maintain neighborly relations. The narrowness of the streets and tight turning radii may practically discourage bus traffic along these interior streets.~~

Big Island Candies should instruct tour bus drivers to use Kekuanaoa Street, and not drive through the neighborhood. If the mandates of Big Island Candies do not effectively control the bus drivers, then the County can respond to any community complaints by legally restricting buses from using certain streets pursuant to the Hawaii County Traffic Code.[11] The narrowness of the streets and tight turning radii may practically discourage bus traffic along these interior streets. Big Island Candies should also instruct the bus drivers to not idle while waiting for their passengers.

3.1.8 Scenic Resources

Setting

Currently, the existing landscaping and structures are not fully maintained. The proposed project, embellished with landscaping, will improve the scenic quality of the area. The proposed building has been scaled to fit the surrounding residential character of the area.

Impacts

None.

---

11. Hawaii County Code §24-166 (restricted use of highways by certain vehicles).

to be compatible with the surrounding residential uses. This proposition finds support by the endorsement of the project by the Waiakea Houselots Lower Association *kumiai* as well as the individual old-time residents immediately adjacent to the Site who were surveyed for this project.[19]

Eight owner-occupants residing closest to the Site were interviewed. None of them opposed the project. Several were eager to have the project conveniently located nearby so that they would not have to deal with the traffic and parking problems of the existing Big Island Candies site. A couple of the residents even expressed interest to work for Big Island Candies. None of the residents had any concerns with the bus noise, even those residents living directly across the Site's proposed entrance on Hinano Street who would be most impacted by the project. One resident recalled the buses that used to visit the Orchids of Hawaii business that formerly operated on the Site. This resident used to welcome the tourists who took pictures of their house or just relaxed under the big shady tree in their front yard.

In short, the long-time residents do not oppose the proximity of non-residential uses. In fact, they value the convenience of living in close proximity to such uses, provided such uses are not noisy, smelly, ugly, or generate truck traffic. The proposed project mitigates all of these concerns: the enclosed facility will not be noisy, no foul industrial smells will emanate, the building will be a low-scale building designed to fit with the surrounding residential structures with extensive landscaping, adequate onsite parking will be provided, and the project's location near Kekuanaoa will prevent the tour buses from having to drive through the interior neighborhood streets.

The focus on owner-occupants does not exclude renters' concerns. Owner-occupants and renters basically share the same concerns with any proposed development-- noise, traffic, parking, aesthetics.

19. See letter from the Waiakea Houselots Lower Association, dated August 1, 1996, in Appendix C. Interview surveys were conducted by the EIS author on September 14, 1996 of selected owner-occupants along Hinano and Laukapu Streets between Kekuanaoa and Hualani Streets.

Hinano Street. Manono Street, which parallels Hinano Street, provides the only through route between Kamehameha Avenue and Kekuanaoa Street in the Waiakea neighborhood. Based on these routes, the key intersections are on Kekuanaoa Street at Hinano and Manono Streets.

Kekuanaoa Street is a two-lane County collector road signed for 35 mph. The intersection of Kekuanaoa and Manono Streets is signalized with left turn lanes and advance green turn signals for left turns from Kekuanaoa to Manono. There is no separate left turn lane on Manono Street to Kekuanaoa.

The intersection of Kekuanaoa and Hinano Streets are stop-controlled along Hinano Street. There are no separate turning lanes on Kekuanaoa or Hinano Streets. Hinano Street is a two-lane County roadway with a 40' wide right-of-way. The City of Hilo Zoning Map specifies all minor streets to be widened to 50'.

Traffic counts taken at the Hinano and Manono intersections along Kekuanaoa Street indicate that the existing traffic volume along Kekuanaoa Street increases throughout the day until it reaches a peak in the afternoon. The existing traffic along Hinano Street is low (see Figure 12 on page 3-15).

To determine the potential traffic impact of the proposed project, incoming and outgoing vehicular traffic were counted at the existing BIC outlet. Based on this count, approximately 160 cars, 40 vans, and 13 buses can be expected to visit the project during an average retail day. Tour bus and van traffic is heavier in the mid-morning and early afternoon (see Figure 13 on page 3-16). The automobile traffic rises to a peak in the afternoon, with a significant portion of the peak probably related to employee pick-ups.

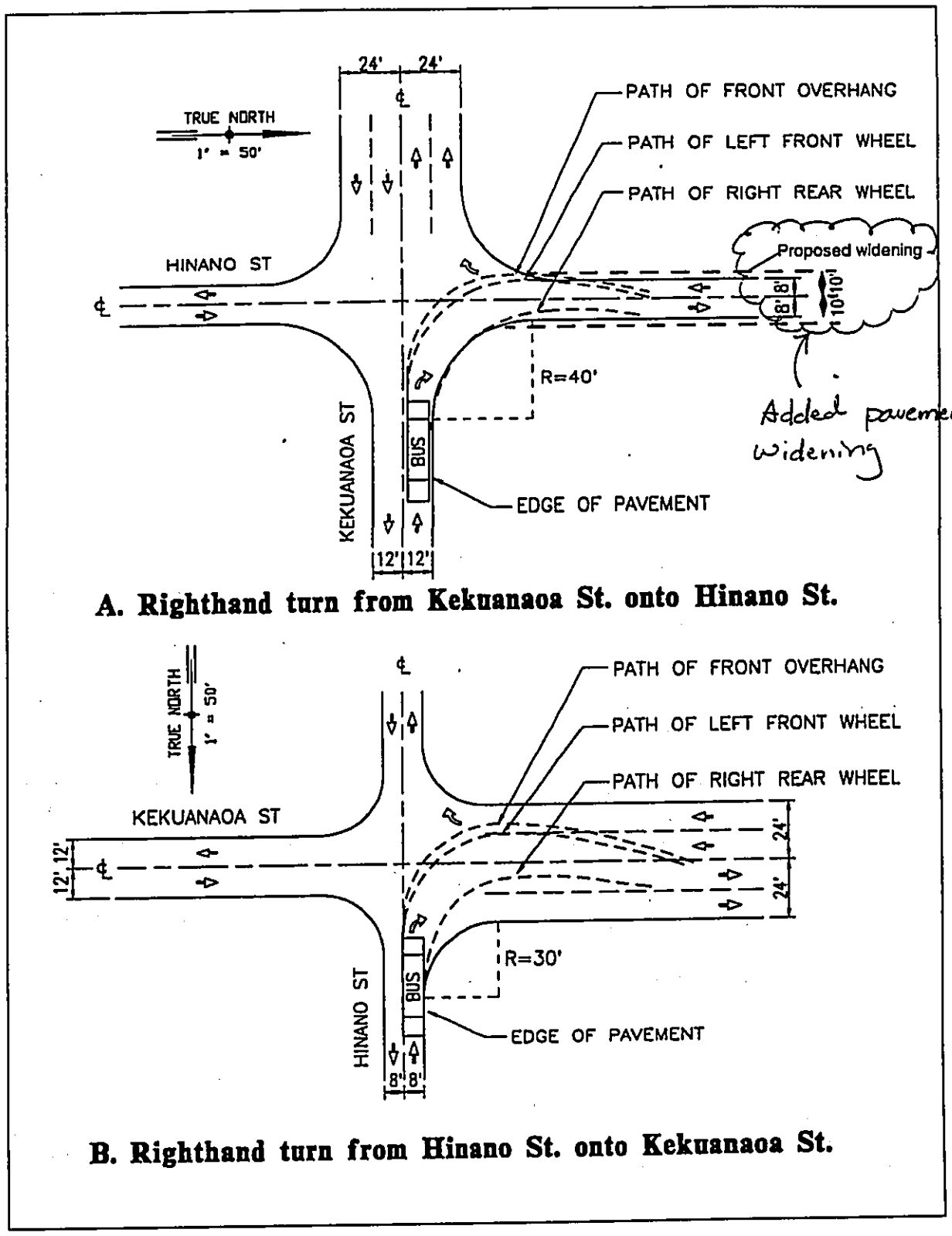
TABLE 2. Level of Service Analysis

Kekuanaoa/Manono Intersection (signalized)			Kekuanaoa/Hinano (unsignalized)		
	Existing	Forecast (w/ Project)		Existing	Forecast (w/ Project)
Entire Intersection	B	B	*Entire Intersection*		
Afternoon Peak Hour					
Kekuanaoa Street Eastbound	C	C	*Hinano Street Northbound*	C	C
Kekuanaoa Street Westbound	C	C	*Hinano Street Southbound*	C	C
Manono Street Northbound	C	D	*Kekuanaoa Street Eastbound, left turn*	A	A
Manono Street Southbound	E	E	*Kekuanaoa Street Westbound, left turn*	A	A
Entire Intersection	D	D	*Entire Intersection*		

Although the project will not have significant traffic impacts, the narrow width of Hinano Street may cause some problems to accommodate buses (see Appendix B, Preliminary Engineering Report). The width of a typical bus is 8.5 feet. The width of the Hinano Street travel lane is 8 feet. When two buses must pass each other, one or both need to move to the ~~shoulder.~~shoulder. Widening the pavement width from 16' to 20' (10' travel lanes) would provide sufficient passing capacity.

When a bus makes a right turn from Kekuanaoa to Hinano Street, the bus will have to swing into the oncoming lane on Hinano Street (see Figure 14 on page 3-19). However, because of the low volume of traffic along Hinano, the buses would only occasionally encounter a conflict. ~~When a conflict does occur,~~ By improving the curve radius, together with the pavement widening to 20', the ~~bus can wait until the traffic clears on Hinano before making~~ buses should adequately maneuver the turn without ~~causing undue delays along Kekuanaoa Street.~~going off the pavement.

FIGURE 14. Effects of Curb Turning Radius



~~When a bus makes a right turn from Hinano Street to Kekuanaoa Street, the 30' curb radius will cause the bus to swing onto oncoming traffic. To avoid this situation, the buses can make left turns instead from Hinano to Kekuanaoa Street, or merely to wait until a gap occurs in the eastbound Kekuanaoa traffic before making the right turn.~~

When a bus makes a right turn from Hinano Street to Kekuanaoa Street, the 30' curb radius will cause the bus to swing into oncoming traffic. However, this situation will rarely occur since the buses will usually make left turns instead from Hinano to Kekuanaoa Street to their next stop, which is Liliuokalani Gardens. In the infrequent event of a right turn, the recent County improvements such as the right turn pocket from Kekuanaoa to Hinano Street, should provide additional lane width to accommodate the turning bus without endangering oncoming traffic. After the left turn onto Kekuanaoa Street, the buses will turn left on Kanoelehua Avenue and drive along Kanoelehua into Banyan Drive. Because of the traffic lights at the intersection of Kekuanaoa/Manono Streets and Kekuanaoa/Kanoelehua Avenue, sufficient gaps in the traffic flow will allow the left turn from Hinano to Kekuanaoa Street without much problem.

Neither the police department nor the State Department of Transportation raised any other traffic or road improvement concerns.[23]

Mitigation

Design phase. Pursuant to comments from the County Department of Public Works and Planning Department, project engineering design to be approved by the County should include:

- widen the pavement from 16' to 20' from the intersection to the project's entrance, a distance of approximately 400';

~~Street frontage improvements along Hinano Street should include paving the shoulder to handle occasional weight loading of buses.~~

23. See letter from Wayne Carvalho, Police Chief, dated 8/5/96 (included in Appendix C), and letter from Kazu Hayashida, Director of Transportation, dated 11/14/96 (included in Appendix D).

~~Operational phase.~~ ~~BIC will instruct tour bus operators to restrict their routes to the Site via Kekuanaoa to Hinano Street. When departing the Site, BIC will advise tour bus operators to be cautious of eastbound Kekuanaoa traffic when making right turns.~~

- reserve, dedicate, and/or improve according to County requirements a width of 5' along the Hinano Street frontage for street widening purposes to increase the right-of-way width from 40' to 50' in conformance with the City of Hilo Zoning Map;
- improve the curve radius of the right turn from Kekuanaoa to Hinano Street to the extent possible within the existing right-of-way; if additional area is necessary, the County needs to condemn any additional area not owned by the County or the Applicant.

Operational phase. BIC will instruct tour bus operators to restrict their routes to the Site via Kekuanaoa to Hinano Street. When departing the Site, BIC will advise tour bus operators that the easiest route to their next stop, Liliuokalani Gardens, is a left turn from Hinano to Kekuanaoa Street. If BIC's mandates to the tour bus operators do not control tour buses from driving through the neighborhood, then the County can respond to community complaints by imposing legal restrictions to prohibit tour buses from using certain streets.[24]

3.3.2 Water System

Setting

County water service is available via 6-inch mains along Hinano or Laukapu Streets. The Site is currently serviced by one $1^1/_2$-inch meter and two $^5/_8$-inch meters.[25]

24. Hawaii County Code §24-166 (restricted use of highways by certain vehicles).

25. See letter from the County of Hawaii Department of Water Supply, dated August 12, 1996, in response to EIS Preparation Notice (Appendix C).

Impacts

The project's estimated water demand is summarized in Table 3 below.

TABLE 3. Estimated Water Demands[a]

Actual Average Daily Usage	4,166 gpd
Average Daily Demand (based on DWS standard of 3000 gals/ acre for commercial operations)	10,020 gpd
Maximum Daily Demand (based on DWS standard of 1.5 times average daily demand)	15,030 gpd
Peak Hour Demand (based on DWS standard of 5x average daily demand)	50,100 gpd
Fire Flow Demand	2,000 gpm/ 2 hours

a. M&E Pacific, Inc., Preliminary Engineering Report for Big Island Candies Relocation, July 1996 (included as Appendix B in this EIS).

Since the proposed project will have a fire sprinkler system, the new water connection must be a 6-inch diameter line and will require a separate fire flow meter in addition to a normal service meter. The existing water system has adequate capacity to accommodate the projected water ~~demands.~~demands, as confirmed by the Department of Water Supply.[26]

Mitigation

None required since adequate capacity is available.

3.3.3 Wastewater System

Setting

There are 8-inch diameter sewer mains along Laukapu and Hinano Streets. Both lines connect to a 10-inch diameter collector along Kekuanaoa Street. All three lines are gravity-flow.[27]

26. See letter from Mr. Milton Pavao, Manager, dated 11/4/96 (included in Appendix D).
27. M&E Pacific, Inc., Preliminary Engineering Report for Big Island Candies Relocation, July 1996 (included as Appendix B in this EIS).

Impacts

The anticipated average daily sewerage flow is summarized in Table 4 below.

TABLE 4. Estimated Average Daily Sewerage Flow

Employees (based on 80 employees at 35 gal/person/day	2,800 gpd
Visitors (based on 600 visitors at 5/gal/person/day	3,000 gpd
Total average daily flow	5,800 gpd

Either of the two 8-inch lines along Laukapu or Hinano Streets has capacity to accommodate the estimated wastewater flow demands.[28]

Mitigation

~~None required since adequate capacity is available.~~

None required since adequate capacity is available. Sewer line connections shall conform to the rules and regulations of the Department of Public Works, Wastewater Division.

3.3.4 Drainage System

Setting

Presently, the Site does not have any storm drainage system.

Impact

The proposed project will increase the amount of runoff generated by a typical storm in the Hilo area. The roofs for the new building and covered walkways, plus the large paved areas will reduce the Site's ability to absorb surface water by infiltration. Current storm water regulations require the installation of an onsite catchment and disposal system to maintain the runoff volume at or below preconstruction levels. Based on storm drainage calculations, the installation of a network of drain inlets can deliver the

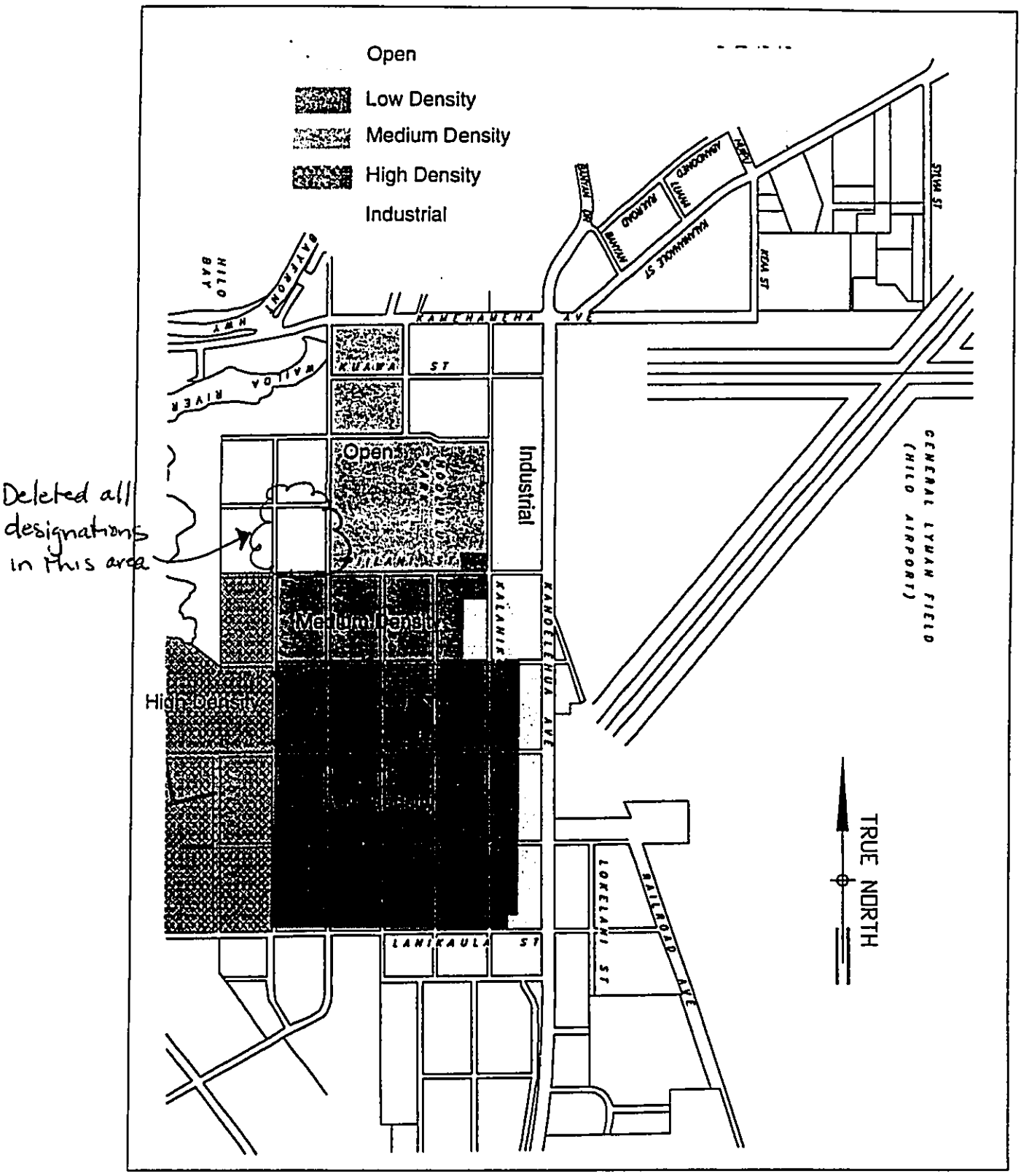
28. Ibid.

Permit approval process. During the construction phase, the Fire Department will inspect and approve the installed fire protection system as part of the Certificate of Occupancy approval process.

3.3.7 Solid Waste

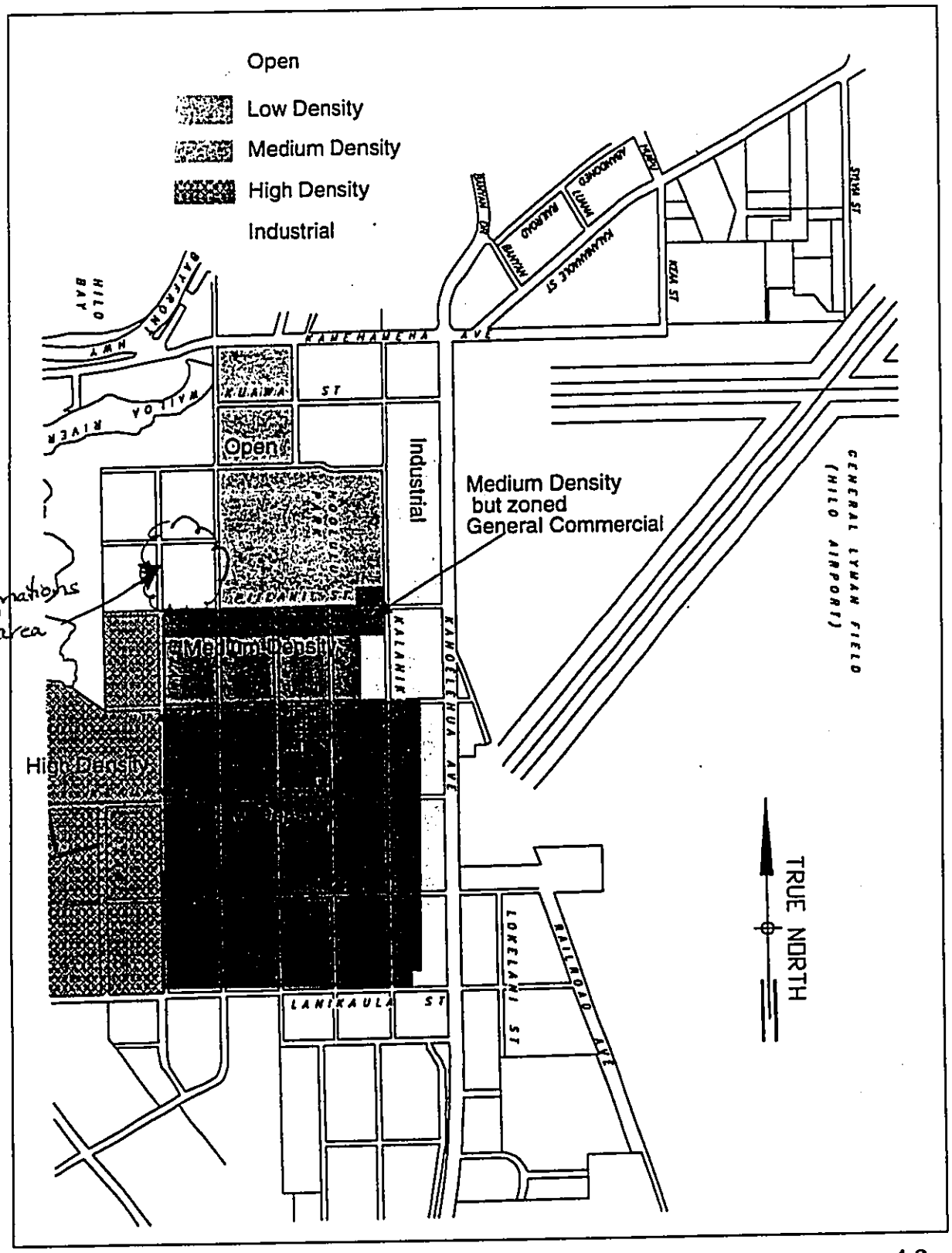
The Applicant shall prepare a solid waste management plan in conformance with the rules and regulations of the Department of Public Works, Solid Waste Division prior to Plan Approval.

FIGURE 16. General Plan LUPAG Map-- Current Designations



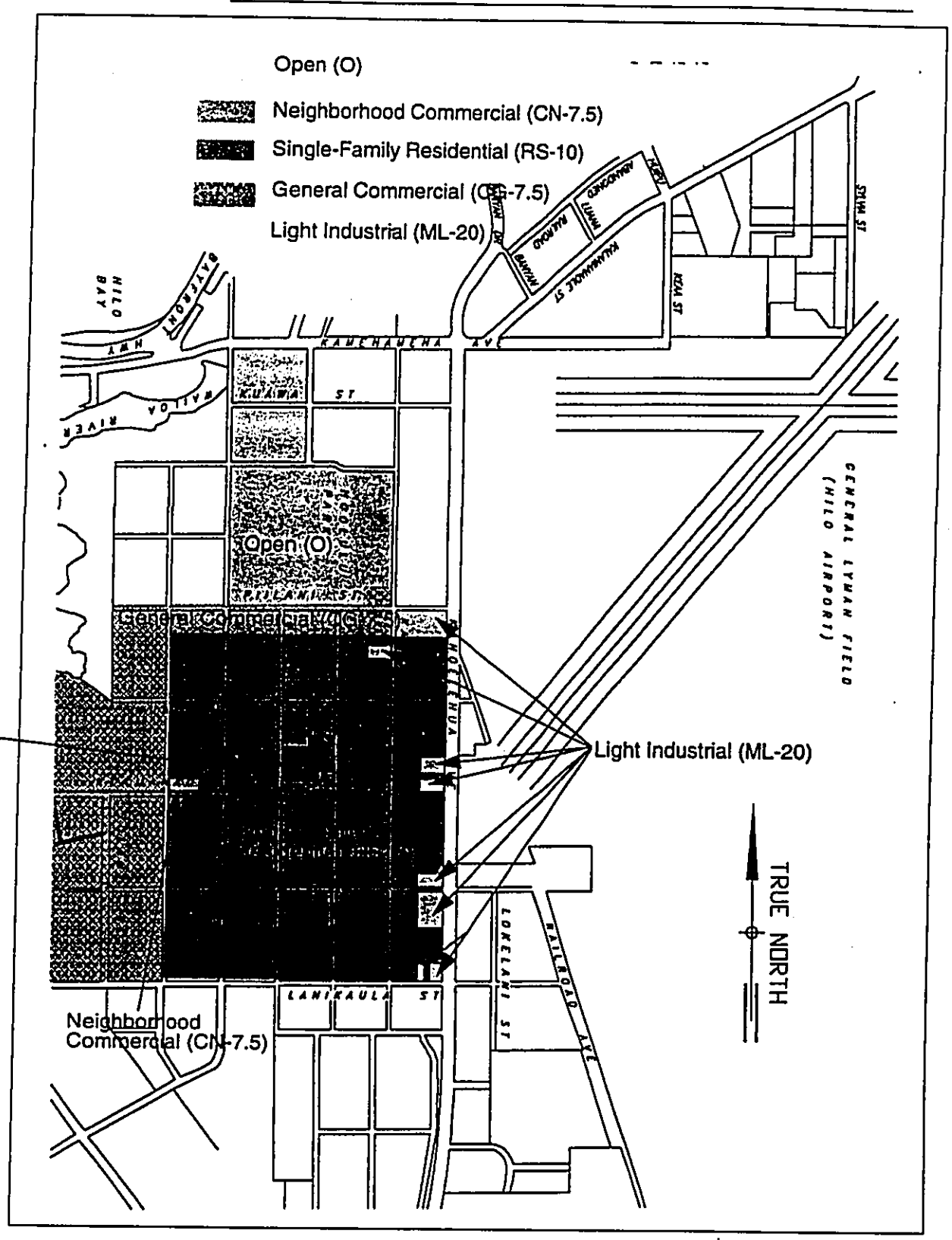
Deleted all designations in this area

FIGURE 17. General Plan High Density Urban Areas



Delcted all designations in this area

FIGURE 18. Hawaii County Zoning



4.6 COASTAL ZONE MANAGEMENT AND SPECIAL MANAGEMENT AREA

~~The project is not located within the Special Management Area (SMA).~~

The project is not located within the Special Management Area (SMA), and therefore does not require a SMA Permit. However, all actions within the State must comply with the objectives and policies of the Coastal Zone Management Act (CZM).[10]

The CZM objectives and policies that are pertinent to the project include:

> Scenic and open space resources:
>
> Encourage those developments which are not coastal dependent to locate in inland areas.[11]

Discussion: Since the project is not coastal-dependent, the proposed inland location is consistent with this policy.

> Coastal hazards:
>
> Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards.[12]

Discussion: The Hawaii County Civil Defense Agency notifies the general public of the tsunami evacuation zones and procedures through its publication in the telephone book. The project is located outside the evacuation zone (see Figure 9 on page 3-3).

10. The "coastal zone management area," at one time defined as the Special Management Areas (SMA) delineated by the counties, now includes all land areas in the State (*Hawaii Revised Statutes* §205A-1, -4(b)).
11. *Hawaii Revised Statutes* §205A-2(c)(3)(D).
12. *Hawaii Revised Statutes* §205A-2(c)(6)(A).

CHAPTER 7

UNRESOLVED ISSUES

There are no unresolved issues, provided the following mitigation measures are implemented:

Design Phase:

- Provide dense perimeter landscaping, especially around parking lots, to buffer noise.
- Incorporate existing large trees, especially along Hinano Street, into the landscaping plan to the extent feasible.
- Design the building with low-scale, residential character.
- ~~Improve the road shoulders fronting the Site.~~
- Widen Hinano Street to 20' from the Kekuanoa/Hinano Street intersection to the project entrance.
- Improve the turning radius for the right turn corner from Kekuanaoa to Hinano Street to extent possible within the existing right of way.

Construction Phase:

- ~~Expedite the construction schedule or limit working hours to minimize impact on the surrounding residents.~~
- Comply with the standards set forth in the Department of Health Community Noise Control regulation.

Operational Phase:

- Instruct the bus drivers to access the Site from Kekuanaoa Street and restrict driving through the neighborhood.
- Advise bus drivers to exercise caution when making right turns ~~onto and~~ from ~~Hinano~~ Kekuanaoa Street to ~~Kekuanaoa~~ Hinano Street.
- Advise bus drivers to make left turns from Hinano Street to Kekuanaoa Street as the standard route to their next stop at Liliuokalani Gardens.
- Instruct bus drivers to turn off their engines and not to idle while waiting for their passengers.