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'93 JUL 22 A 7:55 STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
HWY-RM
3.67485

JUL 20 1993

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

CHAPTER 343, HRS
Environmental Assessment/Determination
Negative Declaration

Recorded Owner: State of Hawaii, Department
of Transportation
Applicant: Hawaii Environmental Transfer, Inc.
Agent: Kusao & Kurahashi, Inc.
Location: Waiawa Interchange
Tax Map Key: 9-6-4-por. 19
Proposal: To Develop a Recycling/Transfer
Facility
Request: Proposal to Lease State Land
Determination: A Negative Declaration is Issued

Enclosed and incorporated by reference is the environmental assessment prepared by the applicant for the project. Based on the significance criteria outlined in Chapter 200, State Administrative Rules, we have determined that preparation of an Environmental Impact Statement is not required.

In support of the foregoing determination, the following summarizes mitigative measures proposed by the applicant which will minimize the project's impact on the environment:

Traffic

Access to the site will be limited to right turns in and right turns out from a driveway in the approximate location of the existing driveway. This means that all traffic exiting the site will have to use the connector ramp to north bound Kamehameha Highway, then travel to other roadways to go west or east.

1993-08-08-0A-~~FEA~~-Hawaii Environmental Transfer Inc AUG 8 1993

HAWAII ENVIRONMENTAL TRANSFER, INC.

RECYCLING/TRANSFER FACILITY

ENVIRONMENTAL ASSESSMENT

APPLICANT

**HAWAII ENVIRONMENTAL TRANSFER, INC.
ARTHUR KAZARIAN, PRESIDENT
611-A MIDDLE STREET
HONOLULU, HAWAII 96819**

AGENT

**TYRONE T. KUSAO, INC.
1188 BISHOP STREET, SUITE 2202
HONOLULU, HAWAII 96813**

NOVEMBER 1992

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RIGHT-OF-WAY BRANCH

TABLE OF CONTENTS

	Page
I. GENERAL INFORMATION	1
A. Applicant	1
B. Approving Agency	1
C. Recorded Fee Owner	1
D. Agent	1
E. Tax Map Key	1
F. Location	1
G. Lot Area	1
H. State Land Use	1
I. Development Plan	1
J. Zoning	1
K. Existing Use	4
L. Agencies Consulted	4
II. PROPERTY DESCRIPTION	4
A. Location	4
B. Topography	4
C. Soils	6
III. TECHNICAL CHARACTERISTICS	6
A. Project Description	6
B. Population and Area to be Served	11
C. Emergency Operating Procedures	11
IV. CITY AND STATE POLICIES ON WASTE DISPOSAL	12
A. City Policies	12
B. State Policies	15
V. SOCIO-ECONOMIC CHARACTERISTICS	16
A. Existing Use and Surrounding Uses	16
B. Employment	17
C. Economic Impact on Existing Permittee	17
VI. ENVIRONMENTAL CHARACTERISTICS	17
A. Noise	18
B. Air Quality	18
C. Historic/Archaeological Resources	19
D. Natural Resources	20
E. Visual Impact	20
VII. AGENCY COMMENTS	20
A. State Historic Preservation Division, Department of Land and Natural Resources (DLNR)	20
B. Department of Health (DOH)	22
C. Office of Environmental Quality Control (OEQC)	26
D. Department of Public Works (DPW)	26

E.	Board of Water Supply (BWS)	26
F.	Department of Transportation Services (DTS)	27
G.	Department of Land Utilization (DLU)	27
H.	Department of General Planning (DGP)	28
I.	Department of Accounting and General Services	28
VIII.	INFRASTRUCTURE REQUIREMENTS	29
A.	Water Requirements	29
B.	Wastewater	29
C.	Drainage	30
D.	Traffic	33
IX.	AFFECTED ENVIRONMENT	34
A.	Flora and Fauna	34
B.	Historical/Archaeological and Cultural Sites	35
C.	Waiawa Stream	35
D.	Other Natural Resources	35
X.	IMPACTS AND ALTERNATIVES CONSIDERED	35
A.	Impacts	35
B.	Alternatives Considered	36
XI.	PROPOSED MITIGATIVE MEASURES	36
A.	Traffic	36
B.	Noise	37
C.	Visual Impact	37
D.	Drainage	37

LIST OF EXHIBITS AND APPENDICES

		Page
Exhibit 1	Location Map	2
Exhibit 2	Zoning Map	3
Exhibit 3	Existing Site Plan	5
Exhibit 4	Aerial Photo with Project Rendering	7
Exhibit 5	Proposed Site Plan	8
Exhibit 6	Elevation Drawing	9
Exhibit 7	View from Farrington Highway	21
Exhibit 8	Drainage Runoff Map Pre-Development	31
Exhibit 9	Drainage Runoff Map Post Development	32

Appendix 1	Traffic Impact Assessment Report	
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**HAWAII ENVIRONMENTAL TRANSFER, INC.
RECYCLING/TRANSFER FACILITY
ENVIRONMENTAL ASSESSMENT**

I. GENERAL INFORMATION

- A. Applicant : Hawaii Environmental Transfer, Inc.
611-A Middle Street
Honolulu, Hawaii 96819
Arthur Kazarian, President
Akira Shibata, Assistant Manager
- B. Approving Agency : State of Hawaii
Department of Transportation
- C. Recorded Fee Owner : State of Hawaii
Department of Transportation
- D. Agent : Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2202
Honolulu, Hawaii 96813
- E. Tax Map Key : 9-6-4: por. 19
- F. Location : Between Pearl City and Waipahu, on a
remnant parcel within the Waiawa
Interchange (Exhibit 1).
- G. Lot Area : Approximately 6 acres
- H. State Land Use : Urban
- I. Development Plan
- Land Use Map : Residential
- Public Facilities
Map : No improvements affecting this site
- J. Zoning : AG-2 General Agricultural District
(Exhibit 2)

LOCATION MAP

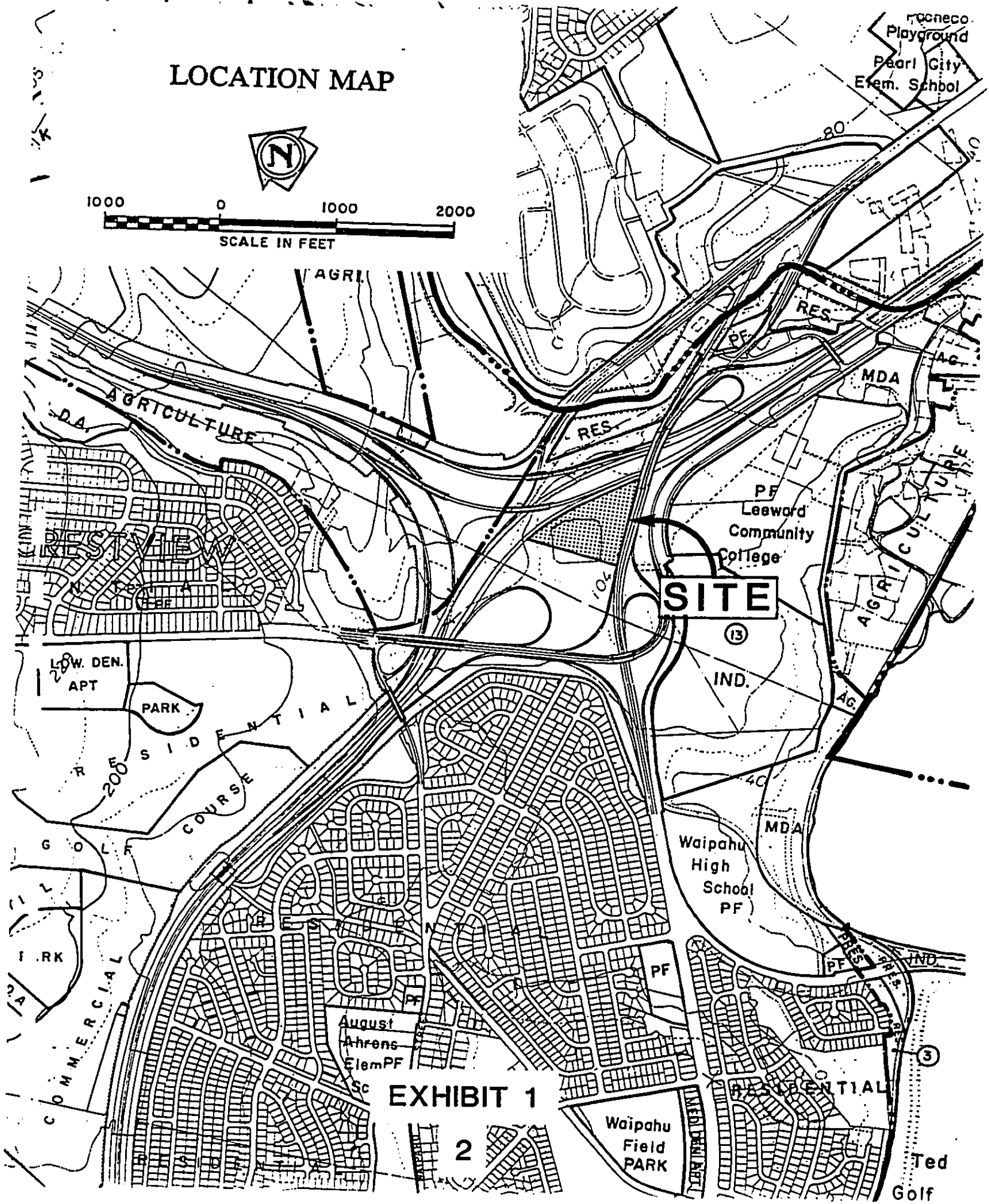


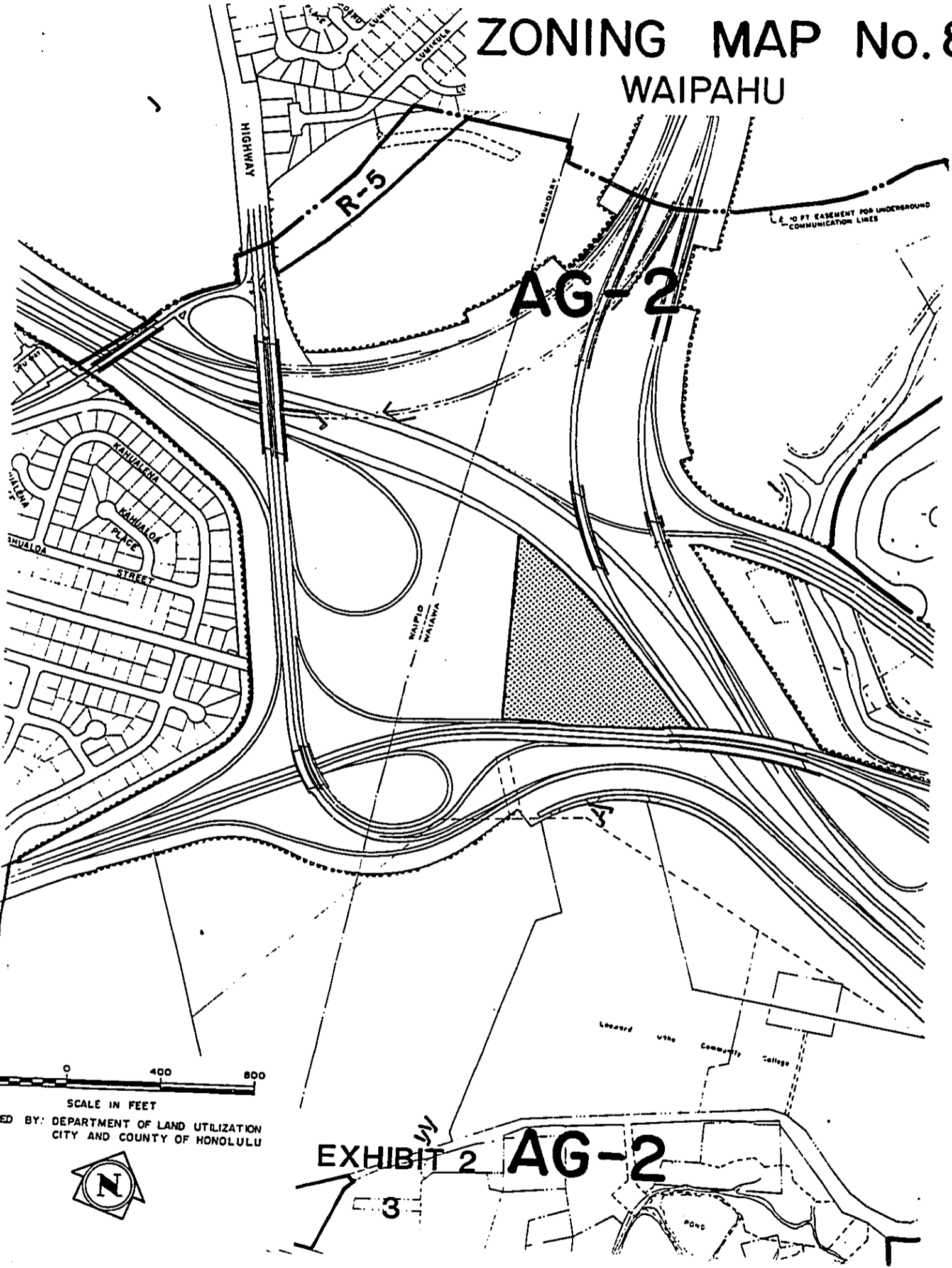
EXHIBIT 1

2

Waipahu
Field
PARK

Ted
Golf

ZONING MAP No. 8 WAIPAHU



PREPARED BY: DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU



EXHIBIT 2 **AG-2**

3

- K. Existing Use : Bagasse (plant residue from sugarcane processing) composting operation which produces fertilizer sold to agricultural operators (Exhibit 3)
- L. Agencies Consulted : Department of Transportation
 Department of Accounting and General Services
 Department of Land and Natural Resources
 Department of Health
 Department of Health, Environmental Management Division
 Office of Environmental Quality Control
 State Historic Preservation Division
 Department of Public Works
 Board of Water Supply
 Department of Transportation Services
 Department of Land Utilization
 Department of General Planning

II. PROPERTY DESCRIPTION

A. Location

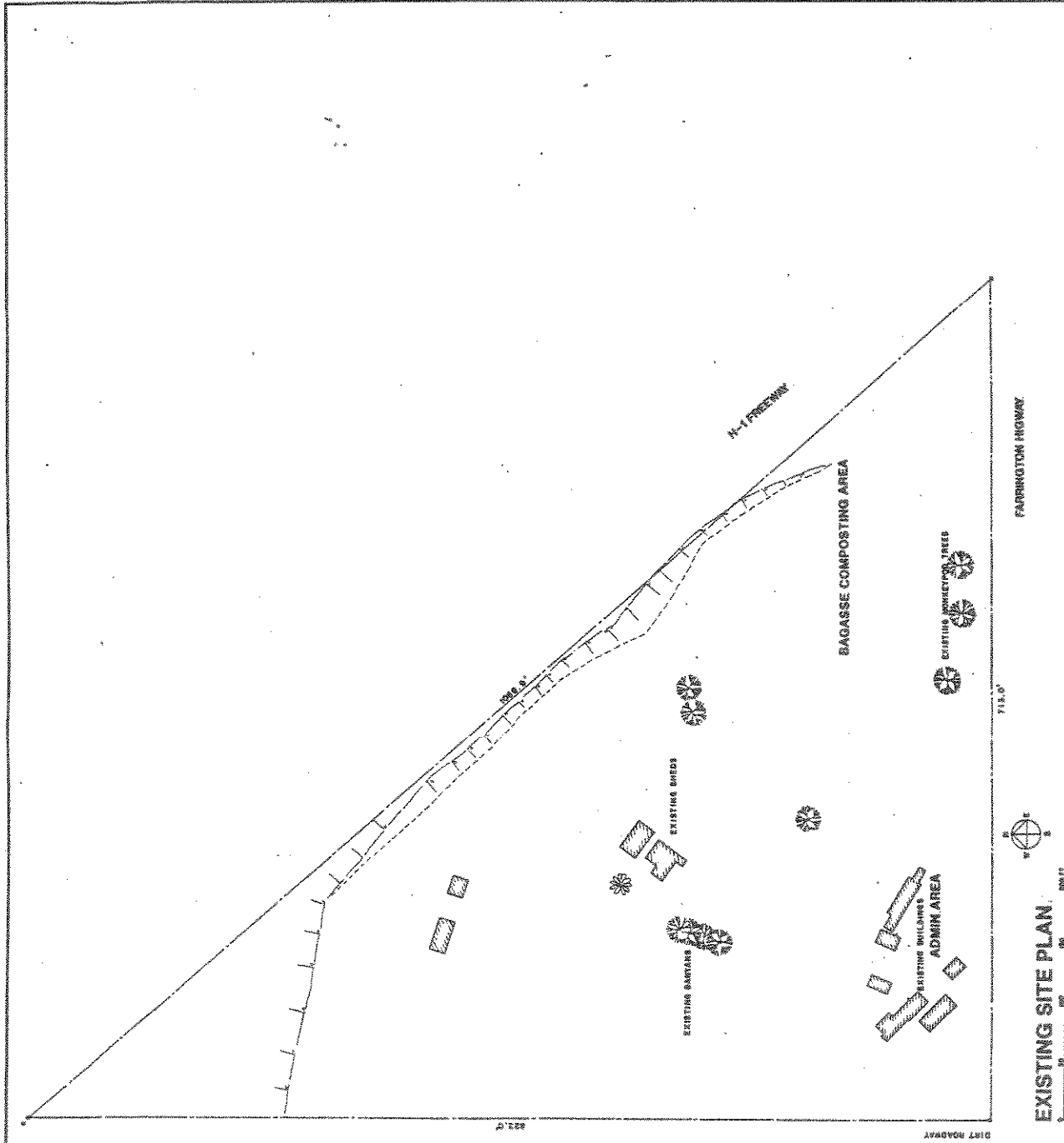
The subject property is located between Pearl City and Waipahu within the Waiawa Interchange between the H-1 Freeway and Farrington Highway. The site is triangular shaped and bounded by the H-1 Freeway, Farrington Highway, and a nursery operation (see Exhibit 1).

B. Topography

The subject site is triangular in shape and is situated on a remnant parcel created by the roadway alignments established at the Waiawa Interchange. The H-1 Freeway is situated approximately 20 feet below and to the north of the subject site. Farrington Highway abuts the site at grade on its southeast boundary. The third leg of the triangular shaped site abuts an existing nursery operation at grade. The site is level with a five foot earthen berm along its northern property boundary.

Several mature monkey pod trees are located generally along and near the southeastern boundary of the site. The rest of the site has been cleared of vegetation and is used for

DATE	
SCALE	
SHEET	
TOTAL	



EXISTING NURSERY

EXISTING SITE PLAN

5

composting bagasse, involving storing mounds of bagasse and other materials used as additives for producing soil enrichers.

C. Soils

Soils on the site are classified by the United States Department of Agriculture, Soil Conservation Service as Waipahu silty clay (WzA), which is characterized by 0 to 2 percent slopes. This soil is nearly level and occurs on dissected terraces adjacent to the ocean.

In a representative profile, the surface layer is about 12 inches thick and consists of grayish-brown silty clay. The subsoil, which is about 58 inches thick, is dark-brown silty clay that has prismatic structure. These soils are very sticky and very plastic in the lower parts. The substratum is clayey alluvium. The soil is slightly acid in the surface layer and subsoil.

On this soil permeability is moderately slow; runoff is slow or very slow; and the erosion hazard is none to slight. The available water capacity is about 1.4 inches per foot in the surface layer and about 1.6 inches per foot in the subsoil. Roots penetrate to a depth of 5 feet or more.

This soil is used for sugarcane and homesites.

III. TECHNICAL CHARACTERISTICS

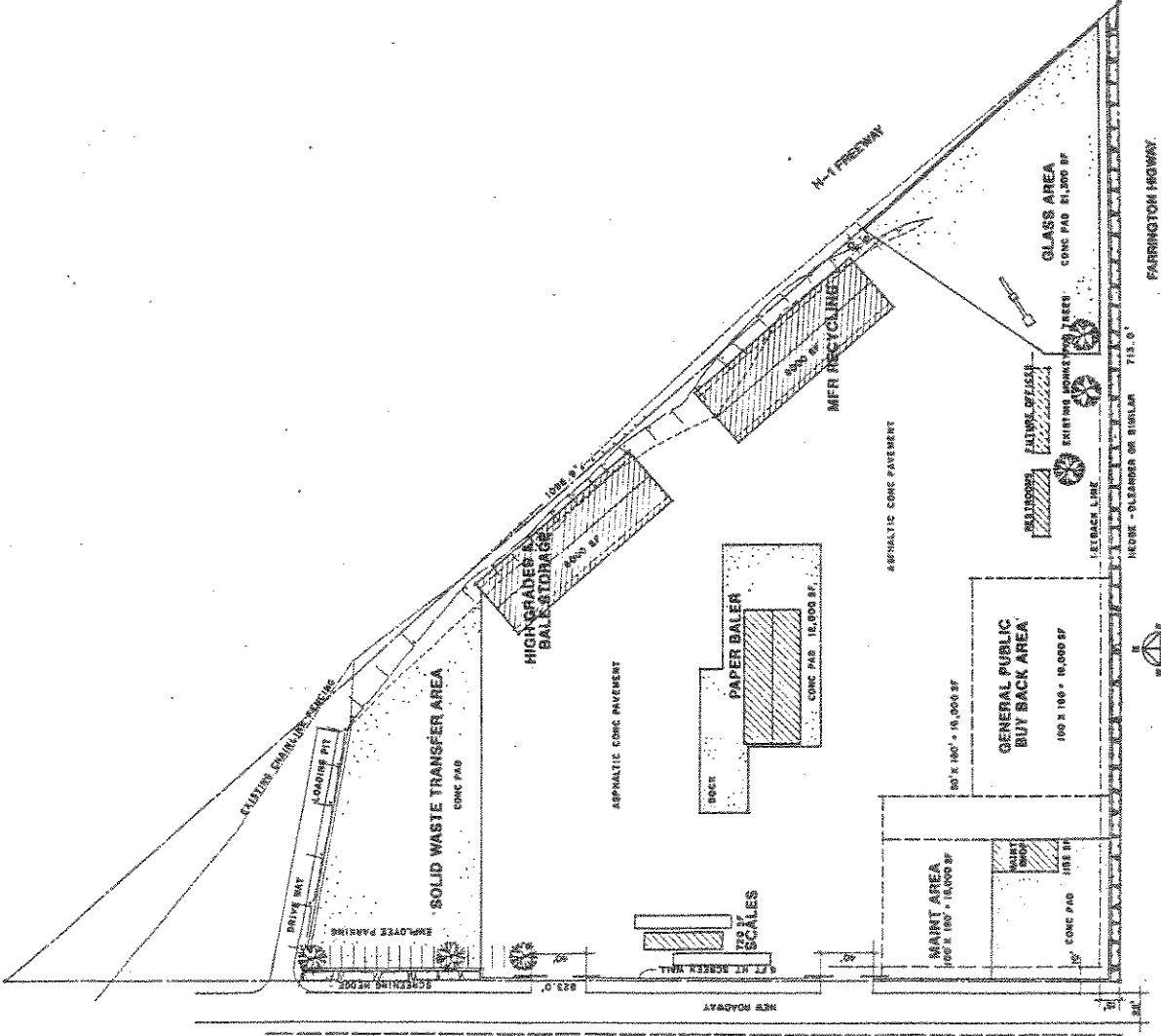
A. Project Description

The recycling facility will consist of five operations: Buy-Back Recycling Center, Commercial Materials Recovery Facility, Clean Materials Recycling Facility, Recyclable Material Processing Center, and a Solid Waste Transfer Operation. The operations at this facility will result in a net reduction of waste going to local disposal facilities of approximately 6,400 tons per month. Only non-hazardous solid wastes are accepted at the facility. Liquid, semi-liquid, toxic, infectious, and hazardous wastes, as well as sewage sludge will not be accepted at this facility. The aerial photo with the project rendering (Exhibit 4), the proposed site plan (Exhibit 5) and the elevation drawing of a typical structure (Exhibit 6) provides a visual overview of the project design.

1. Buy-Back Recycling Center

The buy-back center will accept recyclable materials delivered to the facility by the general public. These





PROPOSED SITE PLAN

materials will include: newspaper, office paper, cardboard, mixed paper, glass, aluminum, scrap metals, and plastics.

Materials will come from residents throughout the island. Projected quantities per month are as follows:

- Paper/Cardboard.....	1,000 tons
- Glass.....	800 tons
- Metals.....	20 tons
- Plastics.....	20 tons
- Total.....	1,840 tons

2. Commercial Materials Recovery Facility (MRF)

Commercial haulers will deliver waste materials comprised primarily of paper from offices and industrial firms. These loads will be tipped in the sorting area where the following materials will be mechanically and manually separated: newspaper, cardboard, office paper, mixed waste paper, aluminum, plastics, wood, and scrap metals. These commodities will be forwarded to the processing center where final grading and packaging for shipment to markets will take place. Non-salvageable residue will be forwarded to the solid waste transfer operation for final disposal at local facilities.

Materials will be collected and transported from the commercial and industrial sections of the greater Honolulu area. Projected quantities per month are as follows:

- Paper.....	1,000 tons
- Cardboard.....	400 tons
- Glass.....	100 tons
- Metals.....	5 tons
- Plastics.....	40 tons
- Wood.....	20 tons
- Total.....	1,565 tons

3. Clean Materials Recycling Facility (MRF)

This operation receives source separated curbside materials as well as recyclables from commercial haulers participating in recycling programs, from accounts serviced by Hawaii Environmental Transfer, Inc. (HET), and from restaurants, bars, schools, apartments, and condominium complexes. Materials will be sorted into the following categories: newspaper, cardboard, mixed waste paper, aluminum, plastics, and metals. These commodities

will be forwarded to the processing center where final grading and packaging for shipment to markets will take place. Non-salvageable residue will be forwarded to the solid waste transfer operation for final disposal at local facilities.

Materials will be collected and transported from the residential and commercial sections of the greater Honolulu area. Projected quantities per month are as follows:

- Paper/Cardboard.....	2,000 tons
- Glass.....	1,000 tons
- Metals.....	10 tons
- Plastics.....	20 tons
- Total.....	3,030 tons

4. Recyclable Materials Processing Center

Recyclable materials received from the Buy-Back Center, the Commercial MRF, and the Clean MRF are consolidated for packaging and sale to final markets. Processed materials will be transported to local markets in Honolulu or loaded into containers for shipment to West Coast or Far East markets.

5. Solid Waste Transfer Operation

Non-salvageable residues resulting from the Commercial and Clean MRF operations as well as directly from the commercial haulers will be consolidated into semi-trailers and transported to local disposal facilities. It should be noted that the residue will consist of non-salvageable wastes which along with recyclable materials were going to the landfill already.

B. Population and Area to be Served

The facility will be designed to serve all of the Hawaiian Islands. Currently HET markets recyclables from Oahu, Kauai, Maui, and the Island of Hawaii. Smaller satellite recycling/transfer stations may be established as required to provide convenient drop-off points for island residents. One such satellite recycling operation is planned for a site near the applicant's existing recycling facility at the Middle Street Interchange.

C. Emergency Operating Procedures

Standby forklifts, loaders and transfer trailers will be available on the site for use in case of equipment failure.

In instances of power failures, sorting will continue to be done on a manual basis and portable lighting will be rented to illuminate the site as needed, after sunset. Work crews will be available to work additional shifts if necessary to process and bale material stored during emergencies.

Only as a last resort will commercial loads be diverted directly to the landfill, by-passing the recycling facility.

IV. CITY AND STATE POLICIES ON WASTE DISPOSAL

A. City Policies

The City through its Department of Public Works prepared a Recycling Report dated October 30, 1991 summarizing the City's efforts in recycling and making recommendations on short term activities which will support the City's recycling goals. The following discussion summarizes information presented in the recycling report.

On October 4, 1989, the Mayor approved Ordinance 89-114, which was adopted by the City Council to establish recycling goals to divert portions of Oahu's solid waste away from incineration and landfilling. This ordinance established goals to have 30 percent of the solid waste generated within the city recycled, reused, composted, or otherwise diverted from incineration or placement in a landfill by the end of 1991; 50 percent by the end of 1995; and 75 percent by the end of 2000.

With these optimistic goals, if private recycling facilities, such as the one proposed, are unable to handle the demand, the City will have to develop their own facilities for recycling.

Although there is a 15-year supply of landfill space available, the difficulty in siting of landfills due to community opposition and environmental concerns warrants considering options which would extend the life of existing landfills and limit the need for future landfill space.

The City's Department of Public Works (DPW) Division of Refuse Collection and Disposal is responsible for waste reduction and recovery activities. A recycling coordinator oversees the establishment of and implementation of recycling activities and was responsible for a pilot curbside recycling program that began in July 1990, but has since been discontinued. The coordinator is also responsible for implementing the mandated programs.

The City and County currently recycles almost 10% of its wastes and its recycling activities continue to grow. The island recycled about 80,000 tons in 1988, consisting mainly of ferrous metals, followed by cardboard, aluminum, newspaper, and glass. The City spent about \$1.5 million on recycling activities in 1990.

The pilot curbside recycling program involved 8,000 households in Kailua and tested the effectiveness of two systems. The first system provided residents with three bins into which they sorted aluminum and plastics, three types of glass, and newspaper. Bins were collected weekly and materials were sorted by specialized collection vehicles into six categories and the recyclables were then delivered to the transfer stations. A private hauler provided collection and distribution services. The aluminum was sold to Reynolds Aluminum, and all other materials were purchased by Hawaii Environmental Transfer of Honolulu (applicant's parent company).

The second collection strategy involved providing residents with two reusable, recyclable bags and a stand to keep the bags open. The first bag was for newspapers and plastics, while the second bag was for glass and aluminum. The bags were collected from curbside each week and hauled directly to Hawaii Environmental Transfer for sorting, processing, and marketing rather than to the transfer station. The collector dropped off a new bag for each bag taken.

After well over a year of designing, implementing, and running these programs, DPW experienced the same difficulties that municipalities across the mainland encountered. Recyclable materials are of very low value, except for aluminum and office paper, and prices can fluctuate widely over even a short time span, at least partially caused by inadequate markets for the vast amount of materials being collected nationwide. Another problem involves the high cost of collecting the recyclables. Hawaii is further hampered by its distance from existing markets and the added transportation costs. A continuing problem in Hawaii is the shortage of available industrial land for recycling activities.

DPW has discovered what appears to be a large, untapped potential for recycling in the commercial sector, which includes office buildings, hotels and restaurants, shopping centers and retail merchants, and which also encompasses apartments and condominiums serviced by private refuse companies. DPW's role will be to develop programs for this sector to encourage and support private refuse collection companies' expansion of their services into recycling and to provide implementation guides and assistance to apartments, condominiums and business organizations.

DPW began a school/community program, in November 1990, with 20 schools promoting campus recycling and serving as recycling drop off centers for surrounding communities. Also in November 1990 City offices in the downtown area started an office recycling program. In cooperation with motor oil retailers, DPW implemented a used oil collection system which integrated recycling and a wasted-to-energy system. DPW is continuing its attempts to introduce and encourage reuse and/or recycling of other specific wastes, such as yard trimmings, used tires, and sewage sludge, and DPW continues to advise and assist in the startup of programs for apartments and condominiums and for the commercial sector.

Short term recommendations of DPW's Recycling Report include the following:

1. Complete the Solid Waste Management Plan by the end of 1992. This plan will discuss recycling alternatives and quantify the impact of recycling on the environment and energy conservation.
2. Determine the quantities and sources of recyclables through a Recycling Potentials Assessment to determine the large generators of recyclable wastes for future collection programs.
3. Identify and recommend local end uses for recyclables and explore the viability of a waste exchange program. Enlist private industry support for government efforts by encouraging increases in remanufacturing capacity and expanding markets for recyclable materials.
4. Improve the curbside collection program by implementing another pilot program incorporating the lessons learned from the previous attempt. If an economic system can be developed, islandwide expansion will require modifications to existing transfer stations, stimulation of private industry to construct a materials recovery facility, and a possible volume-based refuse collection fee to encourage and maintain a high level of participation.
5. Expand on the existing School/Community Recycling Program to give more residents and small businesses recycling opportunities.
6. Provide greater education and implementation assistance to the commercial sector.

7. Continue the development of the Backyard Composting Program and reevaluate the plans for a municipal composting facility utilizing sewage sludge, green wastes, and H-Power residue.
8. Seek recycling options for specialized wastes such as tires, white goods, incinerator ash and construction debris. Solutions will probably involve joint participation by government and private industry.
9. Ban certain recyclables from landfills, as recycling markets and collection systems develop.
10. Modify the timetable on recycling goals to coincide with the actual implementation schedule.

As can be seen by the City's policies on recycling, the success of its programs will depend on participation by the private sector in participation in the collection of recyclables and the provision of recycling facilities as proposed by the applicant to serve as processing plants and transfer stations. The applicant's Middle Street facility plays an important role in the City's recycling programs and upon relocation and expansion of the facility to the Pearl City/Waipahu site we expect their role to be even greater.

B. State Policies

The State through the Department of Health and under the guidance of the State Solid Waste Task Force has prepared the "Integrated Solid Waste Management Plan for the State of Hawai'i" (Plan). This plan moves away from our traditional reliance on waste disposal and focuses on alternatives such as reducing the generation of wastes, recycling waste products, and using bioconversion to allow processing of waste into useable by-products.

The federal government is in the process of adopting more stringent regulations for solid waste disposal facilities, prompted by the need to protect groundwater resources and minimize the risks to the environment posed by landfills. These regulations will significantly increase the cost of siting, operating, and closing landfills and will motivate municipalities to reduce their solid waste through innovative recycling, reuse, incineration, and bioconversion methods.

In July of 1991, the Hawaii State Legislature adopted the Solid Waste Integrated Management Act which implemented elements of the Plan including statewide waste reduction goals, a dedicated county planning process, large-scale public education efforts, better solid waste coordination at the

state level, market development and coordinated State governmental actions. The Act established waste reduction goals of 25 percent by 1995 and 50 percent by 2000.

The applicant, Hawaii Environmental Transfer, is described by the Plan as one of the largest materials processing operations in the State. The majority of material collected in the State is eventually sold to Hawaii Environmental Transfer, which then ships the materials to overseas markets. The applicant handles primarily aluminum, high-grade paper, newspaper, glass, and limited other materials. It also processes and markets material collected through Honolulu's pilot curbside recycling program.

With the optimistic waste reduction goals of both the State and the City, operations such as the applicant's will need to pursue significant expansion to accommodate the stream of recyclable materials which will result from the waste reduction programs implemented. The applicant's planned move and enlargement will help to meet both the State and City's programs to reduce solid waste.

V. SOCIO-ECONOMIC CHARACTERISTICS

A. Existing Use and Surrounding Uses

The site is used for fertilizer production through the composting of bagasse, sugarcane residue from sugar production. The site contains a small office and some earth-moving equipment used in the composting operation. It is otherwise unimproved with no formal landscaping. A 5-foot earthen berm is situated on the site's northern boundary and provides further shielding of the site from the H-1 Freeway located approximately 20 feet below the site's existing grade.

The project site is part of a larger parcel, which includes a nursery operation, that is surrounded by roadways, on and off ramps, and roadway right-of-ways forming the Waiawa Interchange.

West of the subject site beyond the nursery is a residential subdivision in Waipahu zoned R-5 Residential District. The subject site and all other surrounding properties are zoned AG-2 General Agricultural District.

North and east of the site are vacant lands zoned for agricultural use.

South of the site is Leeward Community College. Southwest of the site is a Navy industrial site that the City proposes to

acquire for use as a transit station and for government buildings.

In view of the existing use of the site for bagasse composting and the similarity in impacts (small amount of truck traffic generated; outdoor storage of materials; and processing and recycling of solid waste) between the existing use and the proposed use (recycling facility), the project is not expected to generate significant new social impacts on the surrounding area.

The isolated location of the site away from residential areas, on State owned, remnant highway right-of-way, land surrounded by roadways and on and off-ramps minimizes impacts on residential uses and other uses such as the Leeward Community College campus. Leeward Community College is further buffered from the project site by its expansive parking lot.

B. Employment

The operation will involve two shifts, employing a total of approximately 50 people. The first shift will operate between 6:00 a.m. and 3:00 p.m. with about 42 employees. The second shift will operate between 3:00 p.m. and 11:30 p.m. with about 8 employees.

C. Economic Impact on Existing Permittee

The existing permittee on the site is on a month to month lease. The applicant and the Department of Transportation (lessor) have discussed and will attempt to relocate the existing permittee to another area on the same parcel. This would permit greater utilization of the parcel.

VI. ENVIRONMENTAL CHARACTERISTICS

In view of the existing use of the site for bagasse composting and the similarity in impacts (small amount of truck traffic generated; outdoor storage of materials; and processing and recycling of solid waste) between the existing use and the proposed use (recycling facility), the project is not expected to generate significant new environmental impacts.

The isolated location of the site away from residential areas, on State owned, remnant highway right-of-way, land surrounded by roadways and on and off-ramps minimizes impacts on residential uses and other uses such as the Leeward Community College campus. Leeward Community College is further buffered from the project site by its expansive parking lot.

A. Noise

Noise generated by the recycling operation and the small number of vehicles entering and exiting the site is expected to be minimal compared to the current noise levels in the vicinity of the site, which are high due to vehicular traffic on nearby Farrington Highway, Kamehameha Highway, the H-1 Freeway and the various on and off-ramps.

The noise generated by the recycling facility is expected to be similar to the noise generated by the existing bagasse composting operation and no significant net increase in current noise levels is expected to occur on the project site.

It is further expected that the nominal noise generated by the recycling facility would only affect its immediate environs, which are comprised of the abutting nursery, roadways, on and off-ramps, and vacant remnant highway right-of-way parcels.

In order to further reduce the impact of noise generated by the project on Farrington Highway and to minimize the noise from Farrington Highway impacting on the site, the applicant will be providing a 6-foot screen wall, fronted by a 5 to 6-foot Oleander screening hedge. The screen wall will also extend along the property's western and northern boundaries, with an Oleander hedge along a portion of the property's western boundary that fronts the project's parking area. The northeastern boundary has an existing 5 to 6-foot earthen berm and a chainlink fence providing a buffer between the project site and the H-1 Freeway. The freeway, situated below the site, is further protected from the project site by a grade separation of about 15 to 20 feet.

Noise from activity on the project site will have minimal impact on the H-1 Freeway and Farrington Highway with the proposed screen wall and hedge.

B. Air Quality

Emissions related to the operation of the recycling facility and the small number of vehicles entering and exiting the site are expected to have minimal impact on the existing ambient air quality which is heavily impacted by the significant amount of vehicular traffic at this highway interchange, particularly during the morning and afternoon peak hours.

The emissions generated by the recycling facility are expected to be similar to the emissions generated by the existing bagasse composting operation and no significant net increase in current emissions are expected to occur on the project site.

It is further expected that the nominal emissions generated by the recycling facility would only affect its immediate environs, which are comprised of the abutting nursery, roadways, on and off-ramps, and vacant remnant highway right-of-way parcels.

C. Historic/Archaeological Resources

The site is not listed on the State or National Register of Historic Sites.

Except for a narrow strip along the project's perimeter, the project site has been cleared and grubbed to accommodate the operation of the bagasse composting facility.

In addition to the present land uses on the site, it has been determined, in reviewing "as built" plans on file with the Department of Transportation (DOT), that this area was formerly part of extensively cultivated sugar cane fields in the Waipahu area for many years, prior to the construction of the highway interchange. A large reservoir was in the center of the parcel in question, as were portions of old Farrington Highway, Waipahu Street and Kamehameha Highway.

The area was further disturbed with the extensive grading that occurred with the construction of the Waiawa Interchange beginning in 1969, under Federal Aid Project I-H1-1(69):8. The area was again disturbed in 1974, under Federal Aid Project I-H1-1(102):8, when DOT constructed an electrical transformer vault on the parcel for roadway lighting and an irrigation system control vault for a central irrigation system for the landscaping in the interchange. This work also included installing underground conduits and cables, as well as planting trees and other plants in the interchange.

Much of the land surrounding the project site has been graded to accommodate the construction of the H-1 Freeway, Kamehameha Highway, Farrington Highway, and the on and off-ramps.

Although no archaeological survey has been done for the site, it appears that historic or archaeological resources which may have been present at or near the project site were probably removed or destroyed when the project site was cleared and grubbed for the composting operation and even earlier when extensive roadway and other grading occurred, as discussed above. If historic or archaeological resources are found during grading or construction, the applicant will cease work on the project and contact the State Historic Preservation Office to insure that significant or important resources will be protected and/or preserved.

D. Natural Resources

The project site contains no natural monuments or valuable resources. The project site is situated mauka of the Special Management Area and does not contain any unique land forms or obstruct any established view plane or view corridor. Development of the site will not impact any wetlands, wildlife refuge, agricultural production, or endangered flora or fauna (since project site was cleared and grubbed).

Waiawa Stream is situated over 200 feet away from the subject parcel and is separated by the H-1 Freeway and an on-ramp leading to the H-2 Freeway. The subject parcel is situated about 20 feet above the elevation of the H-1 Freeway which is situated above the stream. With this vertical and horizontal separation, development of this project should have little or no impact on the stream.

E. Visual Impact

As mentioned in the previous section the project site does not impact on any established view plane or view corridor. In order to minimize the visual impact of recycling structures on Farrington Highway, the applicant will be providing a 6-foot screen wall, fronted by a 5 to 6-foot Oleander screening hedge (Exhibits 4, 5, and 7). The screen wall will also extend along the property's western and northern boundaries, with an Oleander hedge along a portion of the property's western boundary that fronts the project's parking area. The northeastern boundary has an existing 5 to 6-foot earthen berm and a chainlink fence providing a buffer between the project site and the H-1 Freeway. The freeway, situated below the site, is further protected from the project site by a grade separation of about 15 to 20 feet.

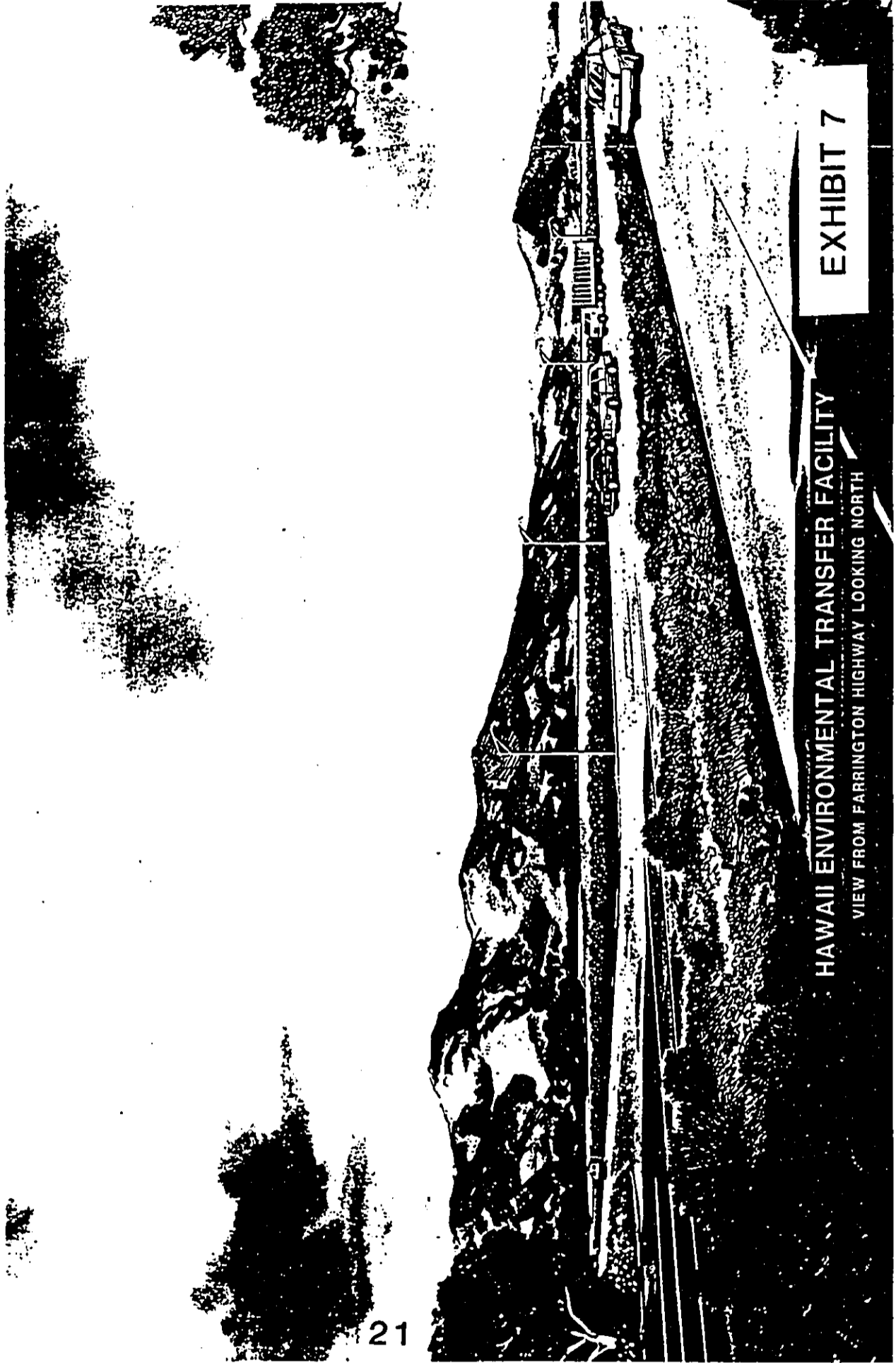
The structures and activity on the project site will not be visible from the H-1 Freeway. With the proposed screen wall and hedge the structures and activity on the site will not be visible from Farrington Highway and the new access road (except for driveway access points along the access road).

VII. AGENCY COMMENTS

A. State Historic Preservation Division, Department of Land and Natural Resources (DLNR)

DLNR commented that the final Environmental Assessment should document land use history, including possible agricultural uses and disturbance during highway construction.

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21

HAWAII ENVIRONMENTAL TRANSFER FACILITY

VIEW FROM FARRINGTON HIGHWAY LOOKING NORTH

EXHIBIT 7

This Draft Environmental Assessment discusses the site's land use history and land disturbance due to highway construction.

B. Department of Health (DOH)

1. Litter

DOH supports the use of State lands for environmentally-supportive activities and the promotion of recycling and responsible solid waste management.

They are concerned about the projects highly visible location, the potential litter generated by the planned activities, and the impact of the wind on operations such as loose plastic, bags, papers and light materials.

DOH recommended that minimization of litter be considered in the layout and design of the facility and that fences or other barriers be used to prevent windblown materials from escaping.

They noted that ongoing maintenance of the facility will be required to prevent litter from creating a problem on site and on the approaches and departure routes to and from the facility.

DOH also recommended that landscaping and other visual barriers be incorporated to minimize the visual impact of the operation on highway users.

The Litter Control Office has received complaints about the service that Hawaii Environmental Transfer has provided to schools and the public in the collection of recyclables. Better service is needed to justify the commitment of State lands for this company.

DOH is also concerned about the economic impact the proposed facility would have on other recycling facilities in light of the presumably lower than market lease that Hawaii Environmental Transfer would receive from the State and the unfair economic advantage that could result. They questioned whether other recycling companies should be provided an opportunity to bid on the proposed site.

2. Solid Waste

The Office of Solid Waste Management believes that the proposed facility is an important and necessary element in assisting the State and the City meet their waste diversion goals. Without adequate recyclable processing capacity, it will be impossible to handle the increasing

volumes of material being generated by municipal and private programs. The applicant's facility is the first serious proposal that they have seen which aims at filling that need.

They will continue to encourage other State and municipal agencies, such as the Department of Business, Economic Development and Tourism, Department of Transportation, and the Department of Land Utilization, to aggressively support this activity which is essential to the success of State and City goals related to waste diversion policies.

3. Wastewater

DOH indicated that the subject property is located in the "No Pass" zone, above the Underground Injection Control Line and in the critical wastewater disposal area determined by the Oahu Wastewater Advisory Committee. Therefore, no new cesspools will be allowed in the subject area.

Since there are no existing sewer service systems in the area and none are planned in the near future, DOH recommends use of an on-site individual wastewater system for domestic wastewater only. Other types of wastewater may involve other types of wastewater treatment processes.

All wastewater plans must conform to applicable provisions of the DOH Administrative Rules, Chapter 11-62, "Wastewater Systems" and DOH reserves the right to review these plans.

4. Sanitation

DOH would like the Environmental Assessment to address the issue of periodic flooding at the proposed site. They further noted that since drinking water for the facility comes from a private well, not from the Board of Water Supply, a discussion of practices to protect this drinking water source should be made.

5. Vector

Bottles and other containers which could retain water should be processed within seven days to prevent mosquito breeding.

6. Noise

DOH is concerned that noise from recycling activities may have an adverse impact on surrounding residents.

The applicant will provide bunkers to contain and control loose materials as needed. The facility will be surrounded by a wall and/or hedge, except at the two driveway accesses, to further contain any loose materials which may be affected by the wind.

Maintenance procedures will be implemented to insure that loose litter from the recycling operations will not create a problem on-site or in the surrounding area. In order to minimize litter problems, the majority of all bale recyclable products shipped from this location will be in closed export containers. All other material, glass, solid waste or other commodities, will be shipped in open topped containers and tarps will be required by the applicant.

The applicant in the design of the facility will attempt to keep it visually attractive and not resembling a junkyard. However, in order to control litter and to insure that the project will not have an adverse visual impact on the abutting properties and roadways, the applicant will provide a wall and/or hedge around the property as mentioned earlier.

The complaints received about service from Hawaii Environmental Transfer, Inc. in the early part of 1992 were partially because of the limited size of their present facility, the limited term of their lease which precluded capital investment in improvements at this site, and certain local management policies which have since been corrected through personnel changes and a new management concept that is more responsive to their clients. The proposed facility at Pearl City/Waipahu, with its automatic and mechanical equipment, sorting lines, crushers and improvements in the processing provided by the new recycling equipment, will provide a first class recycling center.

We understand that other recycling operators who meet the Department of Transportation requirements will have an opportunity to bid on the proposed lease. The applicant will not be presented an unfair economic advantage over other recycling operators who desire to bid on the lease.

The applicant intends to provide a septic tank and leaching field to handle the wastewater requirements for the site, subject to approval by the Department of Health.

According to the Flood Insurance Rate Map (FIRM) of the Federal Emergency Management Agency (FEMA), the project

is in Zone X Flood Area (areas determined to be outside the 500-year flood plain).

Grading for the proposed site will approximately retain the existing flow patterns. The northern paved area will sheet flow toward the existing sump between the Freeway and the loop ramp. Using paved swales, grated drain inlets and underground drain pipes, runoff from the major portion of the site will be led to a new retention basin at the eastern corner. An overflow line will be designed to carry pre-development runoff amounts to the existing drain inlet. The additional runoff generated by the development, due to site site improvements, will be retained and stored in this basin and gradually released as the peak storm passes; additional flow is estimated to 12 cfs (cubic feet per second).

The applicant will process within seven days all bottles and other containers which are capable of retaining water to prevent mosquito breeding on the site.

Noise generated by the recycling operation and the small number of vehicles entering and exiting the site is expected to be minimal compared to the current noise levels in the vicinity of the site, which are high due to vehicular traffic on nearby Farrington Highway, Kamehameha Highway, the H-1 Freeway and the various on and off-ramps.

It is further expected that the nominal noise generated by the recycling facility would only affect its immediate environs, which are comprised of the abutting nursery, roadways, on and off-ramps, and vacant remnant highway right-of-way parcels. There are no residential developments in the immediate area.

In order to further reduce the impact of noise generated by the project on Farrington Highway and to minimize the noise from Farrington Highway impacting on the site, the applicant will be providing a 6-foot screen wall, fronted by a 5 to 6-foot Oleander screening hedge. The screen wall will also extend along the property's western and northern boundaries, with an Oleander hedge along a portion of the property's western boundary that fronts the project's parking area. The northeastern boundary has an existing 5 to 6-foot earthen berm and a chainlink fence providing a buffer between the project site and the H-1 Freeway. The freeway, situated below the site, is further protected from the project site by a grade separation of about 15 to 20 feet.

Noise from activity on the project site will have minimal impact on the H-1 Freeway and Farrington Highway with the proposed screen wall and hedge. Noise from the recycling operation should have no impact on the nearest residence which is situated over a thousand feet away.

We also contacted the Hazardous Waste Section at DOH and staff has indicated that based on the non-hazardous materials that we plan to process, they would not have any comments to provide.

C. Office of Environmental Quality Control (OEQC)

OEQC recommended that we consult with the Hazardous Waste Section of the Department of Health on the non-salvageable residues and recyclable materials mentioned in Section II-A-4, as they were unclear as to the nature of these materials. With respect to wastewater, they requested clarification as to whether water will be used for periodic maintenance of the facility to prevent a buildup of residues.

The applicant has indicated that the non-salvageable residues will consist of non-hazardous and non-liquid residues that are classified as non-recyclable, such scrapwood, certain types of plastic, and other items which would be sent to H-Power or to local landfills.

The recyclable materials discussed in Section II-A-4 would include paper, cardboard, newspaper, office paper, computer paper, plastic, aluminum, glass, and possibly rubber.

We have contacted the Hazardous Waste Section and staff has indicated that based on the non-hazardous materials that we plan to process, they would not have any comments to provide.

D. Department of Public Works (DPW)

DPW commented that there are no municipal sewers in the area which would be available for sewer connection to the proposed project. A private wastewater treatment system would require Department of Health approval. If a septic tank is utilized, a private pumping service must be contracted by the applicant since the City does not provide pumping service for septic tanks.

The applicant intends to provide a septic tank and leaching field to handle the wastewater requirements for the site, subject to approval by the Department of Health. A private pumping service will be utilized for the septic tank.

E. Board of Water Supply (BWS)

BWS stated that there are water services presently serving this parcel, however, they cannot approve requests for additional water off the 8-inch water main to Ala Ike Street because the main has reached its full service capacity. If

additional water is needed, the developer will have to either install a new water main to the site or coordinate the project's water requirements with the State Department of Transportation which has irrigation meters serving the parcel which are not fully utilized. In the latter case, the total demand must be within the allowable capacity of the existing 8-inch water main. The existing water system cannot provide adequate fire protections as required for fire protection. The developer will be required to coordinate the fire protection requirements for the project with the Fire Prevention Bureau of the Honolulu Fire Department.

The applicant has discussed the water needs for the project with staff at the State Department of Transportation and found that the project will be able to utilize the existing water meter and service located on Farrington Highway in the area presently occupied by Halawa Garden Products in the Waiawa Interchange, subject to an agreement that the applicant pay all costs for connection and consumption.

The applicant has been working with BWS and the Honolulu Fire Department to determine what alternative methods are available for meeting fire protection requirements. This will be resolved prior to development of the project.

F. Department of Transportation Services (DTS)

DTS stated that the City plans to utilize the highway interchange area, including Parcel 19, for access to the Waiawa rapid transit facility. The design of the access ramps may require an easement for an elevated structure to cross the property and possibly the recycling project site as well. Columns to support the access ramp may also be located in the subject property. DTS further recommended that all on- and off-site road improvements be coordinated with the State Department of Transportation (DOT).

The applicant's traffic consultant has been working closely with DOT to provide traffic improvements acceptable to the State to mitigate the project's traffic impact.

G. Department of Land Utilization (DLU)

DLU requested that the following additional information be included in the Environmental Assessment:

1. A Site Plan, elevation drawings, and a topography map.
2. Dimensions of the new structures and a site plan depicting existing structures.

3. Details on grading and the proposed drainage system, including mitigative measures.
4. The flood zone for the parcel and discussion of any structures planned within the flood area.
5. Discussion of archaeological resources and the project's potential impact on same.
6. Discussion of rare and endangered plants in the vicinity of the subject parcel.
7. Discussion of nearby streams or wetlands.

DLU also commented that the project is not within the SMA.

The information requested has been included in this Draft Environmental Assessment.

H. Department of General Planning (DGP)

DGP indicated that the proposed development will not require a Development Plan Land Use or Public Facilities Map amendment. They further commented that the Draft Environmental Assessment should address the following concerns:

1. A traffic study to address traffic impacts related to access to the project site.
2. Visual impacts of the proposed facility and proposed mitigative measures.
3. Economic impacts to the existing permittees on the subject parcel.
4. Potential impact of hazardous materials which the public may inadvertently or illegally dump at the site.
5. The location and provisions of the remote facilities where trucks will be cleaned.

The Draft Environmental Assessment discusses these concerns except for item 5. The applicant has not found a remote facility to handle their truck washing. They will find a location prior to operation of the proposed recycling facility.

I. Department of Accounting and General Services (DAGS)

DAGS had no comments to offer.

VIII. INFRASTRUCTURE REQUIREMENTS

A. Water Requirements

The only water requirements will be for the domestic needs of the employees and for landscaping. Trucks will be washed at remote facilities and tipping areas will be cleaned by mobile sweeper. No water is required for the processing of the recyclable material.

As discussed earlier, the applicant will work with the Board of Water Supply and the Honolulu Fire Department to provide an acceptable system to meet fire protection requirements.

B. Wastewater

The only wastewater from the site will be generated by the restrooms and possibly a utility room. Since no water is used in the recycling process, no wastewater will be generated by the recycling activity.

The average daily flow of wastewater generated at the project site is 750 gallons per day (gpd). This volume is based on facilities, without showers, operated by a total of 50 people over two 8-hour shifts, and 15 gpd/person of wastewater being generated. The criterion of 15 gpd/person is consistent with recommended flow rates for day shift workers, without showers, in the State of Hawaii Department of Health's (DOH's) Administrative Rules, Title 11, Chapter 62, "Wastewater Systems".

In addition to the sanitary sewage, 30-40 cases of outdated beverages per month will be discharged into the proposed wastewater system.

DOH's Chapter 62 states that an individual wastewater system (IWS) is permissible for non-residential developments if (1) connection to a municipal system is not available and (2) the wastewater flow generated does not exceed 1,000 gpd per 10,000 square feet of usable land area, excluding areas under buildings. In regards to the former criterion, a letter from the City's Department of Public Works has been received stating that there are no municipal sewers in the area which would be readily available for sewer connection to the proposed project. The latter criterion is satisfied by the fact that the estimated average flow of wastewater is 750 gpd for a project area that is far in excess of 10,000 square feet. Also, DOH has indicated that the monthly discharge of the outdated beverages would not be a deterrent in their approval of an individual wastewater system.

The individual wastewater system proposed for the project is an on-site septic tank/leaching field. Sanitary sewage, as well as outdated beverages, would be discharged into a septic tank for partial treatment by settlement prior to subsurface disposal of the effluent through the buried perforated piping of the leaching field. The areal extent of the leaching field will be contingent upon the results of a percolation test to be conducted at a later date.

C. Drainage

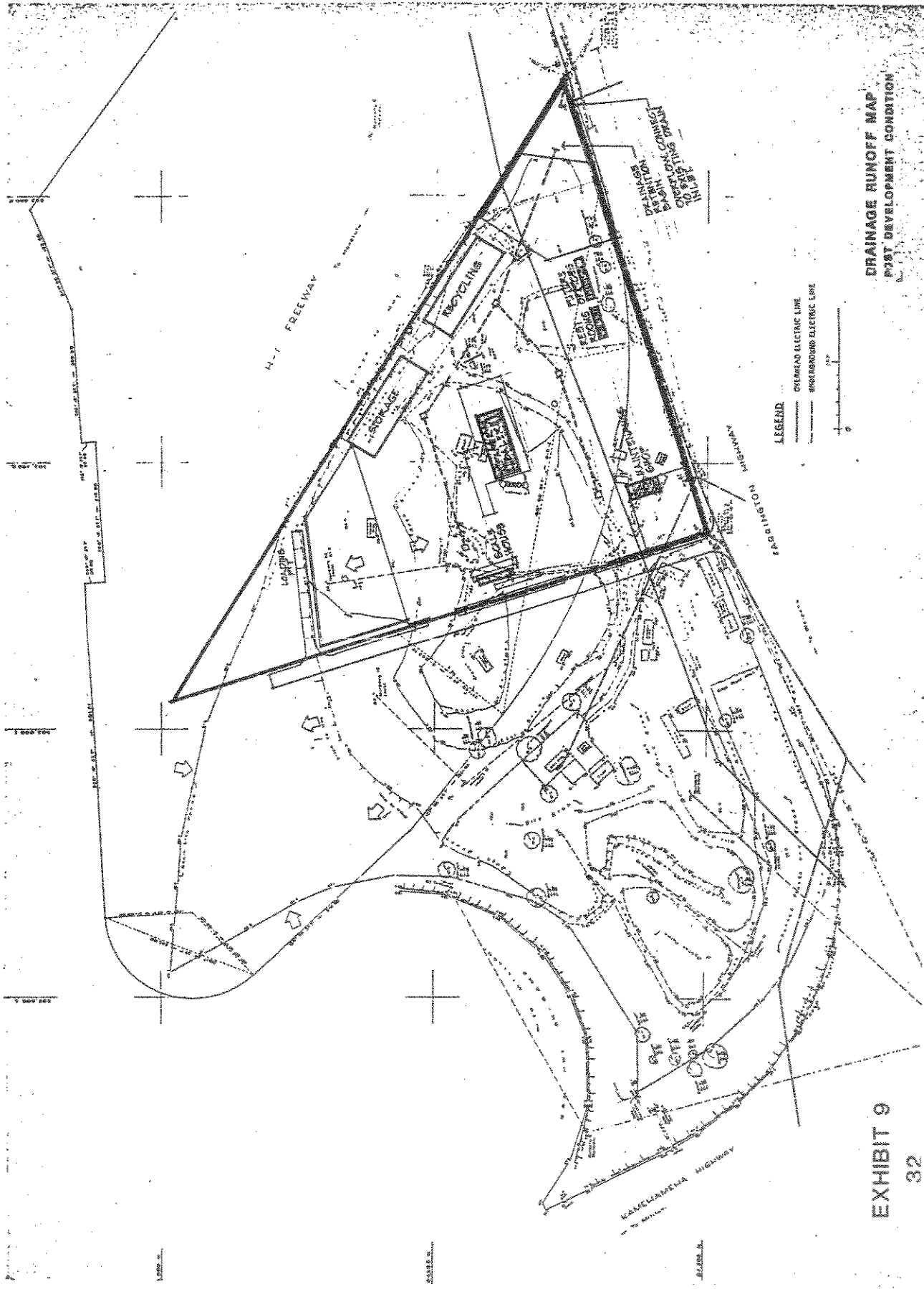
A portion of the area is covered by a growth of brush. Topography is relatively flat. The northern third of the site slopes northerly into a sump area between the H-1 Freeway and the loop ramp from H-1 inbound (eastbound) to Kamehameha Highway northbound. From the high point at this third-mark, the ground of the southern portion slopes easterly at an approximate 1% to 1.5% gradient toward an existing drain inlet. An earth berm along the northeast boundary separates the site from the H-1 Freeway. At the western boundary, the ground slopes westerly, away from the site. A swale along Farrington Highway at the southern boundary intercepts flow and directs runoff to the drain inlet near the eastern corner, away from the project site. There is no significant drainageway within the project site. Exhibit 8 shows the existing topography.

According to the Flood Insurance Rate Map (FIRM) of the Federal Emergency Management Agency (FEMA), the project is in Zone X Flood Area (areas determined to be outside the 500-year flood plain).

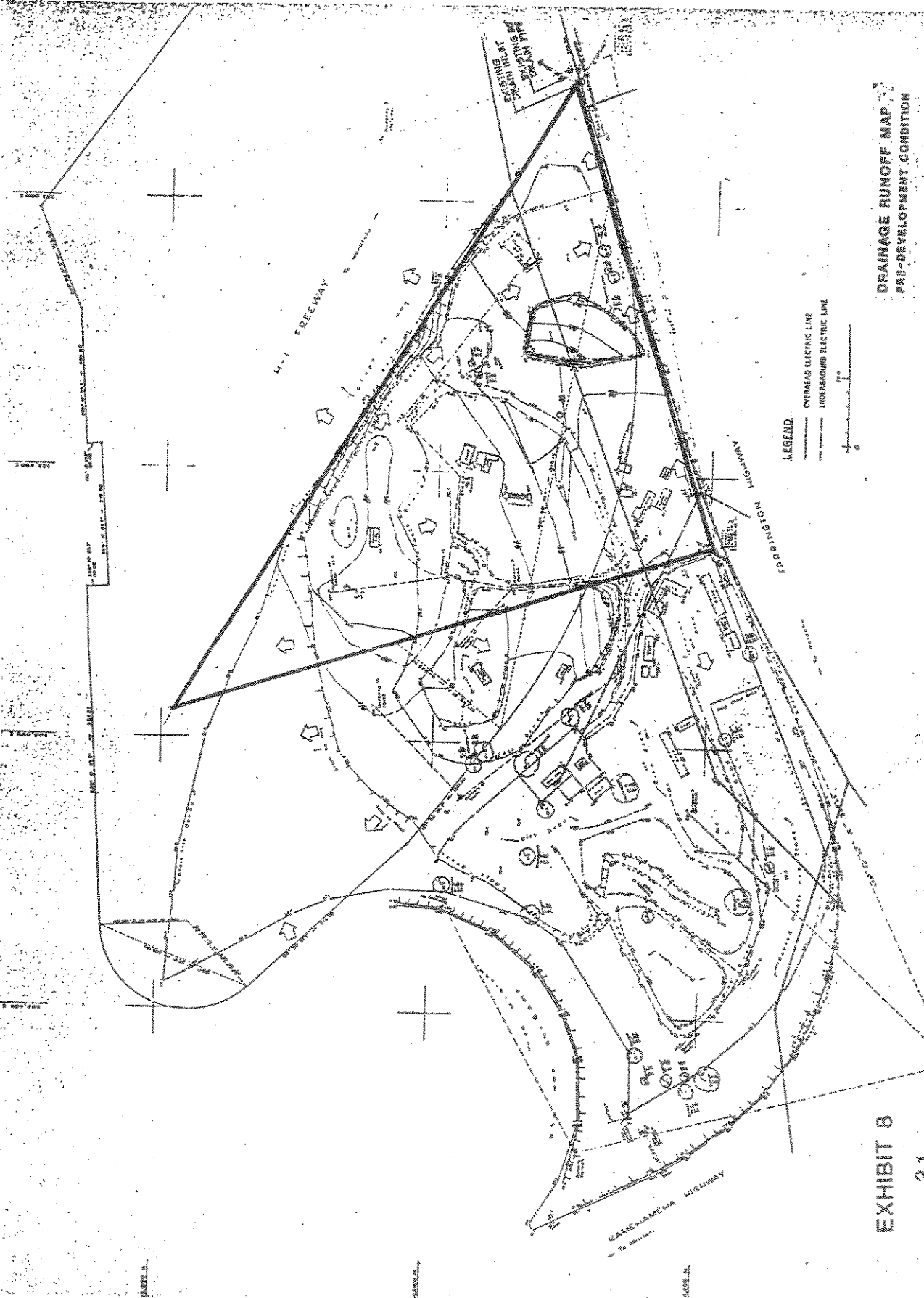
Grading for the proposed site will approximately retain the existing flow patterns. The northern paved area will sheet flow toward the existing sump between the Freeway and the loop ramp. Using paved swales, grated drain inlets and underground drain pipes, runoff from the major portion of the site will be led to a new retention basin at the eastern corner. An overflow line will be designed to carry pre-development runoff amounts to the existing drain inlet. The additional runoff generated by the development, due to site site improvements, will be retained and stored in this basin and gradually released as the peak storm passes; additional flow is estimated to 12 cfs (cubic feet per second).

Exhibit 9 shows the proposed drainage facilities for the project.

Existing and post-development storm drainage conditions will be evaluated by the criteria established in the Storm Drainage Standards, dated May 1988, of the Department of Public Works,



**DRAINAGE RUNOFF MAP
POST DEVELOPMENT CONDITION**



DRAINAGE RUNOFF MAP
PRE-DEVELOPMENT CONDITION

EXHIBIT 8
31

City and County of Honolulu. Pipeline analysis will be calculated in accordance with City requirements.

D. Traffic

The Traffic Impact Assessment Report for the Proposed Solid Waste Management Facility at Waipahu, Hawaii, attached as Appendix I, was prepared for Hawaii Environmental Transfer, Inc. by Austin, Tsutsumi & Associates, Inc. to determine the traffic impact of the proposed development and recommend mitigative measures if necessary. This report is summarized below.

The site is presently occupied by a plant nursery and an agricultural products business. Both are wholesale production type activities so traffic is very low into and out of the site. In addition, the State Highways Division has irrigation and street light control structures on the site. Access to the parcel is from a single 15-foot wide driveway which connects to the west bound (ewa bound) lanes of Farrington Highway in the vicinity of the north bound Kamehameha Highway connector ramp.

The site is within the Waiawa Interchange roadway complex adjacent to Farrington Highway. The interchange is at the confluence of the H-1 Freeway, H-2 Freeway, Kamehameha Highway and Farrington Highway. These are all major highways serving the Leeward, Central and North Shore areas of the island.

Other major highway facilities in the area which will be accessible to traffic exiting the site are the Paiwa Interchange on the H-1 Freeway and the Waipio Interchange on the H-2 Freeway.

Access to the site will be limited to right turns in and right turns out from a driveway in the approximate location of the existing driveway. This means that all traffic exiting the site will have to use the connector ramp to north bound Kamehameha Highway, then travel to other roadways to go west or east.

During the morning and afternoon peak hours, existing traffic is moderate on the ramp and traffic generated by the project is low, so there will be insignificant traffic contribution by the project. However, there may be short, intermittent slowing of traffic on the ramp when large trucks enter or leave the site.

Traffic counts were taken at HETI's present Middle Street site to determine the number of vehicles and trucks using the facility. The counts showed that there are about 13 vehicles entering and exiting the site during the morning peak hour and

8 vehicles entering and exiting during the afternoon peak hour.

Trip generation data were also calculated using factors from the Institute of Transportation Engineers' manual "Trip Generation" General Light Industrial land use classification. These calculations indicated 18 vehicles entering and exiting during the morning peak hour and 18 during the afternoon peak hour.

It is concluded that the traffic generated by the facility will not significantly contribute to traffic in this area. However, the Farrington Highway and H-1 Freeway off ramp traffic maneuvering to get onto the Kamehameha Highway connector ramp must execute multiple lane changes within a very short length of highway. This traffic mix, coupled with the speed of traffic on Farrington Highway, may create difficulties for motorists wanting to get into and out of the site. However, it is anticipated that this weaving traffic will be greatly reduced when the Paiwa Interchange is opened in late September 1992 because this interchange will directly serve Waikele and Waipahu residents.

Although motorists exiting the site must go to north bound Kamehameha Highway, the Paiwa Interchange on the H-1 Freeway and the Waipio Interchange on the H-2 Freeway are within reasonable travel distances and will enable trucks and other vehicles to return to Honolulu or other areas.

Because of the traffic movement conflicts and traffic speed in this area, it is recommended that deceleration and acceleration lanes be constructed at the driveway for the site. Existing highway facilities, such as street light poles, pull boxes, traffic signs, etc., which may be affected by the construction should be relocated. The driveway should be designed and constructed to accommodate semi-trailer trucks.

IX. AFFECTED ENVIRONMENT

A. Flora and Fauna

Except for a narrow strip along the project's perimeter, the project site has been cleared and grubbed to accommodate the operation of the bagasse composting facility.

Much of the land surrounding the project site has been graded to accommodate the construction of the H-1 Freeway, Kamehameha Highway, Farrington Highway, and the on and off-ramps.

With these earlier disturbances the site is fairly barren except for a few Monkeypod and Banyan trees.

No endangered species of flora or fauna exist on the project site.

B. Historical/Archaeological and Cultural Sites

As mentioned earlier, although no archaeological survey has been done for the site, it appears that historic or archaeological resources which may have been present at or near the project site were probably removed or destroyed when the project site was cleared and grubbed for the composting operation and even earlier when roadway grading occurred. If historic or archaeological resources are found during grading or construction, the applicant will cease work on the project and contact the State Historic Preservation Office to insure that significant or important resources will be protected and/or preserved.

C. Waiawa Stream

Waiawa Stream is situated over 200 feet away from the subject parcel and is separated by the H-1 Freeway and an on-ramp leading to the H-2 Freeway. The subject parcel is situated about 20 feet above the elevation of the H-1 Freeway which is situated above the stream. With this vertical and horizontal separation, development of this project should have little or no impact on the stream.

D. Other Natural Resources

The project site contains no natural monuments or valuable resources. The project site is situated mauka of the Special Management Area and does not contain any unique land forms or obstruct any established view plane or view corridor. Development of the site will not impact any wetlands, wildlife refuge, agricultural production, or endangered flora or fauna (since project site was cleared and grubbed).

X. IMPACTS AND ALTERNATIVES CONSIDERED

A. Impacts

The proposed recycling operation should have limited impact on the surrounding community and the environment given its isolated location on a parcel on which significant grading and disturbance have occurred through its use for agricultural activities, roadway, reservoir, and a bagasse composting operation. Although impacts on the surrounding area are

expected to be minimal the applicant does propose mitigative measures for traffic impacts, noise impacts, visual impacts and drainage impacts.

B. Alternatives Considered

1. No Change

This is not an option since the recycling operation is on a month to month lease at its existing location and the fee owner of the site has indicated that he would like Hawaii Environmental Transfer, Inc. (HET) to move within the next year. The fee owner has plans to redevelop the site. Even if HET could remain on the site, it would not be feasible, because they have outgrown the site and this has affected their ability to provide quality service to their clients as one mentioned in the Department of Health's comments.

2. Locate to Another Site

Other sites have been considered; however, it was important to have a site close enough to the downtown area to keep trucking and delivery costs at reasonable levels. The Campbell Estate/Ewa area was considered but was not workable due to its distance from the primary recycling material generators in town. Perhaps in the future a recycling operation may be needed in the Ewa area, but for now this Pearl City/Waipahu area is well situated to service downtown, Ewa and Central Oahu. Another plus about this location is the fact that it is physically separated from other uses by the Waiawa Interchange roadway network and is situated far from residences and other uses which could be negatively impacted by the facility. It is also situated such that it will have limited visibility from public areas and can be easily shielded by landscaping and a fence wall.

XI. PROPOSED MITIGATIVE MEASURES

A. Traffic

Access to the site will be limited to right turns in and right turns out from a driveway in the approximate location of the existing driveway. This means that all traffic exiting the site will have to use the connector ramp to north bound Kamehameha Highway, then travel to other roadways to go west or east.

Because of the traffic movement conflicts and traffic speed in this area, the applicant will provide deceleration and acceleration lanes at the driveway for the site. Existing highway facilities, such as street light poles, pull boxes, traffic signs, etc., which may be affected by the construction will be relocated. The driveway will be designed and constructed to accommodate semi-trailer trucks.

B. Noise

In order to reduce the impact of noise generated by the project on Farrington Highway and to minimize the noise from Farrington Highway impacting on the site, the applicant will be providing a 6-foot screen wall, fronted by a 5 to 6-foot Oleander screening hedge. The screen wall will also extend along the property's western and northern boundaries, with an Oleander hedge along a portion of the property's western boundary that fronts the project's parking area. The northeastern boundary has an existing 5 to 6-foot earthen berm and a chainlink fence providing a buffer between the project site and the H-1 Freeway. The freeway, situated below the site, is further protected from the project site by a grade separation of about 15 to 20 feet.

Noise from activity on the project site will have minimal impact on the H-1 Freeway and Farrington Highway with the proposed screen wall and hedge.

C. Visual Impact

As mentioned in the earlier sections the project site does not impact on any established view plane or view corridor. In order to minimize the visual impact of recycling structures on Farrington Highway, the applicant will be providing a 6-foot screen wall, fronted by a 5 to 6-foot Oleander screening hedge. The screen wall will also extend along the property's western and northern boundaries, with an Oleander hedge along a portion of the property's western boundary that fronts the project's parking area. The northeastern boundary has an existing 5 to 6-foot earthen berm and a chainlink fence providing a buffer between the project site and the H-1 Freeway. The freeway, situated below the site, is further protected from the project site by a grade separation of about 15 to 20 feet.

The structures and activity on the project site will not be visible from the H-1 Freeway. With the proposed screen wall and hedge the structures and activity on the site will not be visible from Farrington Highway and the new access road (except for driveway access points along the access road).

D. Drainage

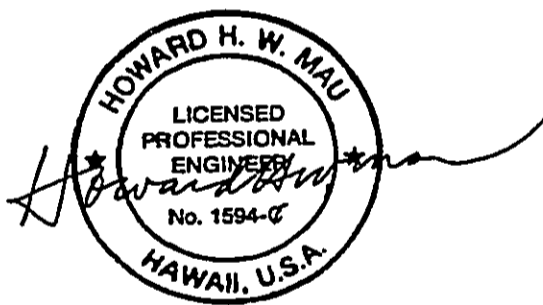
Grading for the proposed site will approximately retain the existing flow patterns. The northern paved area will sheet flow toward the existing sump between the Freeway and the loop ramp. Using paved swales, grated drain inlets and underground drain pipes, runoff from the major portion of the site will be led to a new retention basin at the eastern corner. An overflow line will be designed to carry pre-development runoff amounts to the existing drain inlet. The additional runoff generated by the development, due to site site improvements, will be retained and stored in this basin and gradually released as the peak storm passes; additional flow is estimated to 12 cfs (cubic feet per second).

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APPENDIX 1

TRAFFIC IMPACT ASSESSMENT REPORT
FOR
THE PROPOSED SOLID WASTE MANAGEMENT FACILITY
AT WAIPAHO, HAWAII

PREPARED FOR
HAWAII ENVIRONMENTAL TRANSFER, INC.



Prepared By
Austin, Tsutsumi & Associates, Inc.
Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawaii

October 1992



Contents

	<u>Page</u>
EXECUTIVE SUMMARY	iii-v
I. INTRODUCTION	1-4
A. Purpose and Scope	1-2
B. Location	2
C. Project Description	2-4
II. EXISTING CONDITIONS	5-7
A. Project Site	5
B. Roadway System	5-6
C. Traffic	6-7
III. TRIP GENERATION	7-9
A. General	7
B. Trip Generation Characteristics	7-9
IV. TRAFFIC IMPACT ASSESSMENT	10-11
A. Traffic Assignment	10
B. AM Peak Hour	10
C. PM Peak Hour	10-11
V. CONCLUSIONS	11
VI. RECOMMENDATIONS	12-13
 <u>EXHIBITS</u>	
1 LOCATION AND VICINITY MAP	3
2 PROJECT SITE	4



Contents
(Contd.)

Page

EXHIBITS (Contd.)

3	TRAFFIC COUNTS	8
4	RECOMMENDED IMPROVEMENTS	13

TABLE

1	Generated Traffic, Middle Street Site	9
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APPENDIX

TRAFFIC COUNTS

EXECUTIVE SUMMARY

INTRODUCTION

Hawaii Environmental Transfer, Inc. (HETI) proposes to construct and operate a materials sorting and transfer facility for solid wastes collected from commercial and public sources. These materials will consist of metals (primarily aluminum cans), wastepaper, corrugated cardboard, glass, plastics and other materials suitable for recycling. The sorted materials will be packed in shipping containers for transportation and shipment out of state; the unrecyclable materials will be transported to the City's landfill or HPower facilities.

The facility will be located in a portion of the State Highways Division's Waiawa Interchange in Waipahu, Oahu. The facility will use about 6.73 acres of TMK: 9-6-04:19. Access to the site would be from the west bound (Ewa bound) lanes of Farrington Highway in the vicinity of the north bound Kamehameha Highway connector ramp.

EXISTING CONDITIONS

The site is presently occupied by a plant nursery and an agricultural products business. Both are wholesale production type activities so traffic is very low into and out of the site. In addition, the State Highways Division has irrigation and street light control structures on the site. Access to the parcel is from a single 15-foot wide driveway.

The site is within the Waiawa Interchange roadway complex adjacent to Farrington Highway. The interchange is at the confluence of the H-1 Freeway, H-2 Freeway, Kamehameha Highway and Farrington Highway. These are all major highways serving the Leeward, Central and North Shore areas of the island.

Other major highway facilities in the area which will be accessible to traffic exiting the site are the Paiwa Interchange on the H-1 Freeway and the Waipio Interchange on the H-2 Freeway.

Access to the site will be limited to right turns in and right turns out from a driveway in the approximate location of the existing driveway. This means that all traffic exiting the site will have to use the connector ramp to north bound Kamehameha Highway, then travel to other roadways to go west or east.

During the morning and afternoon peak hours, existing traffic is moderate on the ramp and traffic generated by the project is low, so there will be insignificant traffic contribution by the project. However, there may be short, intermittent slowing of traffic on the ramp when large trucks enter or leave the site.

TRIP GENERATION

Traffic counts were taken at HETI's present Middle Street site to determine the number of vehicles and trucks using the facility. The counts showed that there are about 13 vehicles entering and exiting the site during the morning peak hour and 8 vehicles entering and exiting during the afternoon peak hour.

Trip generation data were also calculated using factors from the Institute of Transportation Engineers' manual "Trip Generation", General Light Industrial land use classification. These calculations indicated 18 vehicles entering and exiting during the morning peak hour and 18 during the afternoon peak hour.

TRAFFIC IMPACT ASSESSMENT

It is concluded that the traffic generated by the facility will not significantly contribute to traffic in this area. However, the Farrington Highway and H-1 Freeway off ramp traffic maneuvering to get onto the Kamehameha Highway connector ramp must execute multiple lane changes within a very short length of highway. This traffic mix, coupled with the speed of traffic on Farrington Highway, may create difficulties for motorists wanting to get into and out of the site. However, it is anticipated that this weaving traffic will be greatly reduced when the Paiwa Interchange is opened in late September 1992 because this interchange will directly serve Waikele and Waipahu residents.



Although motorists exiting the site must go to north bound Kamehameha Highway, the Paiwa Interchange on the H-1 Freeway and the Waipio Interchange on the H-2 Freeway are within reasonable travel distances and will enable trucks and other vehicles to return to Honolulu or other areas.

RECOMMENDATIONS

Because of the traffic movement conflicts and traffic speed in this area, it is recommended that deceleration and acceleration lanes be constructed at the driveway for the site. Existing highway facilities, such as street light poles, pull boxes, traffic signs, etc., which may be affected by the construction should be relocated. The driveway should be designed and constructed to accommodate semi-trailer trucks.



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TRAFFIC IMPACT ASSESSMENT REPORT
FOR
THE PROPOSED SOLID WASTE MANAGEMENT FACILITY
AT WAIPAHU, HAWAII

I. INTRODUCTION

A. Purpose and Scope

The purpose of this study is to identify and assess the impacts of traffic generated by the proposed Hawaii Environmental Transfer, Inc.'s (HETI) solid waste management facility at Waipahu, Oahu. This report presents the findings of the traffic study and recommendations to mitigate the traffic impacts identified with the project, which include the following:

1. A description of the proposed project.
2. An evaluation of the existing traffic conditions.
3. Trip generation characteristics of the project.
4. Identification and assessment of traffic impacts resulting from the proposed project on nearby roadways.

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5. Recommendations to mitigate and/or reduce the traffic impacts identified in this report.

B. Location

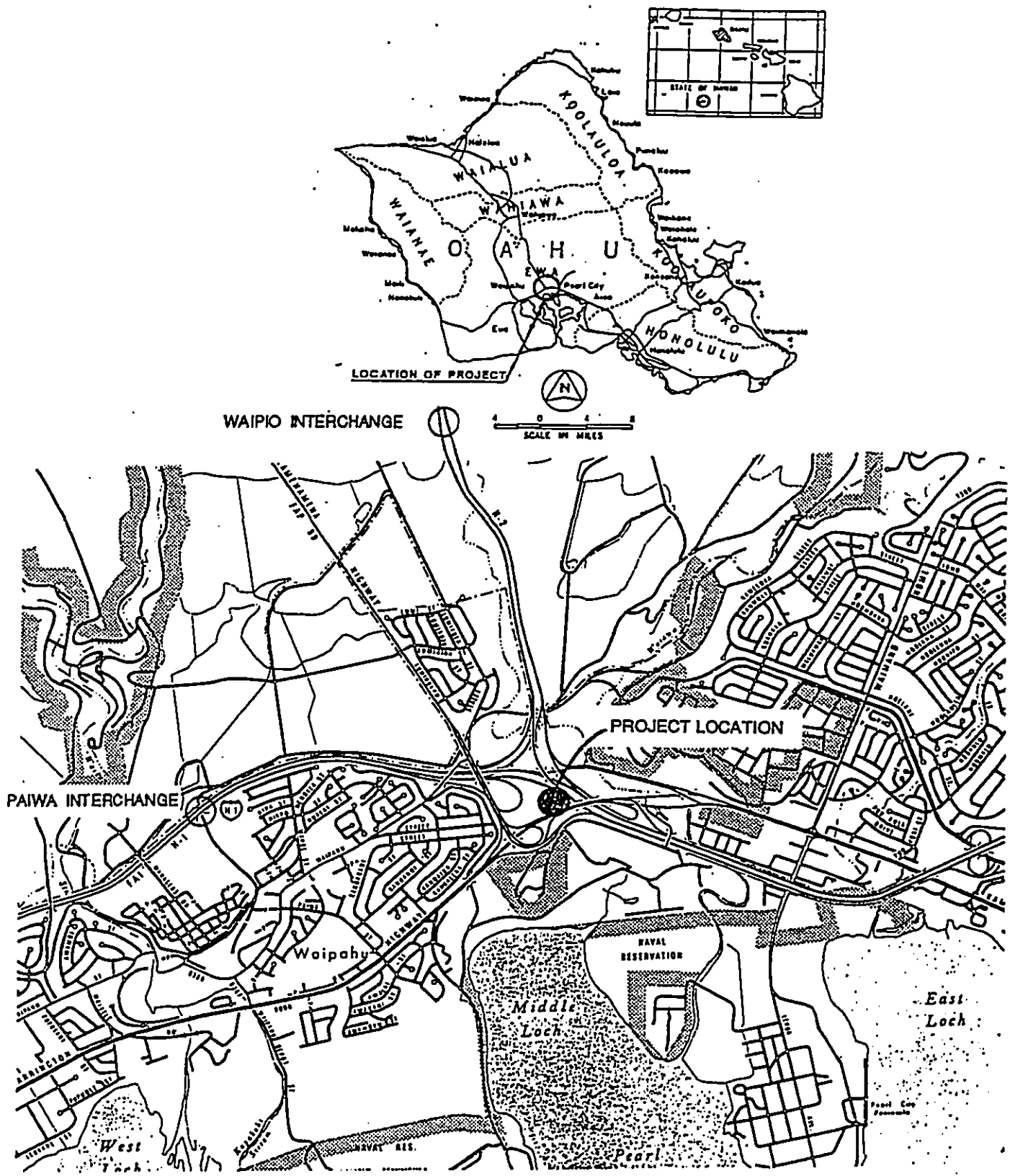
The project will be located off Farrington Highway in a portion of the State Highways Division's Waiawa Interchange at Waipahu, Oahu. The facility will utilize about 6.73 acres of TMK: 9-6-04:19. Access to the site would be from the west bound (Ewa bound) lanes of Farrington Highway in the vicinity of the north bound Kamehameha Highway connector ramp. Exhibits 1 and 2 show the project location and site.


C. Project Description

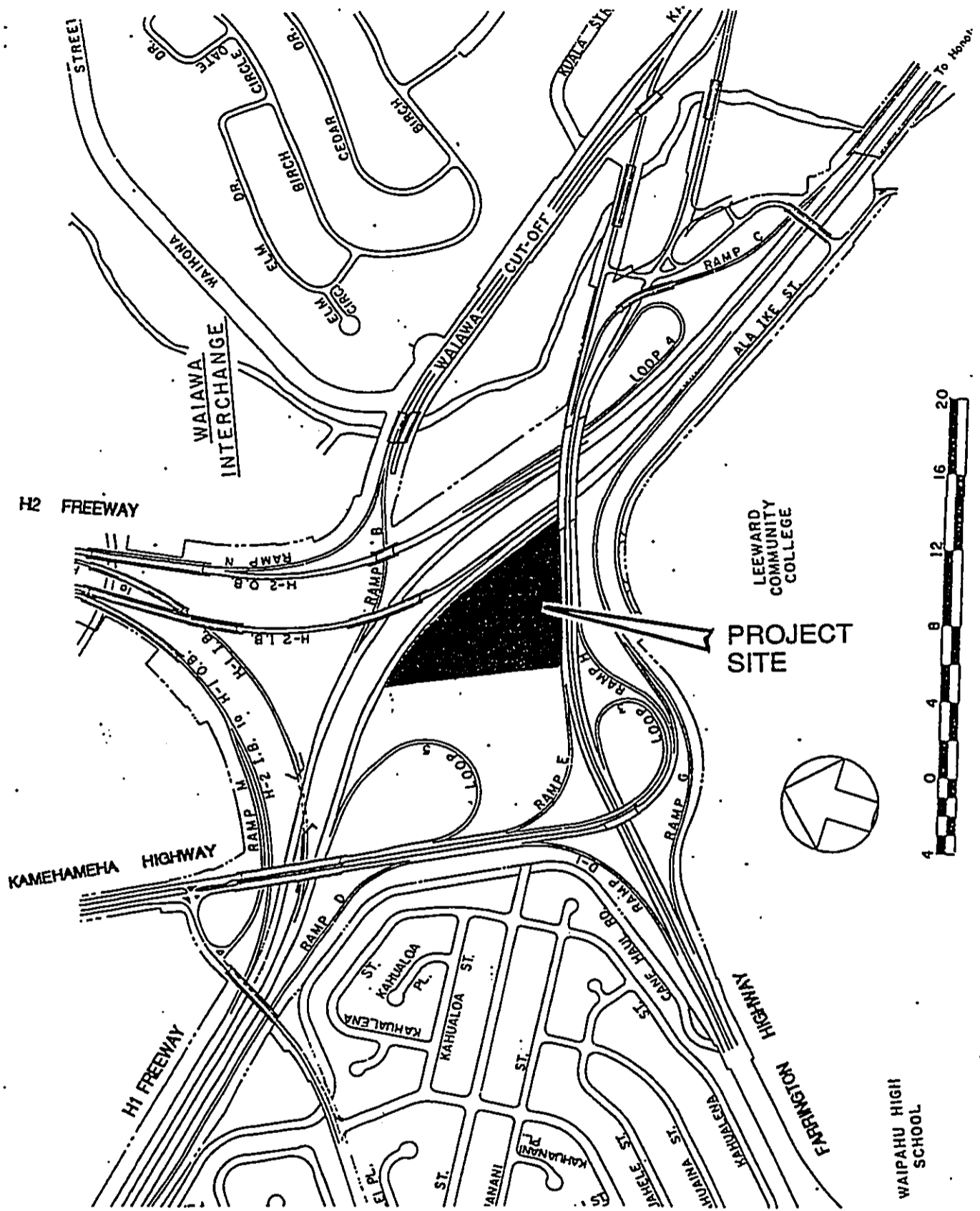
Hawaii Environmental Transfer, Inc. proposes to construct and operate a materials sorting and transfer facility for solid wastes collected from commercial and public sources. These materials will consist of metals (primarily aluminum cans), waste paper, corrugated cardboard, glass, plastics and other materials which would be suitable for recycling. The sorted materials would be packed in shipping containers for transportation and shipment out of state from Honolulu Harbor; the unrecyclable materials would be transported to the City's landfill or HPower facilities.


The materials hauled to the site will be primarily from commercial sources such as stores, hotels, bars, restaurants, etc. The facility will also receive and accept recycling materials from the general public on a drop-by basis. It is estimated that the facility will process approximately 6,400 tons of materials per month from various sources.

The facility will have paved sorting and storage areas, a small equipment maintenance facility, truck weighing scales, transfer and loading docks, offices and other related facilities.



 AUSTIN TSUTSUMI & ASSOC., INC. ENGINEERS • SURVEYORS	TRAFFIC IMPACT REPORT	EXHIBIT
	LOCATION AND VICINITY MAP	1



 AUSTIN, TSUTSUMI & ASSOC., INC. ENGINEERS • SURVEYORS	TRAFFIC IMPACT REPORT HAWAII ENVIRONMENTAL TRANSFER, INC. SOLID WASTE MANAGEMENT FACILITY		EXHIBIT
	PROJECT SITE		2

II. EXISTING CONDITIONS

A. Project Site

The site is presently occupied by two companies: a plant nursery and an agricultural products business which prepares burnt bagasse soil amendment products. It is anticipated that this facility would replace the agricultural products operation. Other facilities on the site include a Highways Division central irrigation control building and a highway lighting system control building for the interchange, and overhead power lines for Hawaiian Electric Co., Inc.

The site is within the Waiawa Interchange, which is a major, complex, highway interchange at the confluence of the H-1 Freeway, H-2 Freeway, Farrington Highway and Kamehameha Highway. The site will be directly accessible only from the west bound (Ewa bound) lanes of Farrington Highway.

The project site is between Pearl City on the east, Waipahu on the west, Leeward Community College on the south, and the Waikele, Seaview and other residential subdivisions on the north.

B. Roadway System

Farrington Highway, fronting the makai side of the project site, is a five-lane divided State highway with three lanes in the west bound direction and two lanes in the east bound direction. The right-most lane, west bound, goes directly into the connecting roadway to Kamehameha Highway north bound; the other two lanes continue to Waipahu. The speed limit is 35 miles per hour (mph).

The H-1 Freeway borders the north, or mauka, side of the site; there is no connection to the freeway from the site. The freeway is a six-lane, divided freeway and is the major east-west freeway on the island, running



from Makakilo in the west to Waialae-Kahala in the east. The speed limit is 55 mph.

Kamehameha Highway, a major State arterial highway, is on the west side of the site. It is a four-lane divided highway in this area, with two lanes south bound and two lanes north bound. North bound traffic on Kamehameha Highway consists of traffic from feeder ramps in the Waiawa Interchange – Loop 3 from east bound (Honolulu bound) Farrington Highway; Ramp E from west bound (Waipahu bound) Farrington Highway; and Loop 5 from east bound (Honolulu bound) H-1 Freeway, as shown on Exhibit 2. Loop 3 and Ramp E enter Kamehameha Highway on their own lanes, Loop 3 on the left lane and Ramp E on the right lane, while Loop 5 merges with the Ramp E lane. The speed limit is 35 mph.

The H-2 Freeway is a four- to six-lane freeway between the Waiawa Interchange on the south and Wahiawa on the north. The speed limit is 55 mph.

Although direct access into the site will be limited to the west bound lanes of Farrington Highway, vehicles can get onto that section of highway from the east bound lanes of Farrington Highway by making a U-turn at the Leeward Community College median crossover, about .3 mile east of the site, and returning on the west bound lanes of the highway. Access to the H-1 and H-2 Freeways from the project site is available by driving north on Kamehameha Highway and using the soon-to-be-opened Paiwa Interchange at the H-1 Freeway in Waipahu via Lumiaina Street, or the Waipio Interchange at the H-2 Freeway in the Waipio Gentry Subdivision via Ka Uka Boulevard, respectively.

C. Traffic

Since access to the site is only available from the west bound lanes of Farrington highway, this is the traffic which will be most affected by the



project. Affected traffic is further limited to only the traffic on the connector ramp between Farrington Highway west bound and Kamehameha Highway north bound because the access to the project will be from the auxiliary lane going to the ramp.

Traffic from west bound H-1 Freeway destined for the Seaview/Crestview subdivisions, which exits the freeway at Ramp "C", enters Farrington Highway on the left, and must cross over two traffic lanes to the right to get to the auxiliary lane and Kamehameha Highway. This maneuver must be accomplished within a distance of only about 1200-1400 feet. This traffic will affect ingress and egress to the project site; therefore, the State Highways Division has restricted access to the site to only right turns in and out to Ramp E.

Exhibit 3 shows the traffic volumes for north bound Kamehameha Highway and the feeder ramps.

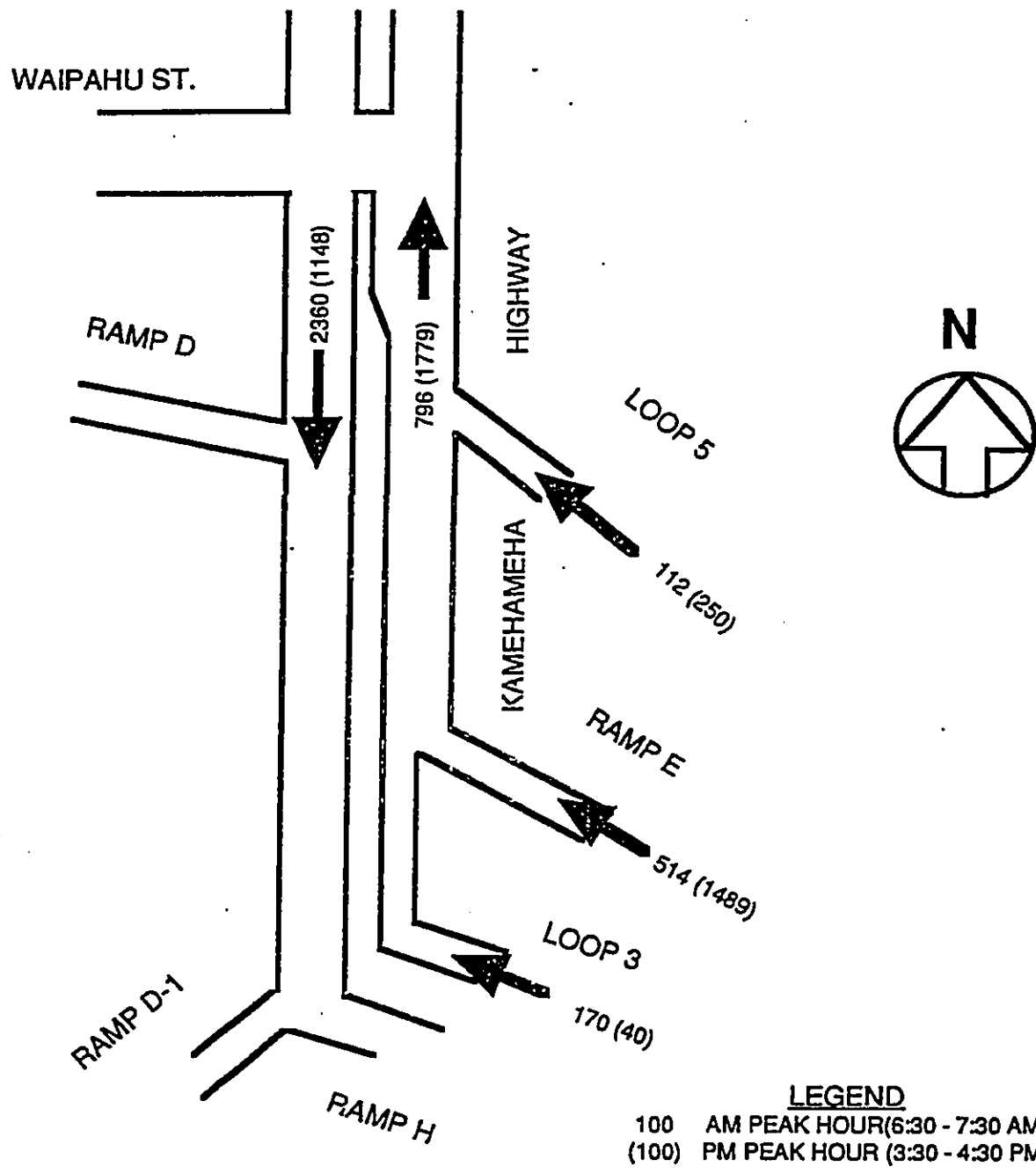
III. TRIP GENERATION

A. General

HETI took traffic counts at its present facility on Middle Street to determine the traffic expected to be generated by the facility. This count was utilized to determine the volume of traffic generated by the facility.

B. Trip Generation Characteristics

Table I shows traffic counts taken at HETI's Middle Street site.




 AUSTIN, TSUTSUMI & ASSOC., INC. ENGINEERS • SURVEYORS	TRAFFIC IMPACT REPORT HAWAII ENVIRONMENTAL TRANSFER, INC. SOLID WASTE MANAGEMENT FACILITY TRAFFIC COUNTS	EXHIBIT
		3



TABLE 1 - GENERATED TRAFFIC, MIDDLE STREET SITE				
Time	Collection, Large Vehicles, In and Out	Collection, Small Vehicles, In and Out	Transfer, Out	Recycling, Out
6:00- 7:00 AM	11	-	1	1
7:00- 8:00 AM	3	3	-	1
8:00- 9:00 AM	2	4	-	-
9:00-10:00 AM	2	5	1	2
10:00-11:00 AM	8	6	-	1
11:00-12:00 AM	7	10	-	-
12:00- 1:00 PM	2	5	1	2
1:00- 2:00 PM	1	4	-	-
2:00- 3:00 PM	3	7	1	1
3:00- 4:00 PM	5	2	-	1
4:00- 5:00 PM	6	-	1	-
5:00- 6:00 PM	3	-	-	-
TOTAL	53	46	5	9

Transfer Out = Trailers taking materials to HPower or Waimanalo landfill

Recycling Out = Containers being transported for shipment from Honolulu Harbor

The project will have 50 employees working two shifts. The first work shift will be from 6:00 AM to 3:00 PM with 42 employees on duty and the second shift will be from 3:00 to 11:30 PM with 8 employees on duty. Employee trips will not affect peak hour traffic because, in the AM, employees will enter from the non-peak direction and in the PM, employee trips will not occur at the peak hour.

IV. TRAFFIC IMPACT ASSESSMENT

A. Traffic Assignment

In previous discussions with Highways Division personnel, HETI was limited to the existing access driveway at the site. The driveway is located adjacent to the auxiliary lane from Farrington Highway west bound to Kamehameha Highway, north bound. Access would be limited to right turns in and out only, and exiting traffic must go onto the Kamehameha Highway north bound Ramp E; traffic would not be permitted to cross the lanes to get onto west bound Farrington Highway.

B. AM Peak hour

It is estimated that there will be 15 vehicles entering the site and 3 vehicles exiting the site during the morning peak hour. Ramp E traffic is estimated at 514 vehicles

Traffic counts taken by the State Department of Transportation on Farrington Highway at the Oahu Sugar Co. road underpass about one-half mile west (Waipahu) of the site and on Kamehameha Highway at Waipahu Street, about one-half mile north of the site shows that the AM peak hour of traffic is at 5:45 to 6:45 AM on Farrington Highway and 6:30 to 7:30 AM on south bound Kamehameha Highway. The directional distribution for both sites is about 75% Honolulu bound and 25% out bound.

Since most, if not all, of the commercial trucks will approach the site from the east, these vehicles will be traveling opposite the peak direction of traffic and, therefore, will not contribute to peak direction traffic.

C. PM Peak Hour

It is estimated that there will be two vehicles entering the site and 16 vehicles exiting during the PM peak hour of traffic from 3:30 to 4:30 PM.

The traffic count shows 1,489 vehicles use the auxiliary lane and Ramp E during the PM peak hour of traffic. This volume will reduce when the Paiwa Interchange is opened to traffic in late September 1992, because the interchange will directly serve the Waikele subdivision and Waipahu Town traffic.

V. CONCLUSIONS

The number of trips generated by the project will be very small, compared to the number of vehicles using Ramp E to get to Kamehameha highway. However, the Farrington Highway and Ramp C freeway traffic maneuvering to get onto Ramp E must execute multiple lane changes within a very short length of highway. This traffic mix, coupled with the speed of traffic on Farrington Highway, will create difficulties for motorists wanting to get into and out of the site. Therefore, deceleration and acceleration lanes are needed for the project driveway. When Paiwa Interchange is opened to traffic, tentatively in late September 1992, traffic exiting from the H-1 Freeway on Ramp C will be significantly reduced because the interchange will directly serve Waikele residents and Waipahu Town residents between Kamehameha Highway and Waikele Stream. Traffic volumes on Ramp E should also be less than at present.

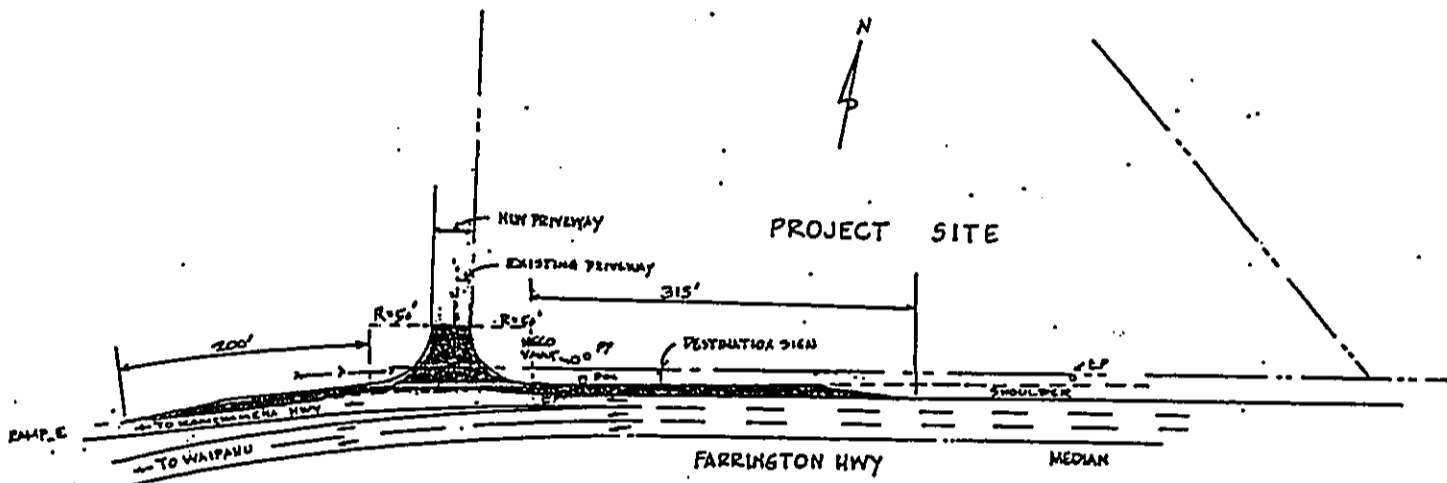
Although the Highways Division has restricted traffic exiting the site to right turns only into Ramp E thence to north bound Kamehameha Highway, this should not cause undue difficulties because vehicles may turn left at Waipahu Street to go to Waipahu town or to the H-1 Freeway at the new Paiwa Interchange via Lumiaina Street, or continue further north to Ka Uka Boulevard to get to the Waipio Interchange of the H-2 Freeway. Both of the freeway interchanges have ramps which allow vehicles to return to Honolulu or to continue in the outbound direction.




VI. RECOMMENDATIONS

Because of the traffic speed and volume, it is recommended that a 315-foot long deceleration lane and 200 foot long acceleration lane be constructed for vehicles entering and exiting the project site. This will enable vehicles going to the site to slow down off the through lanes and, when exiting the site, to accelerate before merging into traffic on the auxiliary lane and Ramp E. Adjustments to existing street lights, traffic and directional signs and pavement markings will also be necessary. The turning radius at the driveway should be designed to accommodate semitrailer trucks.

Exhibit 4 shows the recommended improvements.



 AUSTIN, TSUTSUMI & ASSOC., INC. ENGINEERS • SURVEYORS	TRAFFIC IMPACT REPORT HAWAII ENVIRONMENTAL TRANSFER, INC. SOLID WASTE MANAGEMENT FACILITY	EXHIBIT
	RECOMMENDED IMPROVEMENTS	4



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CIVIL ENGINEERS • SURVEYORS

APPENDIX

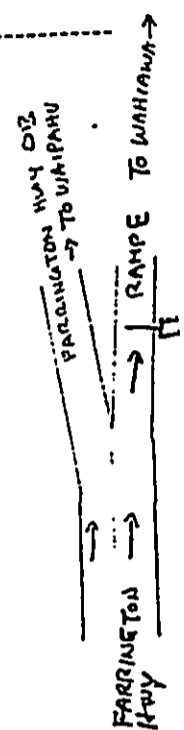
WAIPAHU WASTE FACILITY

PAGE: 1
FILE: RAMPB

SITE CODE : 00000001
Location : KAMEHAMEHA HWY. RAMP B
Weather : DRY, SUNNY
Operator : BM

DATE: 8/24/92

TIME BEGIN	Ch 1		Ch 2		COMBINED		DAY: MONDAY
	AK	PK	AK	PK	AK	PK	
12:00	96	222	0	0	96	222	
12:15	97	232	0	0	97	232	
12:30	71	205	0	0	71	205	
12:45	64	246	0	0	64	246	905
1:00	50	270	0	0	50	270	
1:15	58	257	0	0	58	257	
1:30	44	232	0	0	44	232	
1:45	41	264	0	0	41	264	1023
2:00	39	300	0	0	39	300	
2:15	32	308	0	0	32	308	
2:30	34	289	0	0	34	289	
2:45	23	305	0	0	23	305	1202
3:00	20	311	0	0	20	311	
3:15	26	339	0	0	26	339	
3:30	22	384	0	0	22	384	
3:45	21	379	0	0	21	379	1413
4:00	19	388	0	0	19	388	
4:15	20	338	0	0	20	338	
4:30	18	385	0	0	18	385	
4:45	21	352	0	0	21	352	1463
5:00	29	364	0	0	29	364	
5:15	33	397	0	0	33	397	
5:30	32	405	0	0	32	405	
5:45	52	399	0	0	52	399	1565
6:00	75	362	0	0	75	362	
6:15	117	368	0	0	117	368	
6:30	137	365	0	0	137	365	
6:45	123	346	0	0	123	346	1471
7:00	125	308	0	0	125	308	
7:15	129	285	0	0	129	285	
7:30	133	330	0	0	133	330	
7:45	149	286	0	0	149	286	1209
8:00	126	306	0	0	126	306	
8:15	128	314	0	0	128	314	
8:30	145	271	0	0	145	271	
8:45	124	225	0	0	124	225	1116
9:00	116	262	0	0	116	262	
9:15	142	260	0	0	142	260	
9:30	147	233	0	0	147	233	
9:45	153	219	0	0	153	219	974
10:00	168	180	0	0	168	180	
10:15	154	160	0	0	154	160	
10:30	147	151	0	0	147	151	
10:45	184	129	0	0	184	129	620
11:00	226	127	0	0	226	127	
11:15	201	132	0	0	201	132	
11:30	190	122	0	0	190	122	
11:45	246	108	0	0	246	108	489
TOTALS	4547	13450	0	0	4547	13450	
DAY TOTALS		17997				17997	
SPLIT %	3100.0	3100.0	0	0			
PEAK HOUR	11:00	5:15	*	*	11:00	5:15	
VOLUME	863	1593	*	*	863	1593	
P.H.P.	0.88	0.98	*	*	0.88	0.98	



SITE CODE : 00000001
 Location : KANEHAMEHA HWY. RAMP E
 Weather : DRY, SUNNY
 Operator : HM

WAIPAHU WASTE FACILITY

PAGE: 2
 FILE: RANPE

DATE: 8/25/92

TIME BEGIN	----- Ch 1 -----		----- Ch 2 -----				----- COMBINED -----		DAY: TUESDAY	
	AM	PM	AM	PM	AM	PM	AM	PM		
12:00	96	234	0	0	96	234				
12:15	97	248	0	0	97	248				
12:30	71	239	0	0	71	239				
12:45	64	328	217	938	0	0	64	328	217	938
1:00	50	205	0	0	50	205				
1:15	58	223	0	0	58	223				
1:30	44	256	0	0	44	256				
1:45	41	193	228	912	0	0	41	193	228	912
2:00	39	267	0	0	39	267				
2:15	32	270	0	0	32	270				
2:30	34	266	0	0	34	266				
2:45	23	128	293	1096	0	0	23	128	293	1096
3:00	20	345	0	0	20	345				
3:15	26	345	0	0	26	345				
3:30	22	383	0	0	22	383				
3:45	21	89	357	1430	0	0	21	89	357	1430
4:00	19	400	0	0	19	400				
4:15	20	410	0	0	20	410				
4:30	18	379	0	0	18	379				
4:45	21	78	387	1576	0	0	21	78	387	1576
5:00	29	372	0	0	29	372				
5:15	33	378	0	0	33	378				
5:30	32	406	0	0	32	406				
5:45	52	146	426	1582	0	0	52	146	426	1582
6:00	75	388	0	0	75	388				
6:15	117	388	0	0	117	388				
6:30	137	379	0	0	137	379				
6:45	123	452	381	1536	0	0	123	452	381	1536
7:00	125	355	0	0	125	355				
7:15	129	343	0	0	129	343				
7:30	133	281	0	0	133	281				
7:45	149	536	281	1260	0	0	149	536	281	1260
8:00	126	269	0	0	126	269				
8:15	128	280	0	0	128	280				
8:30	145	294	0	0	145	294				
8:45	124	523	263	1106	0	0	124	523	263	1106
9:00	116	263	0	0	116	263				
9:15	142	288	0	0	142	288				
9:30	147	264	0	0	147	264				
9:45	153	558	213	1028	0	0	153	558	213	1028
10:00	168	187	0	0	168	187				
10:15	154	190	0	0	154	190				
10:30	147	167	0	0	147	167				
10:45	187	656	147	691	0	0	187	656	147	691
11:00	227	139	0	0	227	139				
11:15	215	134	0	0	215	134				
11:30	200	129	0	0	200	129				
11:45	222	864	125	527	0	0	222	864	125	527
TOTALS	4551	13682	0	0	4551	13682				
DAY TOTALS		18233				18233				
SPLIT %	100.0	100.0	0	0						
PEAK HOUR	11:00	5:30	*	*	11:00	5:30				
VOLUME	864	1608	*	*	864	1608				
P.H.F.	0.95	0.94	*	*	0.95	0.94				

WAIPAHU WASTE FACILITY

PAGE: 3
FILE: RANPE

SITE CODE : 00000001
Location : KANEHANA HWY. RAMP E
Weather : DRY, SUNNY
Operator : HM

DATE: 8/26/92

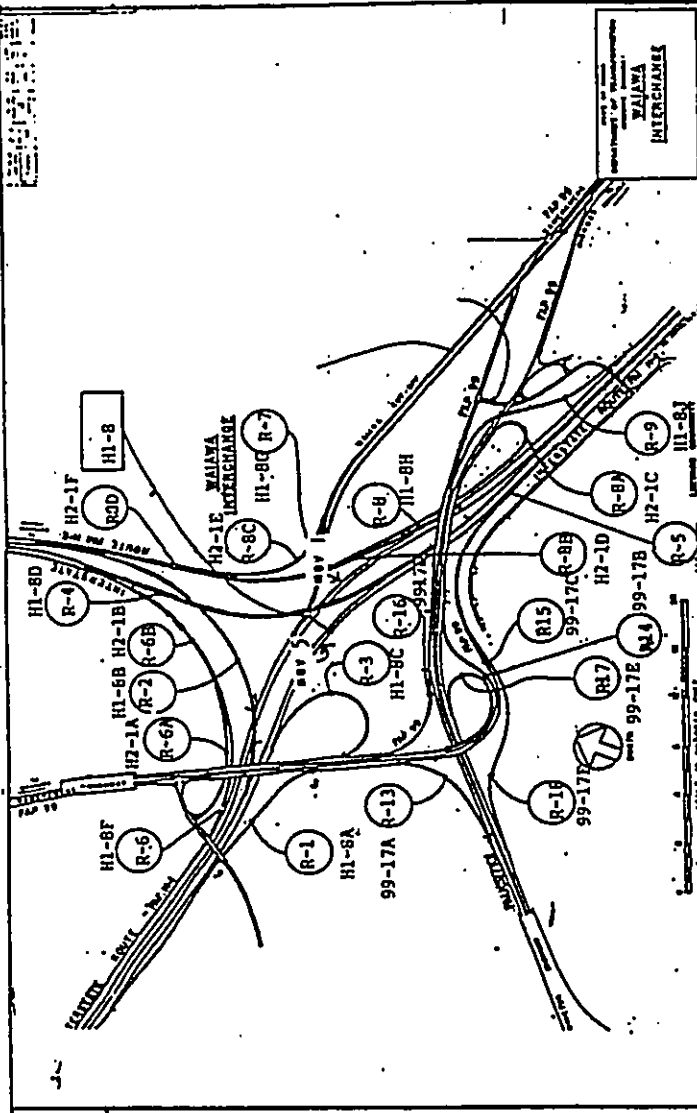
DAY: WEDNESDAY

TIME BEGIN	Ch 1		Ch 2				COMBINED		DAY: WEDNESDAY
	AM	PM	AM	PK	AM	PK			
12:00	107	231	0	0	107	231			
12:15	110	238	0	0	110	238			
12:30	65	224	0	0	65	224			
12:45	56	235	928	0	56	235	338	928	
1:00	57	257	0	0	57	257			
1:15	40	276	0	0	40	276			
1:30	35	230	0	0	35	230			
1:45	40	257	1020	0	40	257	172	1020	
2:00	39	281	0	0	39	281			
2:15	52	265	0	0	52	265			
2:30	29	310	0	0	29	310			
2:45	31	856	0	0	31	856	151	856	
3:00	24		0	0	24				
3:15	18		0	0	18				
3:30	17		0	0	17				
3:45	20	79	0	0	20	79	79		
4:00	18		0	0	18				
4:15	18		0	0	18				
4:30	19		0	0	19				
4:45	20	75	0	0	20	75	75		
5:00	28		0	0	28				
5:15	36		0	0	36				
5:30	37		0	0	37				
5:45	54	155	0	0	54	155	155		
6:00	81		0	0	81				
6:15	119		0	0	119				
6:30	157		0	0	157				
6:45	132	489	0	0	132	489	489		
7:00	124		0	0	124				
7:15	107		0	0	107				
7:30	145		0	0	145				
7:45	154	530	0	0	154	530	530		
8:00	140		0	0	140				
8:15	139		0	0	139				
8:30	138		0	0	138				
8:45	136	553	0	0	136	553	553		
9:00	153		0	0	153				
9:15	121		0	0	121				
9:30	156		0	0	156				
9:45	138	568	0	0	138	568	568		
10:00	182		0	0	182				
10:15	170		0	0	170				
10:30	170		0	0	170				
10:45	166	688	0	0	166	688	688		
11:00	216		0	0	216				
11:15	197		0	0	197				
11:30	181		0	0	181				
11:45	246	840	0	0	246	840	840		
TOTALS	4638	2804	0	0	4638	2804			
DAY TOTALS		7442				7442			
SPLIT %	3100.0	3100.0							
PEAK HOUR	11:00	1:45			11:00	1:45			
VOLUME	840	1113			840	1113			
P.H.F.	0.85	0.90			0.85	0.90			

24-HOUR TRAFFIC COUNT-STATION SUMMARY

INTERCHANGE NO: 8 SHT: 1 OF 3

INTERCHANGE: MALAWA
 HIGHWAY: H-1
 Fwy STA. NO: H1-8 RTE: HP:
 HWY: H-1
 LOCATION: BEST OF H-2 F-R CONNECTION
 NOV (1): DIR: TO RAJALAKSHMI
 NOV (5): DIR: TO AIRAKOA AVENUE
 STA. NO: H1-8A
 HWY: H-1 FREEWAY
 LOCATION: MALAWA IC OFF RAMP R-1
 NOV (5): DIR: H-1 EB TO KAM HWY SB
 STA. NO: H1-8B
 HWY: H-1 FREEWAY
 LOCATION: MALAWA IC OFF RAMP R-2
 NOV (5): DIR: H-1 EB TO H-2 NB
 STA. NO: H1-8C
 HWY: H-1 FREEWAY
 LOCATION: MALAWA IC OFF RAMP R-3
 NOV (5): DIR: H-1 EB TO KAM HWY NB
 STA. NO: H1-8D
 HWY: H-1 FREEWAY
 LOCATION: MALAWA IC ON RAMP R-4
 NOV (5): DIR: H-2 SB TO H-1 EB
 STA. NO: H1-8E
 HWY: H-1 FREEWAY
 LOCATION: MALAWA IC ON RAMP R-5
 NOV (5): DIR: KAM HWY SB TO H-1 EB
 STA. NO: H1-8F
 HWY: H-1 FREEWAY
 LOCATION: MALAWA IC ON RAMP R-6
 NOV (1): DIR: H-2 SB TO H-1 EB



SURVEY DATE	RTE D-1		RTE D-2		TOTAL	STA. NO: H1-8A		STA. NO: H1-8B		STA. NO: H1-8C		STA. NO: H1-8D		STA. NO: H1-8E		STA. NO: H1-8F	
	MOV (5)	HOV (1)	MOV (5)	HOV (1)		R- (1)	MOV (5)	R- (2)	MOV (5)	R- (3)	MOV (5)	R- (4)	MOV (5)	R- (5)	MOV (5)	R- (6)	MOV (1)
01/25/84-03/22/84	19813	17328	24968	21575	37141	3223	1235	1144	1447	18147*	9605	1367	4068				
06/26/86-07/01/86	-	-	-	-	46543	2361	906	1447	-	22351	-	21070	-	-	-	-	-
03/10-11/87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08-23/87	16853	36320	-	-	53173	3395	1524	1764	1764	25764	-	-	-	-	-	-	-
08/30/89	34603	-	-	-	-	-	-	-	-	32049	-	-	-	-	-	-	-
12/26-27/89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/13-15/90	37472	31880	-	-	69352	5480	2806	1693	1693	29695	21937	3298	4036	-	-	-	-
12/12-13/91	-	-	-	-	-	5847	3570	2144	2144	-	-	-	-	-	-	-	-

INTERCHANGE NO: 8 (Sht 1 of 3)

* meter malfunction (counter printer jammed)

20-Dec-91

State of Hawaii, Department of Transportation, Highways Division

ISLAND: OAHU
STATION NO: H1-8C
AUX NO: H1-EB-8C
FUND SYSTEM:

STATION DESCRIPTION: H-1 FREEWAY EASTBOUND
WAIANA I.C. OFF-RAMP, R-3
OAHU

IC NO. 312
ID NO. 14

COUNT GROUP ID: M.P.:
ROUTE NO H-1 FREEWAY EASTBOUND
HWY ST NAME H-1 FREEWAY EASTBOUND
MOV(S) DIR: TO KAH HWY NB
MOV(0) DIR:

CORRIDOR ID:
SURVEY DATE:
D-01 BEG SURVEY DATE: 12/12/91
D-08 BEG SURVEY DATE: 12/12/91

ASSIGNED DATE:
START TIME: 09:30
START TIME: 09:30

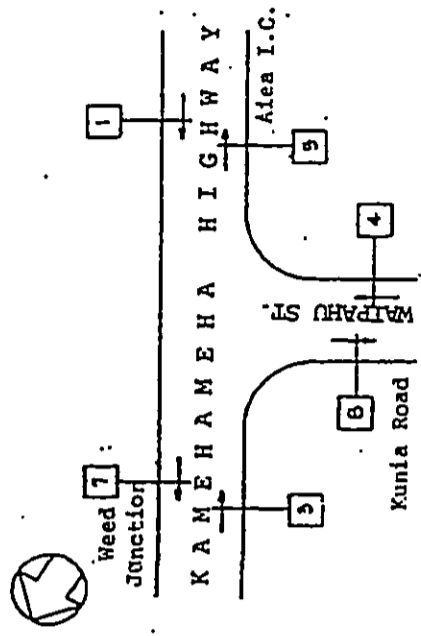
TIME-AM	MOV 5	MOV 0	MOV 5	MOV 0	MOV 5	MOV 0	MOV 5	MOV 0	MOV 5	MOV 0	TOTAL
12:00-12:15	5	0	5	0	16	0	16	0	27	0	27
12:15-12:30	5	0	15	0	15	0	30	0	20	0	20
12:30-12:45	3	0	30	0	30	0	21	0	25	0	25
12:45-1:00	6	0	6	0	21	0	27	0	35	0	35
1:00-1:15	6	0	6	0	27	0	27	0	27	0	27
1:15-1:30	0	0	34	0	34	0	34	0	26	0	26
1:30-1:45	3	0	63	0	63	0	34	0	39	0	39
1:45-2:00	2	0	34	0	34	0	34	0	28	0	28
2:00-2:15	2	0	13	0	13	0	13	0	26	0	26
2:15-2:30	2	0	32	0	32	0	32	0	44	0	44
2:30-2:45	2	0	31	0	31	0	31	0	32	0	32
2:45-3:00	2	0	17	0	17	0	17	0	37	0	37
3:00-3:15	2	0	26	0	26	0	26	0	38	0	38
3:15-3:30	0	0	19	0	19	0	19	0	38	0	38
3:30-3:45	1	0	31	0	31	0	31	0	42	0	42
3:45-4:00	1	0	27	0	27	0	27	0	50	0	50
4:00-4:15	2	0	23	0	23	0	23	0	61	0	61
4:15-4:30	2	0	29	0	29	0	29	0	71	0	71
4:30-4:45	2	0	19	0	19	0	19	0	56	0	56
4:45-5:00	5	0	23	0	23	0	23	0	35	0	35
5:00-5:15	7	0	21	0	21	0	21	0	47	0	47
5:15-5:30	12	0	20	0	20	0	20	0	42	0	42
5:30-5:45	15	0	18	0	18	0	18	0	44	0	44
5:45-6:00	18	0	27	0	27	0	27	0	41	0	41

AM	MOV 5	MOV 0	MOV 5	MOV 0	MOV 5	MOV 0	TOTAL
AM-COUNTED PERIOD (05:00 - 09:00)	150	0	150	0	150	0	150
AM-DIRECTIONAL PEAK:							
AM-PEAK BY TIME	150	0	150	0	150	0	150
AM-PEAK BY VOLUME	150	0	150	0	150	0	150
AM-F FACTOR(1)	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-F	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-DIRECTIONAL PEAK:							
AM-PEAK BY TIME	150	0	150	0	150	0	150
AM-PEAK BY VOLUME	150	0	150	0	150	0	150
AM-F FACTOR(1)	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-F	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-COUNTED PERIOD (09:00 - 15:00)	130	0	130	0	130	0	130
AM-DIRECTIONAL PEAK:							
AM-PEAK BY TIME	130	0	130	0	130	0	130
AM-PEAK BY VOLUME	130	0	130	0	130	0	130
AM-F FACTOR(1)	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-F	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-COUNTED PERIOD (15:00 - 19:00)	130	0	130	0	130	0	130
AM-DIRECTIONAL PEAK:							
AM-PEAK BY TIME	130	0	130	0	130	0	130
AM-PEAK BY VOLUME	130	0	130	0	130	0	130
AM-F FACTOR(1)	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-F	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-COUNTED PERIOD (19:00 - 24:00)	130	0	130	0	130	0	130
AM-DIRECTIONAL PEAK:							
AM-PEAK BY TIME	130	0	130	0	130	0	130
AM-PEAK BY VOLUME	130	0	130	0	130	0	130
AM-F FACTOR(1)	1.00	0.00	1.00	0.00	1.00	0.00	1.00
AM-F	1.00	0.00	1.00	0.00	1.00	0.00	1.00

24-HOUR TRAFFIC COUNT-STATION SUMMARY

Station No: C-13-K Count Type: _____ Group: _____ Old No: _____
 Location: Kamehameha Highway at Waipahu Street (Oahu Sugar Co UP)

STATION CHARACTERISTICS	INTERSECTION APPROACHES			
	LEG 1	LEG 2	LEG 3	LEG 4
Traffic Control	3 - P H A S E	A C T U A T E D		
Width of Approach (Ft)				
No. of Lanes at Approach	2		2	1
Separate Turning Lane (Lt,Rt,Lt/Rt)	Left		Right	Lt/Rt
Parking (AM, PM, All Day, None)				
Bus Stop (NS:Near Side/FS:Far Side)	None		None	None



DATE	24-HOUR TRAFFIC VOLUME BY MOVEMENT												VEHICLES ENTERING INTERSECTION		
	MOV 01	MOV 02	MOV 03	MOV 04	MOV 05	MOV 06	MOV 07	MOV 08	MOV 09	MOV 10	MOV 11	MOV 12	TOTAL	TOTAL	TOTAL
	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
11/79	14879	16595	31474	-	-	13165	13447	26612	7657	5659	13316	35701			
10/80	14662	15407	61543	-	-	12138	13013	25151	7375	5755	13130	34175			
06/82	14891	15647	30538	-	-	12863	13759	26622	7843	6191	14034	35597			
06/15-16/83	16289	17069	33358	-	-	13820	14731	28551	8007	6316	14323	38116			
04/23-24/84	20180	19141	39321	-	-	15099	15948	31047	8859	6893	15752	44138			
04/29-30/85	18646	-	-	-	-	16111	-	-	6383	-	-	41140			
06/29-30/87	21277	22487	43764	-	-	18799	19260	38059	9684	7659	17343	49760			
06/29-30/88	23175	25120	48295	(VTC)	-	-	-	-	-	-	-	-			
06/29-30/88	22386	23837	46223	-	-	-	-	-	-	-	-	-			
02/09-10/89*	30019	16281	46300	-	-	19779	20595	40374	12440	9806	22246	54605			
08/23-24/89	24478	20477	44955	-	-	20075	14827	34902	8261	10258	18525	58361			
06/18-19/90	20290	21283	41573	-	-	17558	18571	36129	12959	7630	20589	54995			
06/18-19/90	-	-	-	-	-	16051	16664	33515	10749	7700	18449	47890			
05/20-21/91	19139	21450	40589	-	-	16649	16510	33159 (VTC)	-	-	-	-			
				-	-	16516	16868	33384	-	-	-	-			

11/25/91 08:29

State of Hawaii, Department of Transportation, Highways Division

RKY Page: 1

Volume Unclassified Output #1

ISLAND: 2

STATION NO: C-13-K STATION DESCRIPTION: KAMEHAMEHA HIGHWAY,

AT WAI'PAHU STREET (OAHU SUGAR MILL UP)

AUX NO: C-13-K COUNT GROUP ID: M.P:

FUND SYSTEM: ROUTE NO:

FILE: LEG1 HWY ST NAME: KAMEHAMEHA HIGHWAY

MOV (1), DIR: TO WEED JCT

MOV (5), DIR: TO PEARL HARBOR IC

SURVEY DATE: 05/20/91 - 05/20/91

CORRIDOR ID: D-2

BEG SURVEY DATE: 05/20/91

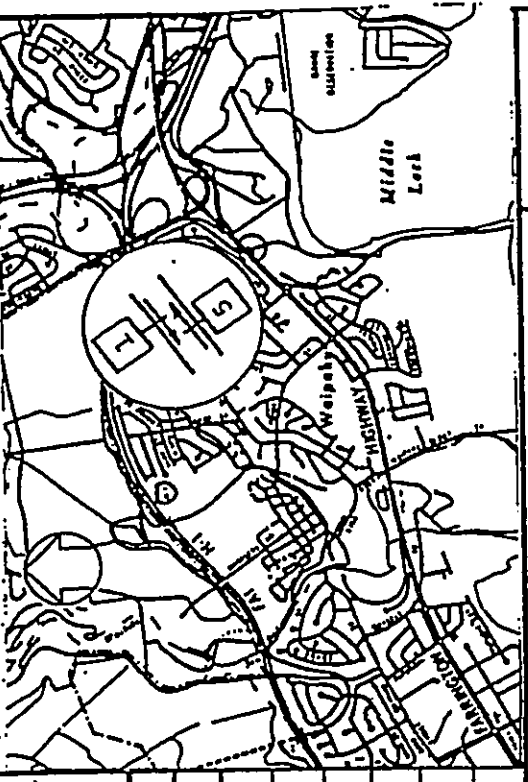
START TIME: 09:00

BEG SURVEY DATE: 05/20/91

START TIME: 09:00

ASSIGNED DATE: 05/20/91

TIME-AM	MOV 1	MOV 5	TOTAL	TIME-AM	MOV 1	MOV 5	TOTAL	TIME-PM	MOV 1	MOV 5	TOTAL	TIME-PM	MOV 1	MOV 5	TOT
00:00 - 00:15	88	31	119	06:00 - 06:15	98	559	657	12:00 - 12:15	176	237	413	18:00 - 18:15	409	248	657
00:15 - 00:30	103	29	132	06:15 - 06:30	137	548	685	12:15 - 12:30	233	216	449	18:15 - 18:30	422	230	652
00:30 - 00:45	63	21	84	* 06:30 - 06:45	168	571	739	12:30 - 12:45	216	245	461	18:30 - 18:45	386	269	655
00:45 - 01:00	58	29	87	* 06:45 - 07:00	204	592	796	12:45 - 13:00	221	240	461	18:45 - 19:00	348	223	571
01:00 - 01:15	60	20	80	* 07:00 - 07:15	220	608	828	13:00 - 13:15	246	228	474	19:00 - 19:15	322	221	543
01:15 - 01:30	47	20	67	* 07:15 - 07:30	204	589	793	13:15 - 13:30	204	242	446	19:15 - 19:30	310	203	513
01:30 - 01:45	39	24	63	07:30 - 07:45	228	507	735	13:30 - 13:45	240	266	506	19:30 - 19:45	272	192	464
01:45 - 02:00	38	18	56	07:45 - 08:00	238	488	726	13:45 - 14:00	231	245	476	19:45 - 20:00	285	165	450
02:00 - 02:15	37	16	53	08:00 - 08:15	166	367	533	14:00 - 14:15	237	315	552	20:00 - 20:15	275	164	439
02:15 - 02:30	35	14	49	08:15 - 08:30	156	369	525	14:15 - 14:30	322	274	596	20:15 - 20:30	256	162	418
02:30 - 02:45	25	22	47	08:30 - 08:45	138	321	459	14:30 - 14:45	324	298	622	20:30 - 20:45	238	119	357
02:45 - 03:00	18	19	37	08:45 - 09:00	136	306	442	14:45 - 15:00	360	312	672	20:45 - 21:00	237	122	359
03:00 - 03:15	12	14	26	09:00 - 09:15	158	292	450	15:00 - 15:15	354	285	639	21:00 - 21:15	273	151	424
03:15 - 03:30	17	29	46	09:15 - 09:30	146	298	444	15:15 - 15:30	383	321	704	21:15 - 21:30	244	131	375
03:30 - 03:45	23	30	53	09:30 - 09:45	156	284	440*	15:30 - 15:45	433	351	784	21:30 - 21:45	224	125	349
03:45 - 04:00	13	32	45	09:45 - 10:00	159	278	437*	15:45 - 16:00	447	288	735	21:45 - 22:00	200	118	318
04:00 - 04:15	18	47	65	10:00 - 10:15	156	247	403*	16:00 - 16:15	425	253	678	22:00 - 22:15	171	90	261
04:15 - 04:30	19	61	80	10:15 - 10:30	176	256	432*	16:15 - 16:30	474	256	730	22:15 - 22:30	162	110	272
04:30 - 04:45	19	148	167	10:30 - 10:45	187	265	452	16:30 - 16:45	432	270	702	22:30 - 22:45	139	101	240
04:45 - 05:00	30	145	175	10:45 - 11:00	185	281	466	16:45 - 17:00	460	288	748	22:45 - 23:00	157	81	238
05:00 - 05:15	32	277	309	11:00 - 11:15	190	254	444	17:00 - 17:15	446	241	687	23:00 - 23:15	127	56	183
05:15 - 05:30	65	404	469	11:15 - 11:30	192	244	436	17:15 - 17:30	441	268	709	23:15 - 23:30	115	47	162
05:30 - 05:45	74	543	617	11:30 - 11:45	170	217	387	17:30 - 17:45	436	243	679	23:30 - 23:45	104	53	157
05:45 - 06:00	93	605	698	11:45 - 12:00	193	251	444	17:45 - 18:00	450	256	706	23:45 - 00:00	85	41	126
AM-TOTAL	5187	MOV- 1	TOTAL	MOV- 5	11590	MOV- 5	16777	PM-TOTAL	13952	MOV- 1	9860	MOV- 5	23812	TOTAL	23812
6:00-12:00 TOT	4161	8992	13153	12:00-6:00 TOT	8191	14629									
AM-PEAK HR TIME	06:30 - 07:30	2360	3156	PM-PEAK HR TIME	15:30 - 16:30	1779									
* PEAK-HR TOTAL	796			*PEAK-HR TOTAL	1148	2927									
AM D-% (PEAK-HR)	25.2	74.8	100.00	PM D-% (PEAK-HR)	60.8	100.00									
AM D-% (MN-12N)	30.9	69.1	100.00	PM D-% (12N-MN)	58.6	100.00									
AM K FACTOR		7.8		PM K FACTOR		7.2									
DIRECTIONAL TOTALS	MOV- 1	D%	MOV- 5	D%	MOV- 1	D%	MOV- 5	D%	24-HOUR TOTAL		40589				
	MOV- 1	D%	MOV- 5	D%	MOV- 1	D%	MOV- 5	D%							
	47.2	47.2	47.2	47.2	47.2	47.2	47.2	47.2							



Station No: C-8-G Count Type: Group: Old No: _____

Location: Farrington Highway at Oahu Sugar Company Road Overpass

STATION CHARACTERISTICS	ROAD SECTION	
	D-1	D-2
Number of Lanes		
Lane Width (Ft)		
Lateral Clearance (Ft) Left/Right		
Detection Method (Loops/Hose)		
Special Conditions:		

Hwy Divided: No Yes Type:

		24-HOUR TRAFFIC VOLUMES													
Col. I.D.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
Traffic I.D.	D-1	D-2	TOTAL												
DATE	MOV 5	MOV 1													
09/79	18175	19838	38013												
07/81	17865	20033	37898												
06/82	16402	20258	36660												
01/25-26/83	15671	18816	34487												
04/23-24/84	16982	19376	36358	(VTC)											
04/29-30/85	17888	20324	38212												
01/20-21/86	17658	20198	37856												
11/12-13/87	17905	18642	36547												
04/03-04/89	19222	23287	42509	(VTC)											
03/19-20/90	20645	19654	40299												
01/09-10/91	19665	22763	42428												

STATION NO: C-8-G

15-Jan-91

State of Hawaii, Department of Transportation, Highways Division

ISLAND: OAHU
STATION NO: C-8-G
AUX NO:
FUND SYSTEM:
FILE:

STATION DESCRIPTION: FARRINGTON HIGHWAY
AT SUGAR CO. ROAD UNDERPASS
OAHU

TC NO.
ID NO.

7105
1

COUNT GROUP ID:
ROUTE NO
M.P. 1
Hwy ST NAME FARRINGTON HIGHWAY
MOV 1 1, DIR: TO KUNIA ROAD
MOV 5 1, DIR: TO HAIKUA I.C.

CORRIDOR ID:
SURVEY DATE:

ASSIGNED DATE:

D-02
D-01

BEG SURVEY DATE: 01/09/91
BEG SURVEY DATE: 01/09/91

START TIME: 08:30
START TIME: 08:30

TIME-AM	MOV 1	MOV 5	TOTAL	TIME-AM	MOV 1	MOV 5	TOTAL	TIME-PM	MOV 1	MOV 5	TOTAL
12:00-12:15	87	27	114	6:00-6:15	166	537	703	12:00-12:15	358	267	625
12:15-12:30	82	34	116	6:15-6:30	186	524	710	12:15-12:30	287	251	538
12:30-12:45	91	25	116	6:30-6:45	200	375	575	12:30-12:45	321	307	628
1:00-1:15	43	27	70	6:45-7:00	227	355	582	1:00-1:15	374	248	622
1:15-1:30	33	24	57	7:00-7:15	262	357	619	1:15-1:30	327	241	568
1:30-1:45	32	16	48	7:15-7:30	330	311	641	1:30-1:45	329	299	628
1:45-2:00	30	18	48	7:30-7:45	364	331	695	1:45-2:00	331	315	646
2:00-2:15	38	18	56	7:45-8:00	362	299	661	2:00-2:15	375	315	690
2:15-2:30	24	16	40	8:00-8:15	273	270	543	2:15-2:30	413	315	728
2:30-2:45	24	11	35	8:15-8:30	282	230	512	2:30-2:45	413	319	732
2:45-3:00	24	11	35	8:30-8:45	258	274	531	2:45-3:00	384	345	729
3:00-3:15	18	16	34	8:45-9:00	258	265	523	3:00-3:15	437	316	753
3:15-3:30	18	17	35	9:00-9:15	248	262	510	3:15-3:30	402	322	724
3:30-3:45	18	18	36	9:15-9:30	248	238	486	3:30-3:45	459	308	767
3:45-4:00	22	18	40	9:30-9:45	269	255	524	3:45-4:00	479	423	902
4:00-4:15	21	32	53	9:45-10:00	292	272	564	4:00-4:15	481	330	811
4:15-4:30	24	32	56	10:00-10:15	292	253	545	4:15-4:30	474	352	826
4:30-4:45	44	99	143	10:15-10:30	374	262	636	4:30-4:45	466	383	849
4:45-5:00	37	116	153	10:30-10:45	309	278	587	5:00-5:15	458	273	731
5:00-5:15	58	188	246	11:00-11:15	317	285	602	5:15-5:30	481	251	732
5:15-5:30	76	274	350	11:15-11:30	348	232	586	5:30-5:45	443	260	703
5:30-5:45	106	451	557	11:30-11:45	312	232	544	5:45-6:00	425	293	718
5:45-6:00	162	517	679	11:45-12:00	317	232	549		407	257	664

PM COMPUTER PERIOD (05:00 - 05:00)	MOV 1	MOV 5	TOTAL	PM COMPUTER PERIOD (15:00 - 15:00)	MOV 1	MOV 5	TOTAL
TWO-DIRECTIONAL PERM:				TWO-DIRECTIONAL PERM:			
AM-PERK HR TIME	714		714	AM-PERK HR TIME	1,900		1,900
PM-PERK HR VOLUME	26.77		26.77	PM-PERK HR VOLUME	57.35		57.35
AM-K FACTOR(1)				AM-K FACTOR(1)			
PM-K FACTOR(1)				PM-K FACTOR(1)			
DIRECTIONAL PERM:				DIRECTIONAL PERM:			
AM PERK-HR VOLUME	1,329		1,329	AM PERK-HR VOLUME	1,905		1,905
PM PERK-HR VOLUME				PM PERK-HR VOLUME	1,905		1,905
PM PERIOD (05:00-12:00)				PM PERIOD (12:00-21:00)			
TWO-DIRECTIONAL PERM:				TWO-DIRECTIONAL PERM:			
AM-PERK HR TIME	714		714	AM-PERK HR TIME	1,900		1,900
PM-PERK HR VOLUME	26.77		26.77	PM-PERK HR VOLUME	57.35		57.35
AM-K FACTOR(1)				AM-K FACTOR(1)			
PM-K FACTOR(1)				PM-K FACTOR(1)			
NON-COMPUTER PERIOD (09:00 - 15:00)				NON-COMPUTER PERIOD (09:00 - 15:00)			
TWO-DIRECTIONAL PERM:				TWO-DIRECTIONAL PERM:			
PERK HR TIME				PERK HR TIME			
PERK HR VOLUME				PERK HR VOLUME			
DIRECTIONAL PERM:				DIRECTIONAL PERM:			
PERK HR TIME				PERK HR TIME			
PERK HR VOLUME				PERK HR VOLUME			

6-HR, 12-HR, AND 24-HR PERIODS
 AM 6-HR PERIOD (06:00 - 12:00)
 PM 6-HR PERIOD (12:00 - 18:00)
 AM 12-HR PERIOD (06:00 - 18:00)
 PM 12-HR PERIOD (12:00 - 24:00)
 24 HOUR PERIOD
 0 X