DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
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JEREMY HARRIS
MAYOR

MICHAEL T. AMII
DIRECTOR

JOHN R. SABAS
DEPUTY DIRECTOR

November 26, 2002

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Final Environmental Assessment – Aloha Gardens
Pa'alaa Uka, Waialua, Oahu, TMK: 6-4-3: Portion of 3

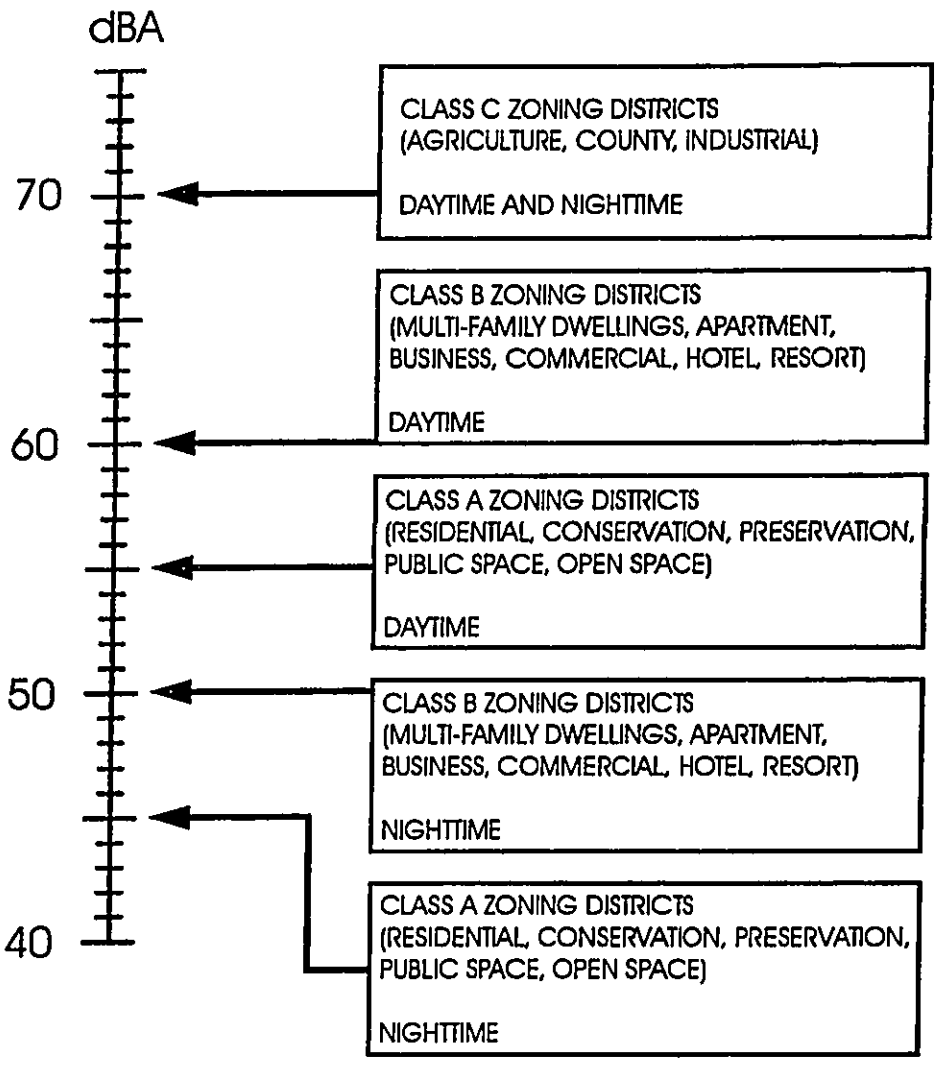
The Department of Community Services has reviewed the final environmental assessment for the subject project and, based on the final Environmental Assessment, we respectfully request a Finding of No Significant Impact (FONSI) for the proposed Aloha gardens development. Accordingly, please publish the notice of availability for this project in the December 8, 2002 Office of Environmental Quality Control (OEQC) Environmental Notice.

Enclosed, please find a completed OEQC Publication form, four copies of the final EA, and the project summary on disk. Should you have any questions on this matter, please feel free to call upon Mr. Ernie Martin of our department's Office of Special Projects at 527-6264.

Sincerely,

MICHAEL T. AMII
Director

MTA:ds



NOTE: SOUND LEVELS INDICATED BY ZONING DISTRICT ARE THE "MAXIMUM PERMISSIBLE" SOUND LEVELS DUE TO EXCESSIVE NOISE SOURCES SUCH AS STATIONARY MECHANICAL EQUIPMENT AND EQUIPMENT RELATED TO AGRICULTURAL, CONSTRUCTION AND INDUSTRIAL ACTIVITIES THAT SHALL NOT BE EXCEEDED FOR MORE THAN 10% OF THE TIME WITHIN ANY 20-MINUTE PERIOD DURING THE TIME PERIOD SHOWN.

(DAYTIME: 7:00 A.M. TO 10:00 P.M., NIGHTTIME: 10:00 P.M. TO 7:00 A.M.)

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FIGURE 2 - DOH MAXIMUM PERMISSIBLE SOUND LEVELS FOR VARIOUS ZONING DISTRICTS

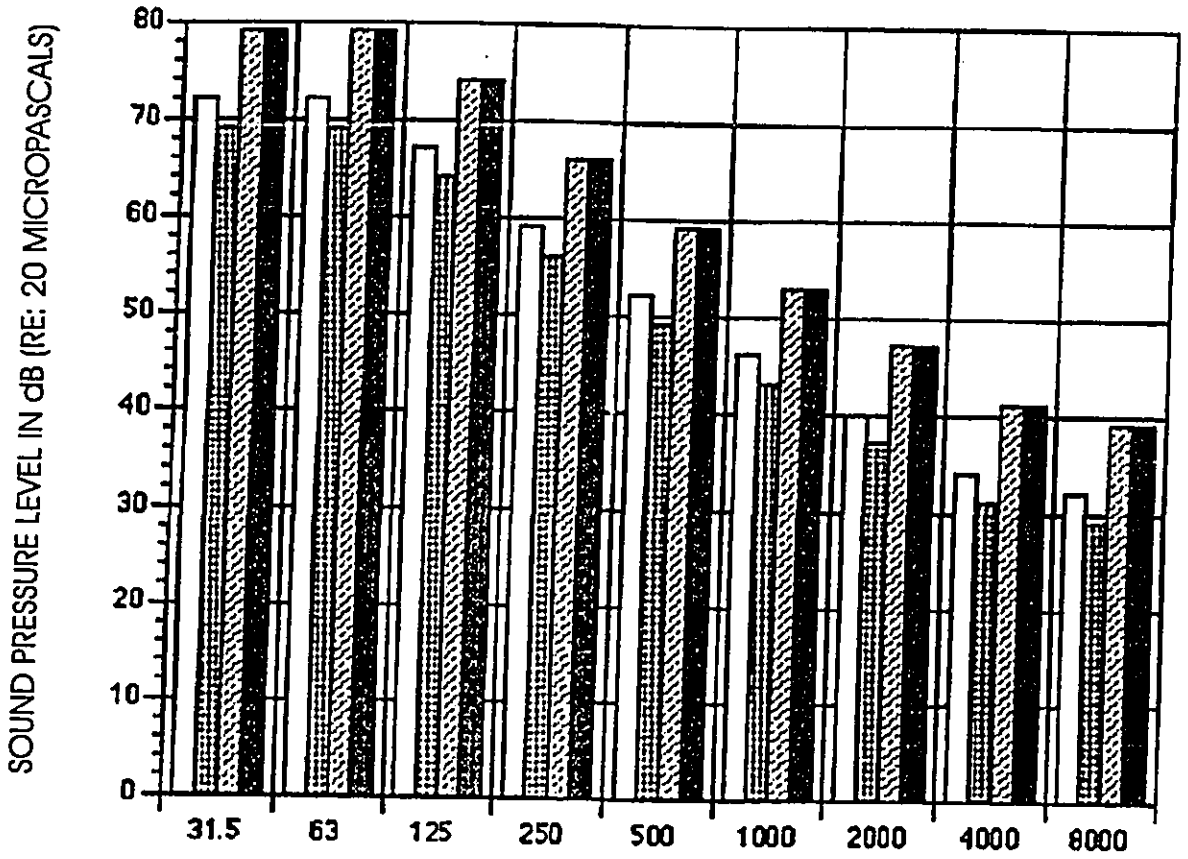

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FIGURE 3 - LUO NOISE REGULATION

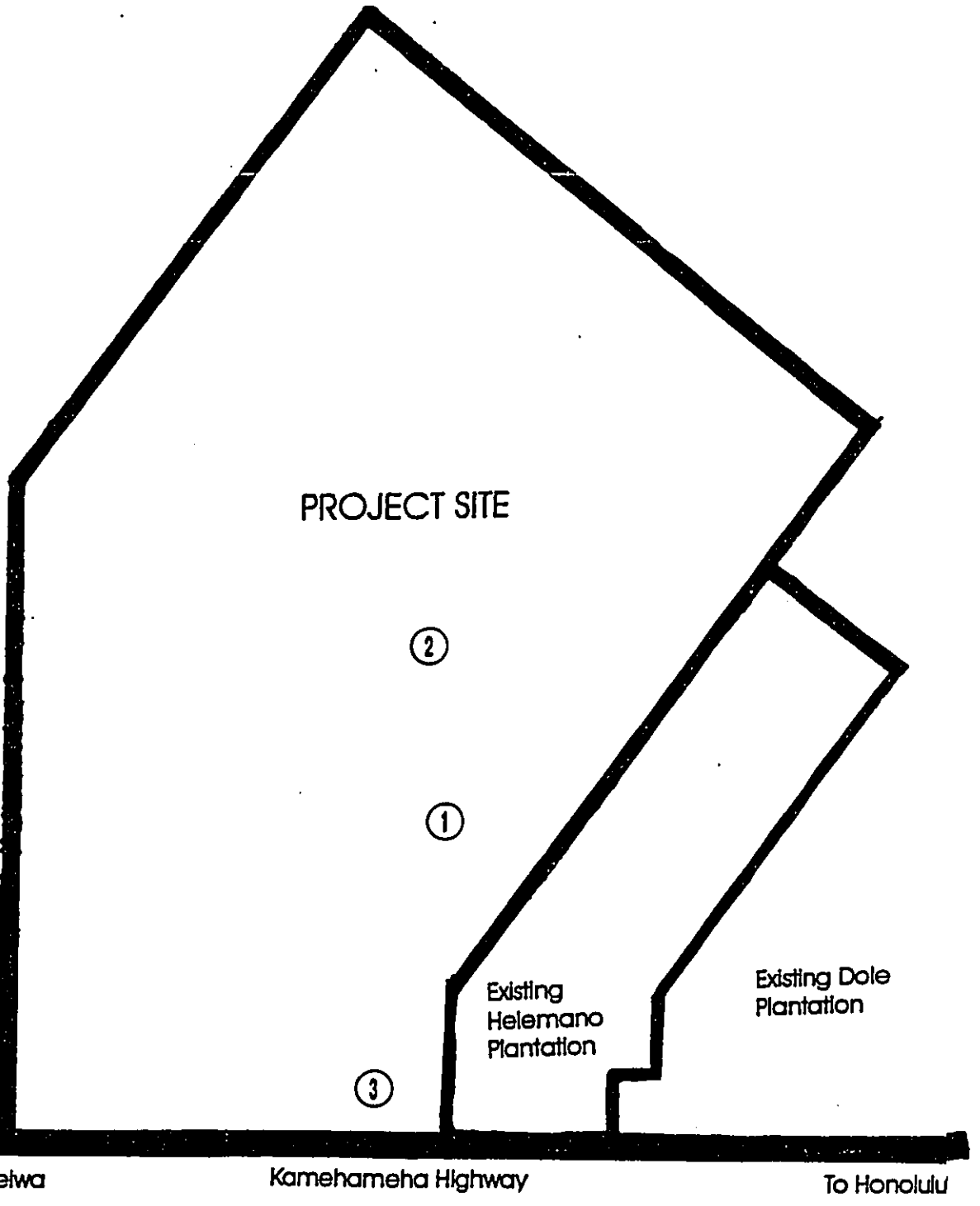

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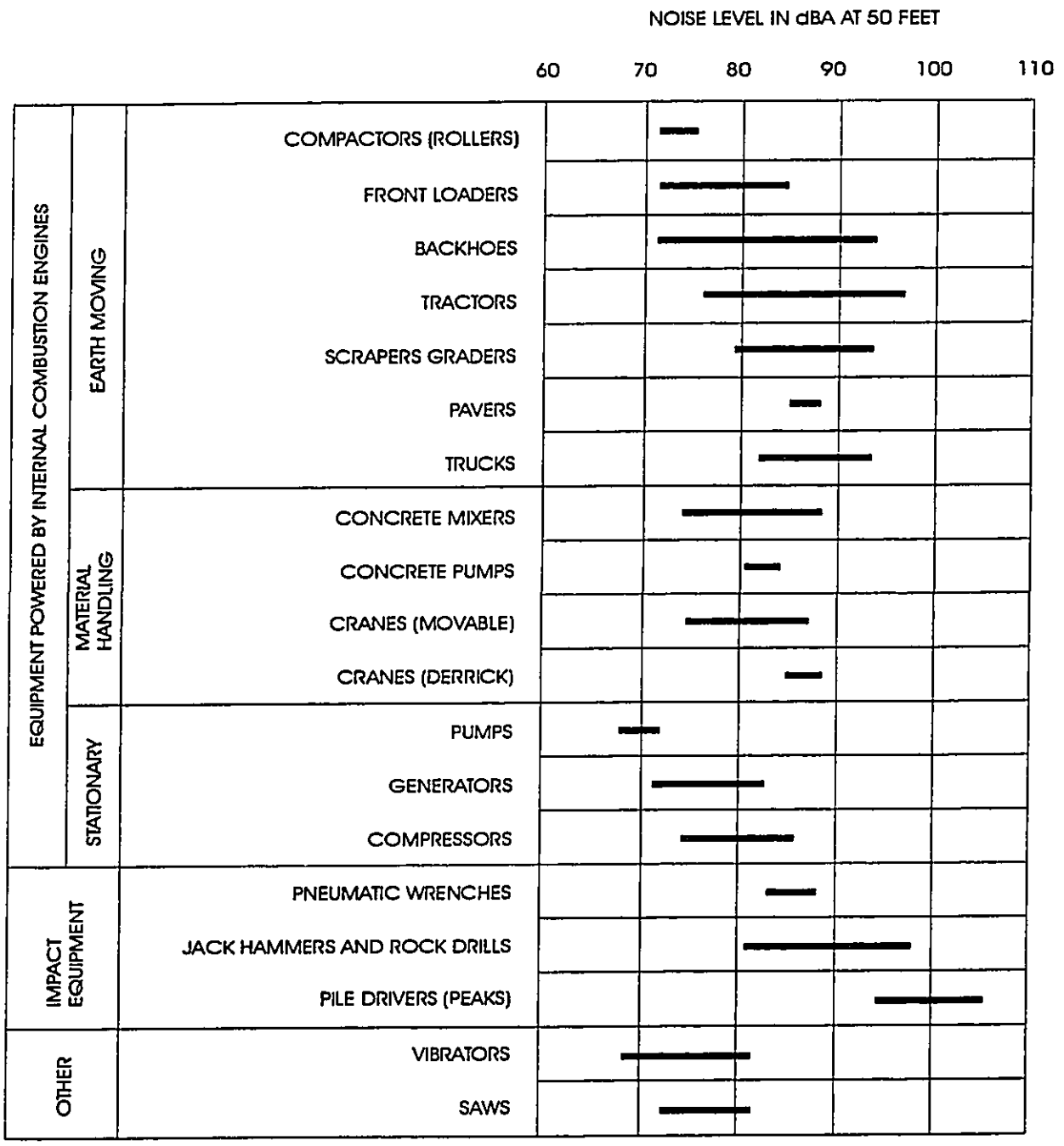
FIGURE 4 - Locations of Noise Measurements

(1) Measurement Location



NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

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FIGURE 5 - TYPICAL SOUND PRESSURE LEVELS FROM CONSTRUCTION EQUIPMENT

APPENDIX A

ACOUSTICAL TERMINOLOGY

Sound Pressure Level

Sound or noise consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. It is measured in terms of decibels (dB) using precision instruments known as sound level meters. Noise is defined as "unwanted" sound.

Technically, sound pressure level (SPL) is defined as:

$$SPL = 20 \log (P/Pref) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and Pref is the reference pressure, 20 micropascals, which is approximately the lowest sound pressure that can be detected by the human ear. For example, if P is 20 micropascals, then SPL = 0 dB, or if P is 200 micropascals, then SPL = 20 dB. The relation between sound pressure in micropascals and sound pressure level in decibels (dB) is shown in Figure A-1.

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound levels, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined level of 53 dB, not 100 dB; two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of a sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 5 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

A-Weighted Sound Level

The human ear is more sensitive to sound in the frequency range of 250 Hertz (Hz) and higher, than in frequencies below 250 Hz. Due to this type of frequency response, a frequency weighting system, was developed to emulate the frequency response of the human ear. This system expresses sound levels in units of A-weighted decibels (dBA). A-weighted sound levels de-emphasizes the low frequency portion of the spectrum of a signal. The A-weighted level of a sound is a good measure of the loudness of that sound. Different sounds having the same A-weighted sound level are perceived as being about equally loud. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.

Statistical Sound Levels

The sound levels of long-term noise producing activities, such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels developed. It is known as the Exceedence Level, L_n. The Exceedence Level, L_n, represents the sound level which is exceeded for n% of the measurement time period. For example, L_{10} = 60 dBA indicates that for the duration at the measurement period, the sound level exceeded 60 dBA 10% of the time. Commonly used Exceedence Levels include L_1, L_{10}, L_{50}, and L_{90}, which are widely used to assess community and environmental noise. Figure A-2 illustrates the relationship between selected statistical noise levels.

Equivalent Sound Level

The Equivalent Sound Level, L_{eq}, represents a constant level of sound having the same total acoustic energy as that contained in the actual time-varying sound being measured over a specific time period. L_{eq} is commonly used to describe community noise, traffic noise, and hearing damage potential. It has units of dBA and is illustrated in Figure A-2.

Day-Night Equivalent Sound Level

The Day-Night Equivalent Sound Level, L_{dn}, is the Equivalent Sound Level, L_{eq}, measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 pm and 7 am to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The L_{dn} is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations. Qualitative descriptions, as well as local examples of L_{dn}, are shown in Figure A-3.

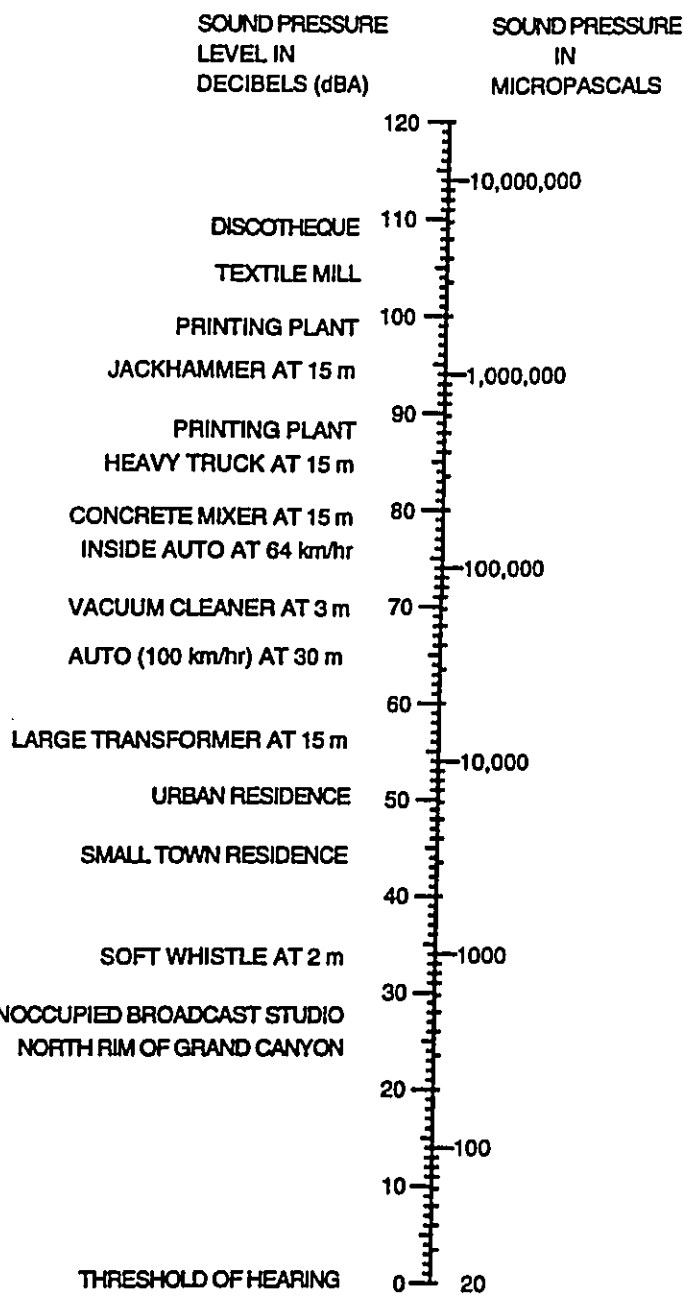

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FIGURE A-1 - THE RELATION BETWEEN SOUND PRESSURE, P, AND SOUND PRESSURE LEVEL, SPL. ALSO SHOWN ARE TYPICAL VALUES OF A-WEIGHTED SOUND LEVELS OF VARIOUS NOISE SOURCES.

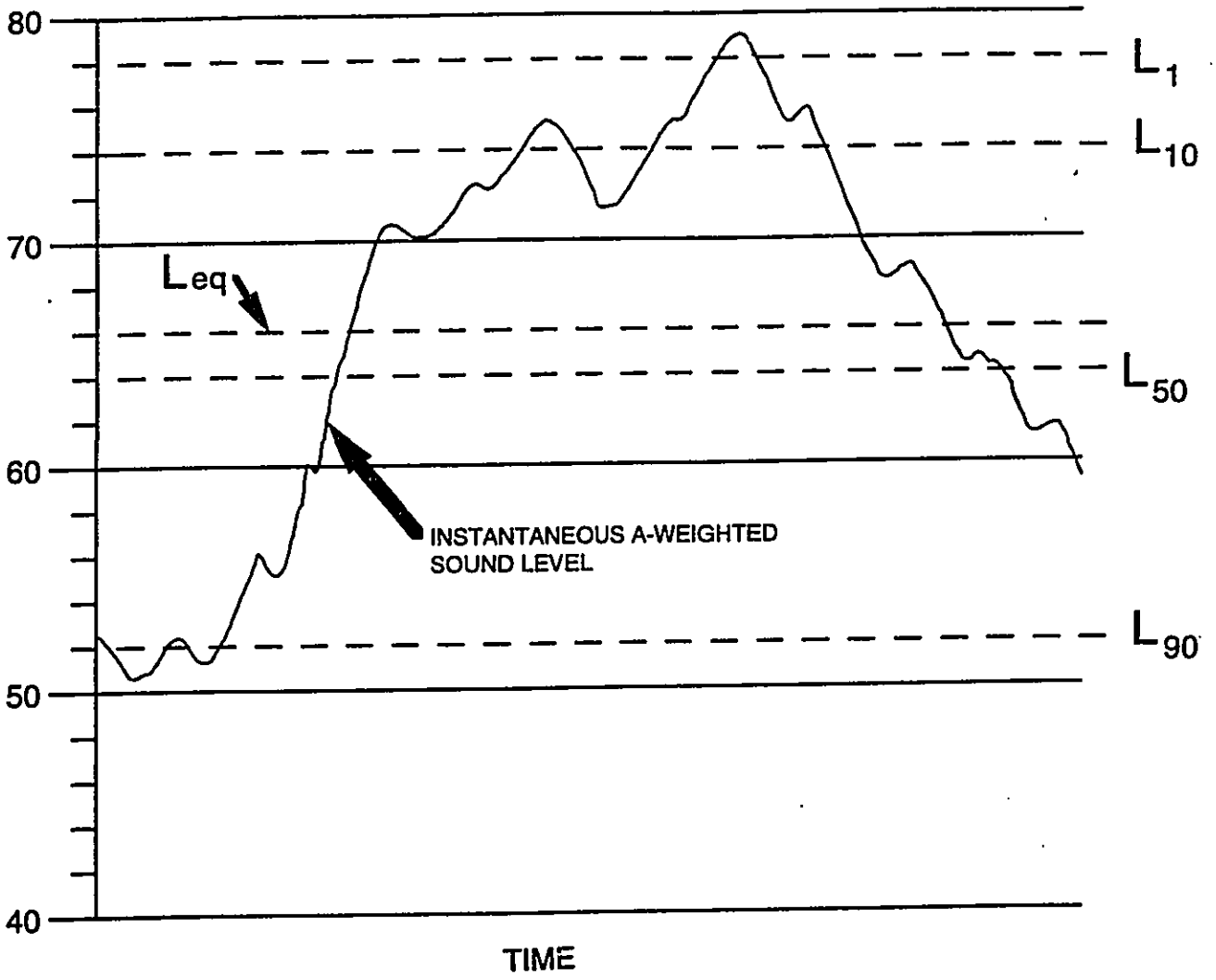

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FIGURE A-2 - COMPARISON OF AN INSTANTANEOUS SOUND LEVEL AND THE CORRESPONDING STATISTICAL SOUND LEVELS

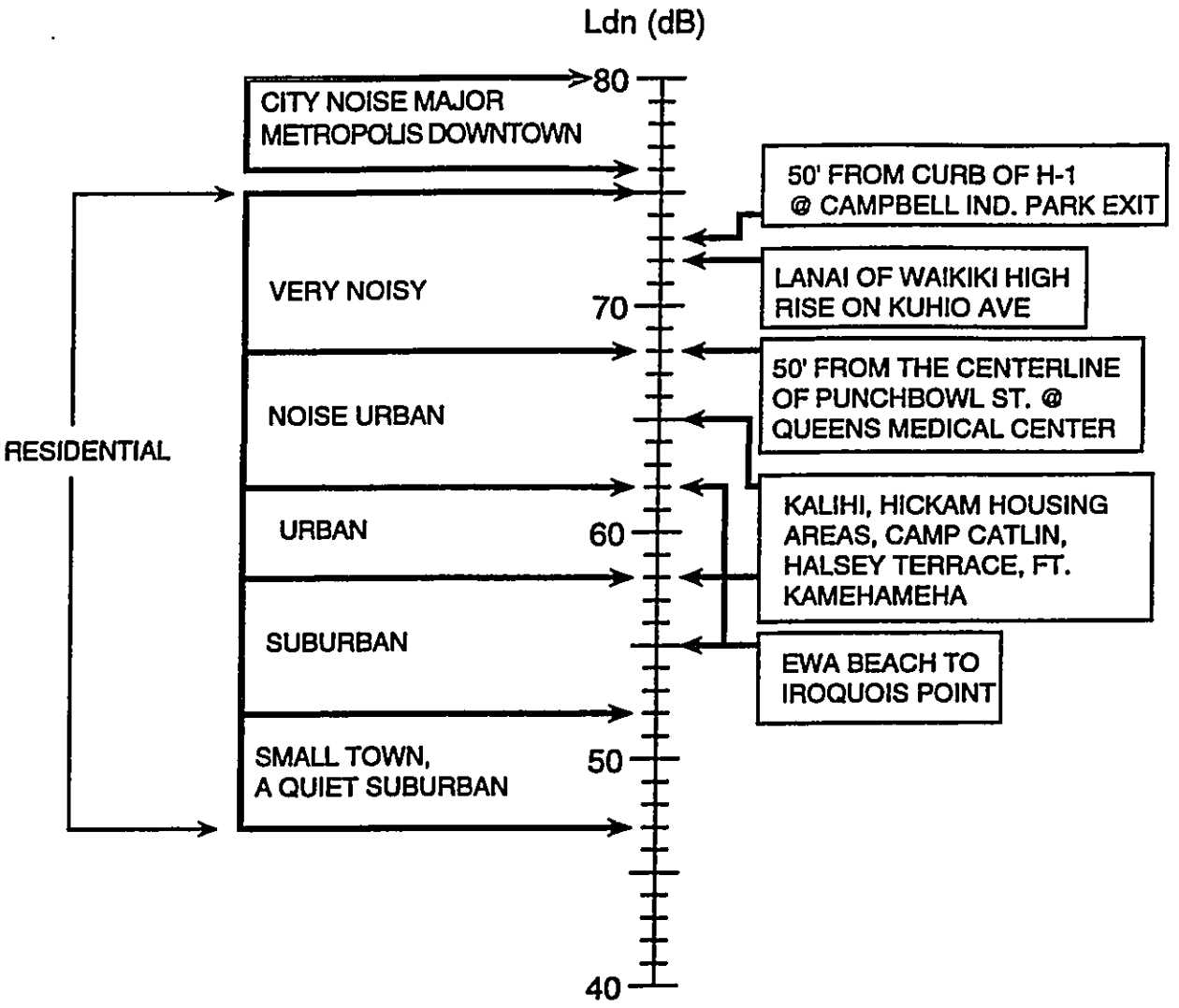

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FIGURE A-3 - QUALITATIVE DESCRIPTION OF THE DAY-NIGHT EQUIVALENT SOUND LEVELS (Ldn) AND EXAMPLE Ldn's AT SELECTED LOCATIONS ON OAHU

APPENDIX VIII

AIR QUALITY IMPACT REPORT

AIR QUALITY IMPACT REPORT (AQIR)

ALOHA GARDENS DEVELOPMENT

11 March 2002

PREPARED FOR:

ORI Anuenue Hale, Inc.

PREPARED BY:

J. W. MORROW
Environmental Management Consultant
1481 South King Street, Suite 548
Honolulu, Hawaii 96814

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1. INTRODUCTION

ORI Anuenue Hale, Inc. ("ORI") is planning development of a new facility to provide a variety of services to a broad spectrum of the community. The proposed facility would be located on a parcel of land along Kamehameha Highway and adjacent to the existing Helemano Plantation and Dole Plantation in central Oahu (see Figures 1 and 2). ORI is seeking a State Land Use Boundary amendment, a North Shore Sustainable Communities Plan amendment, a zone change, and a Conditional Use Permit in order to implement the various services being proposed.

The proposed development consists of the following major components:

- outdoor areas for appreciation of nature and recreation
- learning center and vocational school
- daycare for elders
- a future restaurant facility
- health and wellness center
- group living facility
- administrative facilities
- diversified agriculture activities
- farmer's market

on air quality. The overall project can be considered an "indirect source" of air pollution as defined in

FIGURE 1

PROJECT LOCATION

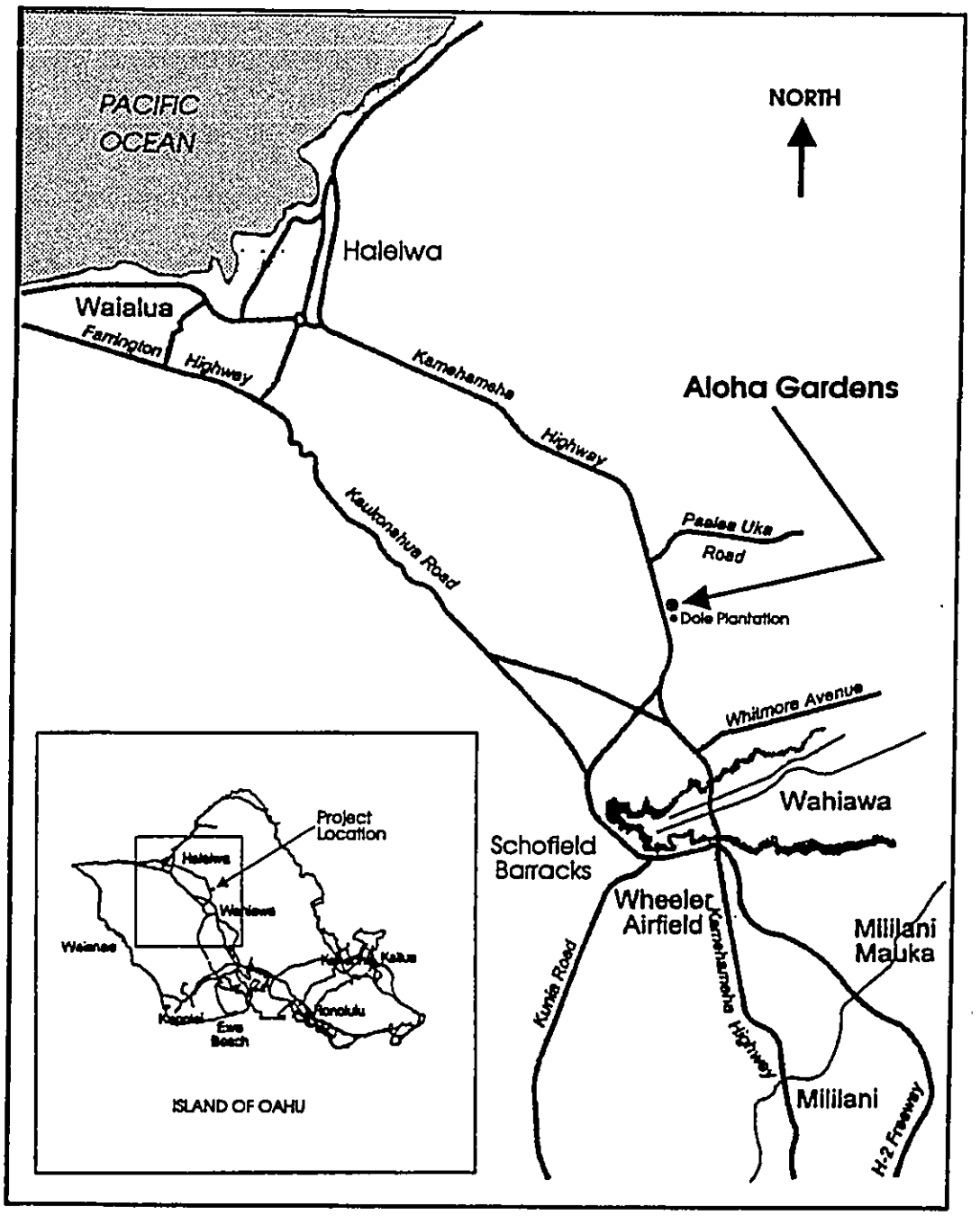
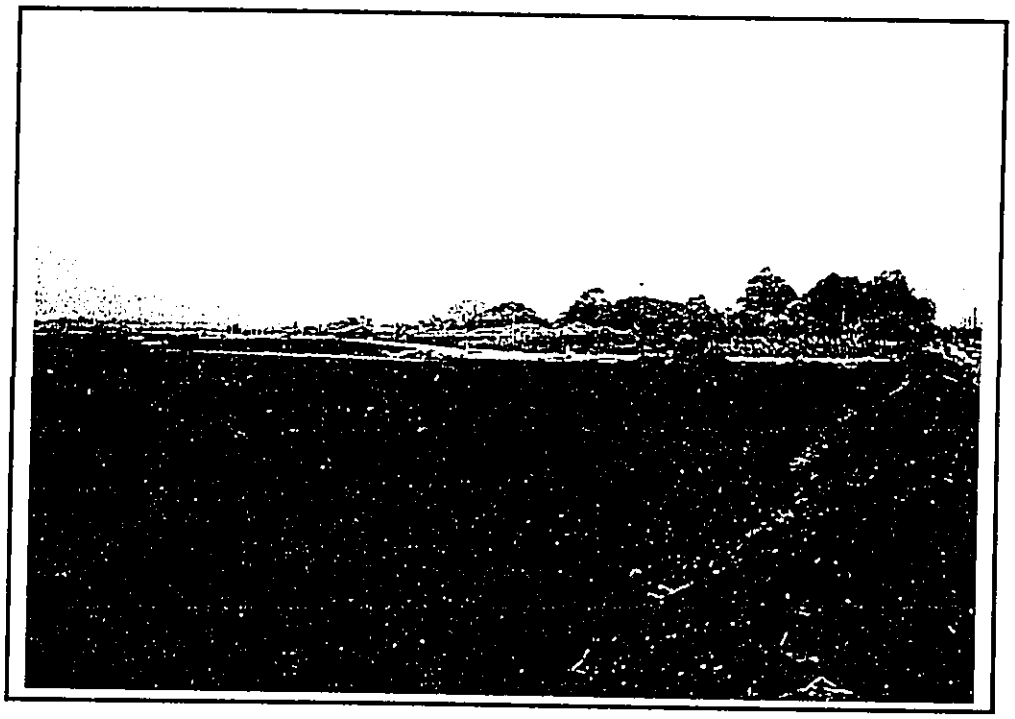


FIGURE 2

EXISTING SITE CONDITIONS



Existing Undeveloped Site
(facing southeast)

Kamehameha Highway
(facing southeast)

The purpose of this report is to assess the short and long-term impacts of the proposed development the federal Clean Air Act[1] since its primary association with air quality is its inherent attraction for mobile sources, i.e., motor vehicles. Much of the focus of this analysis, therefore, is on the project's ability to generate traffic and the resultant impact on air quality. Air quality impact was evaluated for existing (2002) and future (2010) conditions with the proposed development.

Finally, during construction of the various buildings and facilities air pollutant emissions will be generated onsite and offsite due to vehicular movement, grading, concrete and asphalt batching, and general dust-generating construction activities. These impacts have also been addressed.

2. AIR QUALITY STANDARDS

A summary of State of Hawaii and national ambient air quality standards (NAAQS) is presented in Table 1.[2,3,4] Note that Hawaii's standards are not divided into primary and secondary standards as are the federal standards.

Primary standards are intended to protect public health with an adequate margin of safety while secondary standards are intended to protect public welfare through the prevention of damage to soils, water, vegetation, man-made materials, animals, wildlife, visibility, climate, and economic values [5]. Note that in the case of the principal automotive pollutants [CO, NO_2, and O_3], the primary and secondary standards are identical.

TABLE 1

SUMMARY OF STATE OF HAWAII AND FEDERAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING PERIOD	NAAQS PRIMARY	NAAQS SECONDARY	STATE STANDARDS
PM_{10}	Annual 24-hr	50 150	50 150	50 150
$PM_{2.5}$	Annual 24-hr	15 65	15 65	— —
SO_2	Annual 24-hr 3-hr	80 365 —	— — 1,300	80 365 1,300
NO_2	Annual	100	100	70
CO	8-hr 1-hr	10 40	— —	5 10
O_3	1-hr 8-hr	235 156	235 156	100 —
H_2S	1-hr	—	—	35
Pb	Calendar Quarter	1.5	1.5	1.5

KEY: PM_{10} - particulate matter ≤ 10 microns
$PM_{2.5}$ - particulate matter ≤ 2.5 microns
SO_2 - sulfur dioxide
NO_2 - nitrogen dioxide
CO - carbon monoxide
O_3 - ozone
H_2S - hydrogen sulfide
Pb - lead

All concentrations in micrograms per cubic meter ($\mu g/m^3$) except CO which is in milligrams per cubic meter.

Some of Hawaii's standards (CO, NO_2, and O_3) are clearly more stringent than their federal counterparts and like their federal counterparts in the case of short-term standards, they may be exceeded once per year. Note also that the federal $PM_{2.5}$ and 8-hour O_3 standards, while promulgated in 1997, [6,7] were remanded to EPA by a federal court in 1999 and are currently under appeal.[8]

Finally, the State of Hawaii also has fugitive dust regulations for particulate matter (PM) emanating from construction activities[9]. There simply can be no visible emissions from fugitive dust sources.

3. EXISTING AIR QUALITY

3.1 General. The state Department of Health (DOH) maintains a network of air monitoring stations around the state to gather data on the following regulated pollutants:

- particulate matter ≤ 10 microns (PM_{10})
- sulfur dioxide (SO_2)
- nitrogen dioxide (NO_2)
- carbon monoxide (CO)
- ozone (O_3)

In the case of PM_{10} , measurements are made on a 24-hour basis to correspond with the averaging period specified in state and federal standards. Depending on the sampling equipment and site, samples

are collected either continuously or once every six days in accordance with U. S. Environmental Protection Agency (EPA) guidelines. Carbon monoxide, sulfur dioxide, and ozone, however, are measured on a continuous basis due to their short-term (1- and 3-, and 8-hour) standards. Nitrogen dioxide is also measured with continuous instruments and averaged over a full year to correspond to its annual standards. Lead sampling was discontinued in October 1997 with EPA approval. This was largely due to the elimination of lead in gasoline and the resulting reduction of ambient lead levels in Hawaii to essentially zero.

3.2 Department of Health Monitoring. There are no DOH monitoring stations in the vicinity of the project site. . A summary of the most recent published air quality data [10] from the nearest sites at Pearl City, Sand Island, the only ozone monitoring site, and West Beach, one of two NO_2 monitoring sites, is presented in Table 2. These data are indicative of the generally good air quality in Honolulu County and may be considered reasonably representative of existing air quality in the project area.

3.3 Onsite Carbon Monoxide Sampling. In conjunction with this project, air sampling was conducted in March 2002 along Kamehameha Highway in the vicinity of the project site. A continuous carbon monoxide (CO) instrument was set up and operated during the a.m. and p.m. peak traffic hours. An anemometer and vane were also installed to record onsite surface winds during the sampling period. winds during the air sampling. A simultaneous manual count of traffic was performed. The variability of each of the parameters measured during the peak hours is clearly seen in Figures 3 and 4.

TABLE 2

AIR QUALITY DATA
DEPARTMENT OF HEALTH MONITORING SITES
2000

Pollutant		Concentration ($\mu g/m^3$)
Particulate matter ≤ 10 microns (PM_{10})	24-hr (second highest)	24
	Annual	14
Sulfur dioxide (SO_2)	3-hr (max)	11
	24-hr (max)	4
	Annual	1
Carbon monoxide (CO)	1-hr (max)	1.6
	8-hr (max)	1.0
	Annual	0.2
Ozone (O_3)	1-hr (max)	98
	Annual	32
Nitrogen Dioxide (NO_2)	Annual	7

Notes:
1. SO_2, NO_2 and CO data from West Beach site.
2. PM_{10} data from Pearl City site.
3. O_3 data are from the Sand Island site.
4. CO data are milligrams per cubic meter (mg/m^3)

Source: Hawaii Department of Health (Reference 10)

On Thursday, 7 March 2002, sampling equipment was set up on the west side of Kamehameha Highway across from the the project site. Weather conditions during the morning peak hour were characterized by scattered clouds and southeasterly ("kona") winds averaging 4.9 mph. Carbon monoxide concentrations measured were low, averaging 1.6 mg/m^3. Two-way traffic on Kamehameha Highway moved steadily at about 40 mph and totaled 1,145 vehicles between 7:30 and 8:30 a.m. Hawaiian Standard Time (HST).

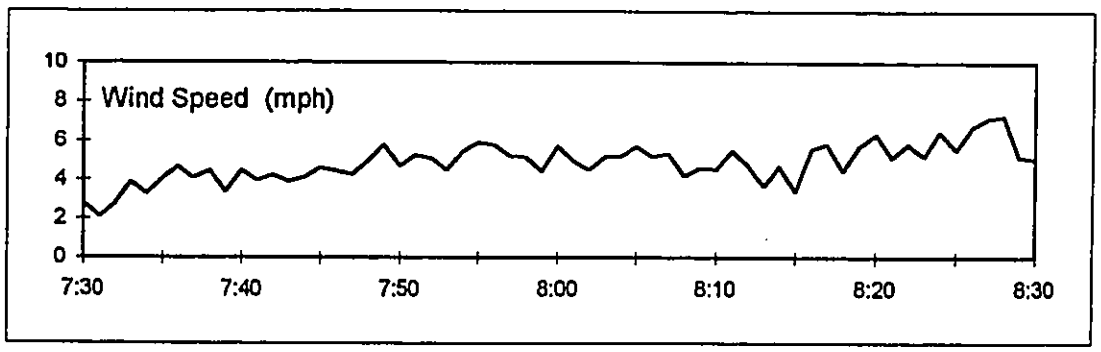
On that same day in the afternoon, the equipment was set up on the opposite side of the road due to the initial northwesterly winds which averaged 8.3 mph. Sky conditions were overcast. At approximately 4:05 p.m. the winds abruptly shifted to north northeast, and light showers commenced. The hourly traffic volume of 1,410 vehicles was about 23% greater than in the morning. The mean CO level of 0.38 mg/m^3 was hardly above pristine background levels due in large part to the shift in wind direction which caused the sampling site to be upwind of the highway for more than half of the sampling period.

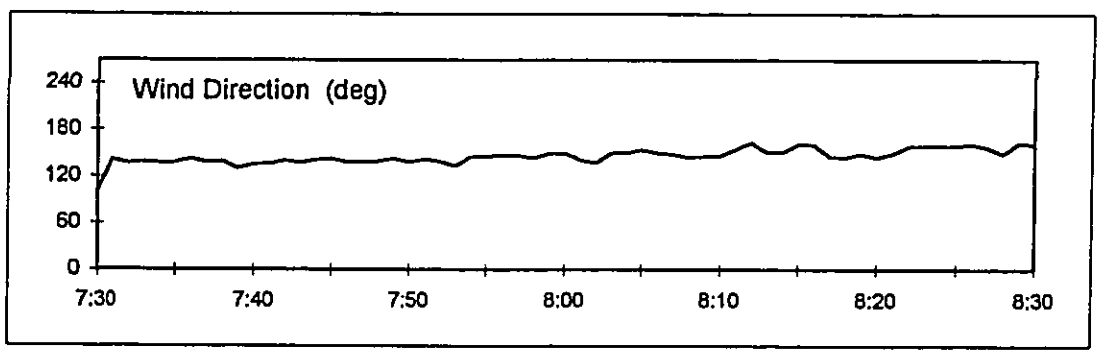
4. CLIMATE AND METEOROLOGY

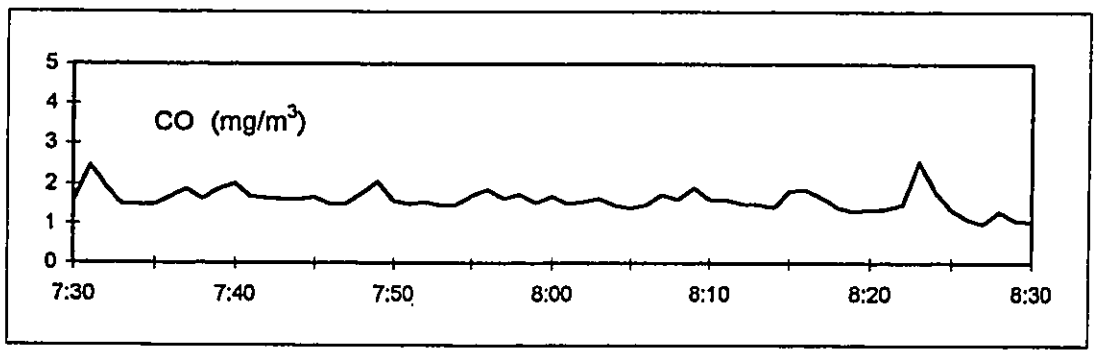
4.1 Climate. Climatic norms, means and extremes for Honolulu [11] are presented in Table 3. The project area is at a higher elevation than the leeward situated Honolulu International Airport and is therefore cooler and wetter. Analysis of the monthly temperature and rainfall data for the nearby Opaeula weather station in accordance with Thornwaite's scheme for climatic classification, yields a precipitation/evaporation (P/E) index of 82.8 which classifies the area as "humid". [12]

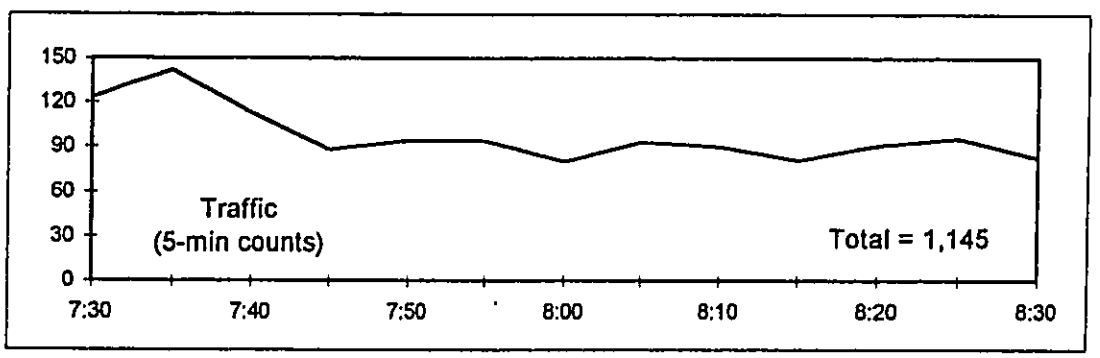
FIGURE 3

A.M. PEAK-HOUR CONDITIONS
ALOHA GARDENS
7 MARCH 2002





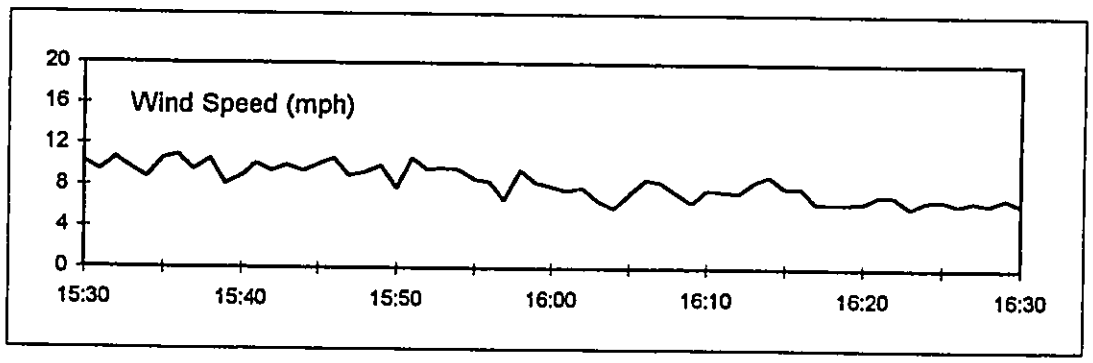


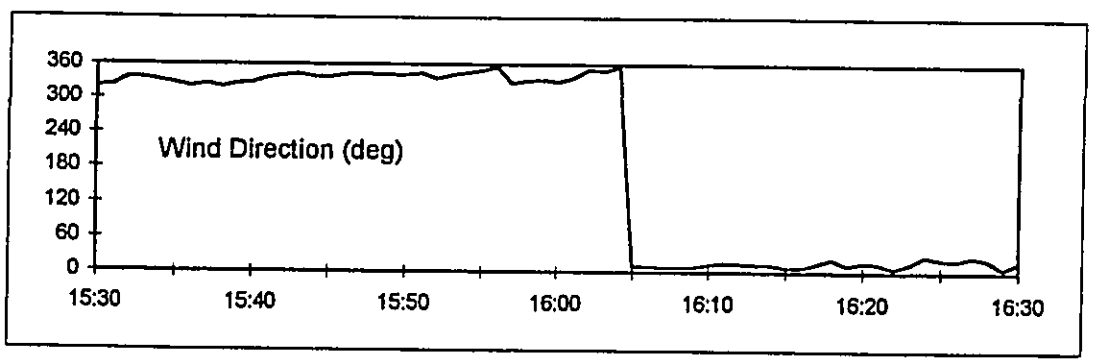


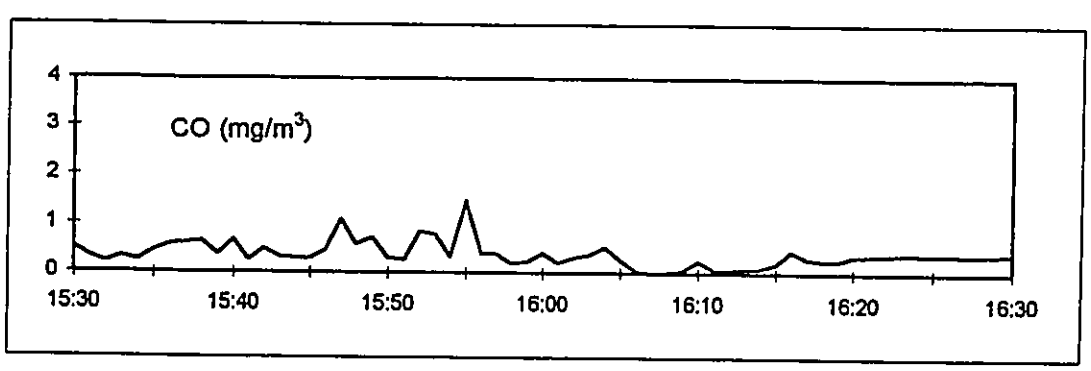
Time of Day

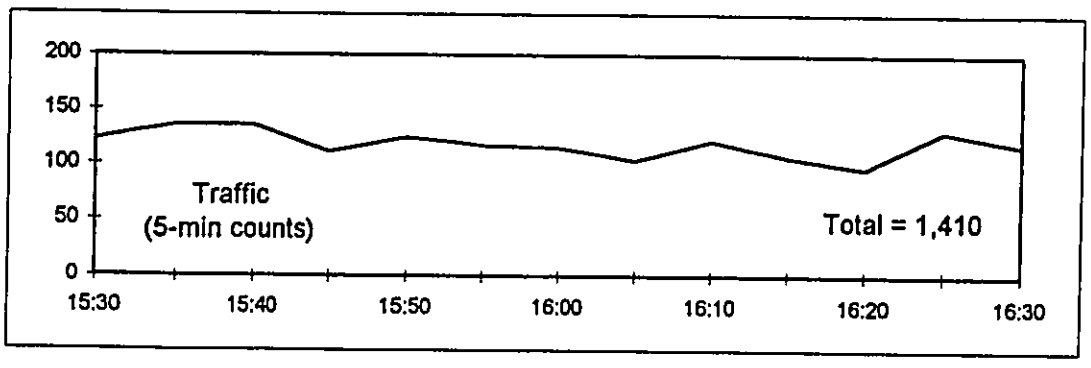
FIGURE 4

P.M. PEAK-HOUR CONDITIONS
ALOHA GARDENS
7 MARCH 2002









Time of Day

TABLE 3

CLIMATIC NORMS, MEANS AND EXTREMES
HONOLULU INTERNATIONAL AIRPORT (HIA)
AND NCDC OPAEULA COOPERATIVE MONITORING STATION

Parameter	Descriptor	Airport	Opaeula
Temperature (deg F)	Daily maximum	84.4	78.1
	Daily minimum	70.0	63.2
	Annual mean	77.2	70.6
Precipitation (inches)	Maximum monthly	20.91	24.5
	Minimum monthly	trace	0.27
	Annual mean	22.02	56.5
Humidity (%)	Normal	68	n/a
Wind Speed (mph)	Mean	11.4	n/a
Sunshine	Percent of possible	71	n/a
Sky cover (mean # days)	Clear	90.0	n/a
	Partly cloudy	179.8	n/a
	Cloudy	92.0	n/a

Sources: National Climatic Data Center (NCDC) (Reference 11)
Western Regional Climatic Center (Reference 13)

4.2 Surface Winds. Meteorological data records were reviewed from the Honolulu International Airport and Hickam Air Force Base. The annual prevalence of northeast trade winds is clearly shown in Table 4. A closer examination of the data, however, indicates that low velocities (less than 10 mph) occur frequently and that the normal northeasterly trade winds tend to break down in the Fall giving way to more light, variable wind conditions through the Winter and on into early Spring. It is during these times that Honolulu generally experiences elevated pollutant levels. This seasonal difference in wind conditions can be easily contrasted by comparing August and January wind roses (Figures 5 and 6). Of particular interest from an air pollution standpoint were the stability wind roses prepared for Hickam Air Force Base [14]. These data indicated that stable conditions, i.e., Pasquill-Gifford stability categories E and F [15], occur about 28% of the time on an annual basis and 36% of the time during the peak winter month (January). It is under such conditions that the greatest potential for air pollutant buildup from groundlevel sources, e.g., motor vehicles, exists.

5. SHORT-TERM IMPACTS

5.1 Onsite Impacts. The principal source of short-term air quality impact will be construction activity. Construction vehicle activity can at times increase automotive pollutant concentrations along adjoining existing streets as well as on the project site itself. Construction activity itself as well as additional construction vehicle traffic may at times cause a temporary reduction in average travel speeds with a concomitant increase in vehicle emissions due to the "stop and go" traffic conditions.

TABLE 4

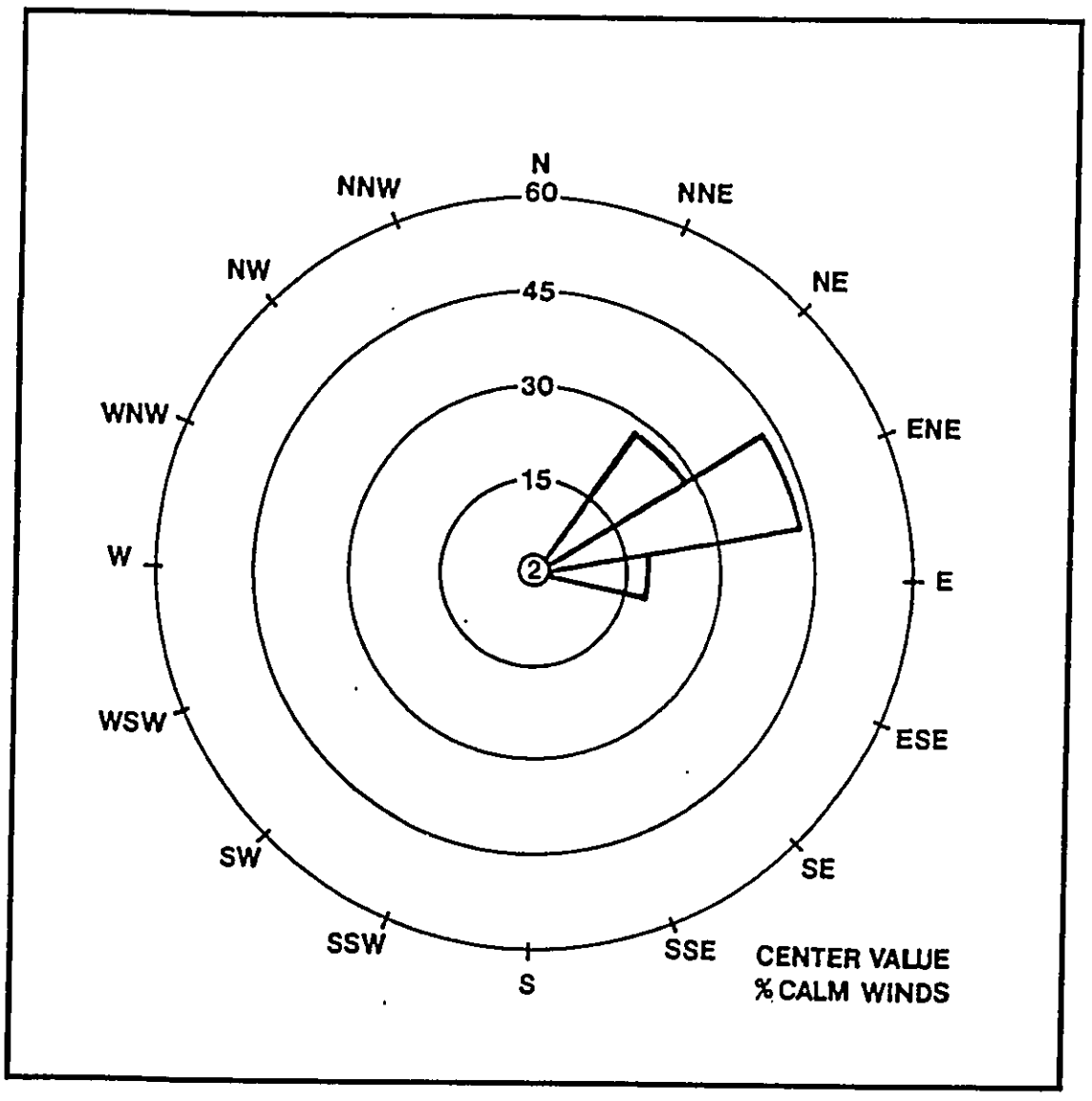
ANNUAL JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION HONOLULU INTERNATIONAL AIRPORT

Dir (deg)	Wind Speed (mph)						
	< 7	< 10	< 13	< 16	< 19	>/= 19	All
10	0.0065	0.0038	0.0023	0.0016	0.0009	0.0001	0.0151
20	0.0082	0.0041	0.0025	0.0023	0.0011	0.0001	0.0183
30	0.0100	0.0061	0.0051	0.0038	0.0028	0.0007	0.0286
40	0.0188	0.0157	0.0258	0.0222	0.0174	0.0040	0.1039
50	0.0268	0.0290	0.0449	0.0385	0.0307	0.0054	0.1752
60	0.0344	0.0289	0.0436	0.0273	0.0238	0.0041	0.1621
70	0.0250	0.0181	0.0197	0.0122	0.0096	0.0009	0.0855
80	0.0113	0.0081	0.0065	0.0039	0.0009	0.0003	0.0310
90	0.0073	0.0049	0.0040	0.0009	0.0008	0.0000	0.0179
100	0.0031	0.0016	0.0014	0.0006	0.0002	0.0000	0.0068
110	0.0027	0.0019	0.0010	0.0007	0.0005	0.0001	0.0069
120	0.0027	0.0013	0.0019	0.0009	0.0003	0.0003	0.0075
130	0.0022	0.0032	0.0018	0.0015	0.0007	0.0002	0.0096
140	0.0034	0.0033	0.0039	0.0018	0.0011	0.0006	0.0141
150	0.0022	0.0030	0.0019	0.0003	0.0002	0.0005	0.0081
160	0.0024	0.0033	0.0023	0.0010	0.0005	0.0000	0.0094
170	0.0031	0.0046	0.0023	0.0007	0.0003	0.0000	0.0109
180	0.0055	0.0042	0.0018	0.0008	0.0005	0.0000	0.0128
190	0.0065	0.0038	0.0013	0.0002	0.0000	0.0000	0.0117
200	0.0057	0.0032	0.0011	0.0001	0.0000	0.0000	0.0101
210	0.0076	0.0038	0.0016	0.0001	0.0000	0.0000	0.0131
220	0.0083	0.0077	0.0016	0.0001	0.0001	0.0000	0.0179
230	0.0076	0.0049	0.0014	0.0001	0.0001	0.0000	0.0141
240	0.0042	0.0016	0.0013	0.0000	0.0000	0.0000	0.0071
250	0.0040	0.0010	0.0003	0.0000	0.0000	0.0000	0.0054
260	0.0064	0.0023	0.0005	0.0000	0.0000	0.0000	0.0091
270	0.0065	0.0010	0.0005	0.0002	0.0000	0.0000	0.0082
280	0.0099	0.0005	0.0002	0.0000	0.0000	0.0000	0.0106
290	0.0123	0.0003	0.0002	0.0001	0.0000	0.0000	0.0130
300	0.0167	0.0018	0.0011	0.0000	0.0000	0.0000	0.0197
310	0.0235	0.0022	0.0015	0.0001	0.0000	0.0000	0.0272
320	0.0200	0.0022	0.0013	0.0006	0.0001	0.0000	0.0241
330	0.0121	0.0023	0.0011	0.0005	0.0000	0.0000	0.0159
340	0.0094	0.0010	0.0003	0.0001	0.0000	0.0000	0.0109
350	0.0082	0.0025	0.0016	0.0002	0.0000	0.0000	0.0125
360	0.0093	0.0027	0.0022	0.0006	0.0005	0.0001	0.0154
All	0.3537	0.1898	0.1917	0.1240	0.0932	0.0174	0.9698
						Calms:	0.0302

SOURCE: National Weather Service, 1992

FIGURE 5

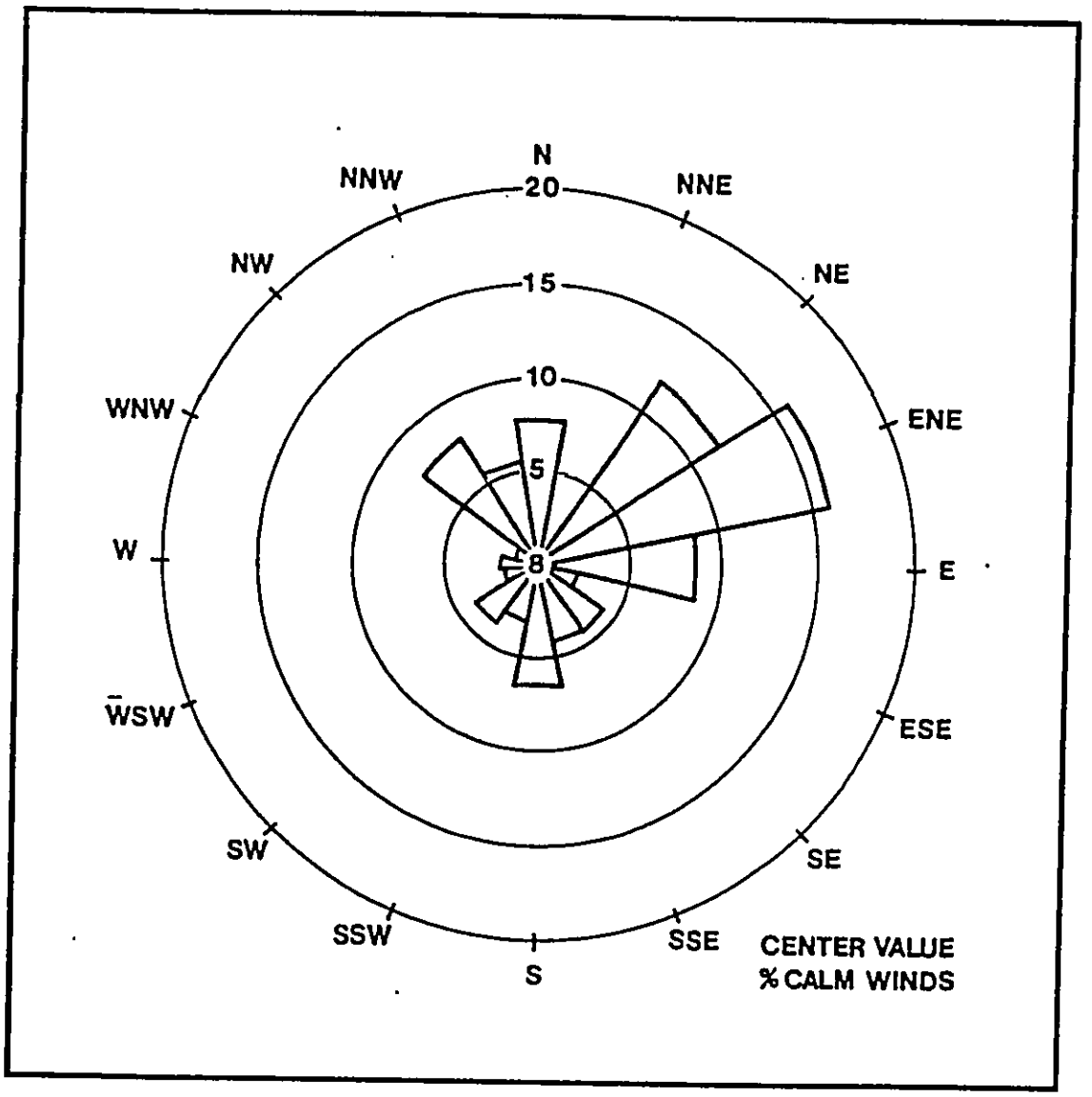
AUGUST WIND ROSE
HONOLULU INTENATIONAL AIRPORT



SOURCE: National Weather Service
Historical Records, 1940-57

FIGURE 6

JANUARY WIND ROSE
HONOLULU INTERNATIONAL AIRPORT



SOURCE: National Weather Service
Historical Records, 1940-57

The site preparation and earth moving will create particulate matter (PM) emissions as will construction of new buildings and roadways themselves. Construction vehicle movement on unpaved on-site areas will also generate PM emissions. EPA studies on fugitive dust emissions from construction sites indicate that about 1.2 tons/acre per month of activity may be expected under conditions of medium activity, moderate soil silt content (30%), and a precipitation/ evaporation (P/E) index of 50 [12, 16].

5.2 Offsite Impacts. In addition to the onsite impacts attributable to construction activity, there will also be offsite impacts due to the operation of concrete and asphalt batching plants needed for construction of buildings, sidewalks and roadways. Such plants routinely emit particulate matter and other gaseous pollutants; however. it is too early to identify the specific facilities that will be providing these materials and thus the discussion of air quality impacts is necessarily generic. The batch plants which will be producing this concrete and asphalt must be permitted by the Department of Health Clean Air Branch pursuant to state regulations [9]. In order to obtain these permits they must demonstrate their ability to continuously comply with both emission [9] and ambient air quality [4] standards. Under the federal Title V operating permit requirements [17], now incorporated in Hawaii's rules [9], air pollution sources must regularly attest to their compliance with all applicable requirements. A typical concrete batch plant in Hawaii is equipped with fabric filters, i.e., "baghouses" for particulate matter (PM) control. Similarly, a typical asphalt plant is equipped with either a wet venturi scrubber or fabric filters. The efficiency of such controls is normally 95 - 99%.

6. MOBILE SOURCE IMPACTS

6.1 Mobile Source Activity. The traffic analysis report [18] prepared for the proposed project served as the basis for this mobile source impact analysis. Existing and projected future peak-hour traffic volumes for the principal streets serving the project site were obtained from that report.

6.2 Emission Factors. Automotive emission factors for carbon monoxide (CO) were generated for calendar years 2002 and 2010 using EPA's Mobile Source Emissions Model (MOBILE-5B)[19]. To localize the emission factors as much as possible, an age distribution for registered vehicles in the City & County of Honolulu [20] was used in lieu of national statistics. That same age distribution was the basis for the distribution of vehicle miles traveled as well.

6.3 Modeling Methodology. Mobile source air quality modeling has historically focused on estimating concentrations of non-reactive pollutants, primarily carbon monoxide (CO). This has been the case because CO is relatively stable in the atmosphere having a half-life on the order of about one (1) month,[21] and it comprises the largest fraction of automotive emissions. [19]

Using the traffic data provided, modeling was performed for the two and one-driveway scenarios for the years 2002 and 2010. The EPA guideline model CAL3QHC [22, 23] as revised to allow for use of hourly meteorological data files [24] was employed to estimate near-intersection carbon monoxide concentrations. CO concentrations were estimated at an array of 120 receptor sites, spaced at a distance of 10 meters along Kamehameha Highway and the access driveway(s) to the project site (see

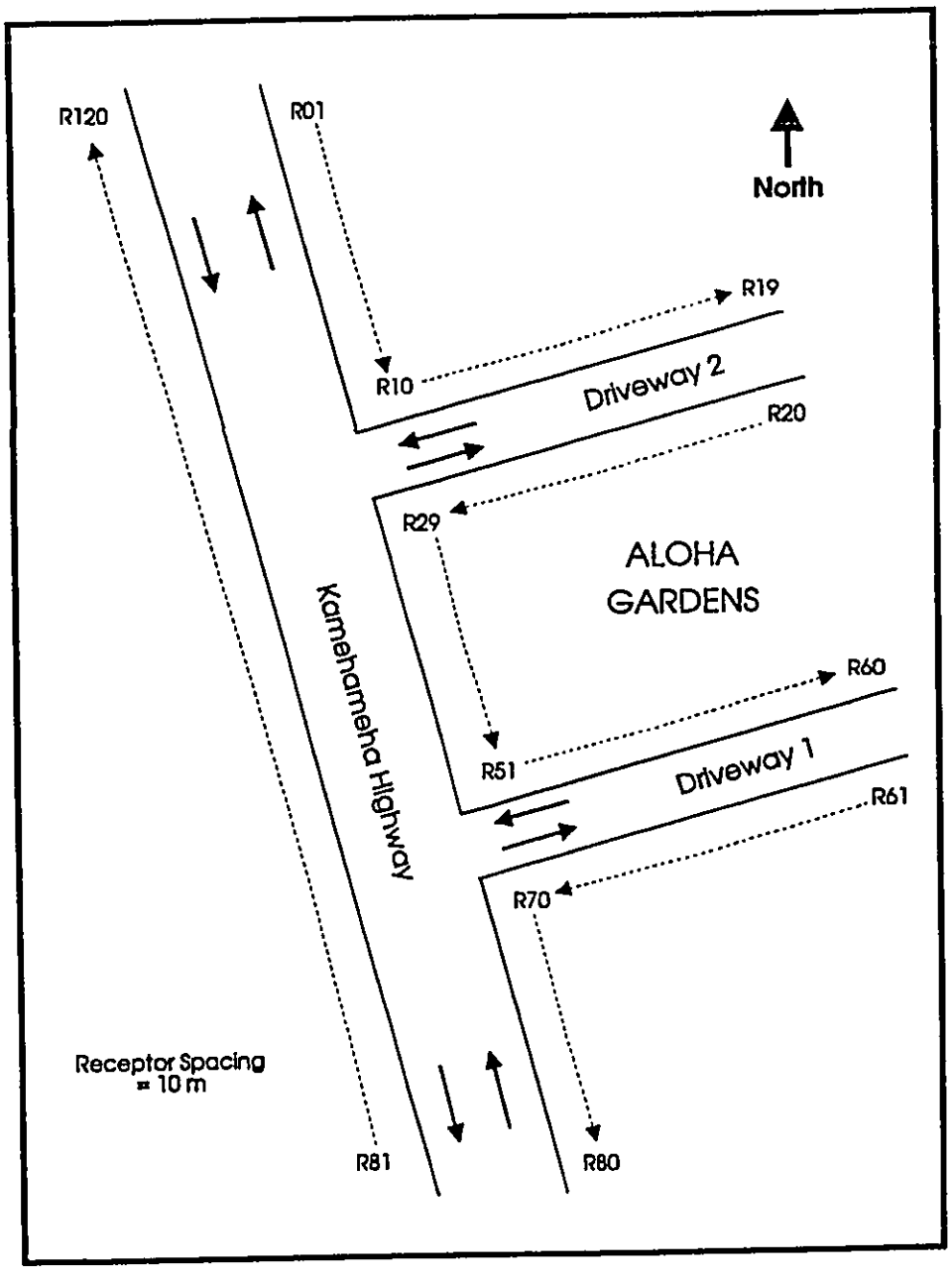
Figure 7). A background concentration of 1.6 mg/m^3 from the Department of Health's 2000 monitoring data was also used as the background concentration in the modeling. Hourly meteorological data for a.m. and p.m. peak traffic hours used in the model were extracted from National Weather service data collected at the Honolulu International Airport [25] and preprocessed with EPA's PCRAMMET program. [26]

6.4 Results: 1-Hour CO Concentrations. The results of this modeling are summarized in Table 5, and all the maximum CO concentrations are listed in the tables in the Appendix. Maximum estimated 1-hour CO concentrations in milligrams per cubic meter (mg/m^3) for each of the evaluated scenarios are presented along with the particular receptor location at which they were predicted. The results suggest that, under *worst case* conditions of meteorology and traffic, both the federal and state 1-hour CO standards would be met at receptor locations 10 meters and beyond the edge of roadways expected to be affected by project-related traffic. The changes in CO levels are insignificant due to the relatively small increase in projected traffic and also the offsetting effect of the federal motor vehicle emissions control program. Vehicle emissions standards for motor vehicles get progressively more stringent over time; thus, older, higher emitting vehicles lost by attrition, are replaced by newer, lower-emitting vehicles which comply with the more stringent standards.

6.5 Results: 8-Hour CO Concentrations. The 8-hour values presented in Table 5 are very conservative estimates because they are based on averages of the worst case 1-hour values during a.m. and p.m. peak hour traffic and meteorology. Nevertheless, the results are similar to the 1-hour findings in that compliance with state and federal standards is indicated.

FIGURE 7

RECEPTOR LOCATIONS FOR DISPERSION MODELING



Note: The "1-driveway" scenario assumes the presence of Driveway 1 only.

TABLE 5

SUMMARY OF MODELING ANALYSIS RESULTS

Peak Traffic Period	2002	2010 w/2 Driveway	2010 w/1 Driveway
	Maximum CO Concentration (mg/m^3)		
AM	4.45	4.67	4.67
PM	2.96	3.08	3.08
8-hr	3.29	3.41	3.41

7. CONCLUSIONS AND MITIGATION

7.1 Short-Term Impacts. Since, as noted in Section 4, the project area is considered to be "humid" by Thornwaite's climatic classification system with a P/E index substantially greater than that associated with the EPA fugitive dust emission factor, there appears to be a reduced potential for fugitive dust. On the other hand, silty clays soils are common in the area and they typically have a silt content greater than the 30% upon which the EPA emission factor is based thus suggesting a somewhat greater dust potential. It will therefore be important to employ adequate dust control measures during the construction period, particularly during the drier summer months. Dust control could be accomplished

through frequent watering of unpaved roadways and areas of exposed soil. The EPA estimates that twice daily watering can reduce fugitive dust emissions by as much as 50% [15]. The soonest possible paving of roadways and landscaping of bare areas will also help.

Short-term air quality impacts due to offsite activities supporting the proposed development, i.e., concrete and asphalt production, appear to be *de minimus* due in large part to the high removal of control devices typically found on such production facilities. Furthermore, any emissions will be strictly regulated by the Department of Health permit which each batch plant must have in order to operate.

7.2 Mobile Source Impacts. As reported in Section 6, compliance with federal and state carbon monoxide standards is demonstrated under *worst case* conditions of meteorology and peak hour traffic; thus, no special mitigative measures are required.

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APPENDIX

MODELING RESULTS

TABLE A-1

RESULTS OF DISPERSION MODELING
YEAR 2002 - A.M. PEAK HOUR

Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)	
	1-hr	8-hr		1-hr	8-hr		1-hr	8-hr
1	2.28	2.01	41	2.51	2.28	81	4.33	3.23
2	2.28	2.05	42	2.51	2.28	82	4.45	3.26
3	2.28	2.09	43	2.51	2.28	83	4.45	3.27
4	2.28	2.11	44	2.51	2.28	84	4.45	3.27
5	2.39	2.13	45	2.51	2.28	85	4.45	3.29
6	2.51	2.13	46	2.51	2.28	86	4.45	3.29
7	2.51	2.17	47	2.51	2.28	87	4.45	3.29
8	2.51	2.17	48	2.51	2.28	88	4.45	3.27
9	2.51	2.18	49	2.51	2.28	89	4.33	3.23
10	2.62	2.21	50	2.51	2.28	90	4.33	3.20
11	2.28	2.07	51	2.51	2.28	91	4.22	3.18
12	2.17	2.00	52	2.39	2.18	92	4.22	3.15
13	2.05	1.95	53	2.28	2.09	93	4.10	3.11
14	2.05	1.94	54	2.28	2.04	94	4.10	3.09
15	2.05	1.94	55	2.17	2.00	95	3.99	3.04
16	2.05	1.93	56	2.17	1.97	96	3.99	3.00
17	1.94	1.89	57	2.17	1.96	97	3.88	2.95
18	1.94	1.88	58	2.05	1.95	98	3.76	2.92
19	1.94	1.87	59	2.05	1.95	99	3.65	2.84
20	1.94	1.89	60	2.05	1.94	100	3.53	2.80
21	1.94	1.89	61	2.05	1.94	101	3.42	2.74
22	1.94	1.90	62	2.05	1.95	102	3.42	2.63
23	2.05	1.94	63	2.17	1.95	103	3.31	2.62
24	2.05	1.94	64	2.17	1.96	104	3.31	2.55
25	2.05	1.94	65	2.17	1.97	105	3.31	2.46
26	2.05	1.97	66	2.17	2.01	106	3.19	2.36
27	2.17	2.01	67	2.28	2.04	107	3.19	2.36
28	2.39	2.07	68	2.28	2.09	108	3.08	2.36
29	2.62	2.25	69	2.39	2.18	109	3.08	2.30
30	2.62	2.23	70	2.51	2.28	110	2.96	2.28
31	2.51	2.25	71	2.51	2.28	111	2.96	2.28
32	2.51	2.25	72	2.51	2.27	112	2.85	2.26
33	2.51	2.25	73	2.51	2.27	113	2.85	2.22
34	2.51	2.28	74	2.51	2.25	114	2.85	2.19
35	2.51	2.28	75	2.51	2.25	115	2.74	2.19
36	2.51	2.28	76	2.51	2.25	116	2.74	2.18
37	2.51	2.28	77	2.51	2.25	117	2.62	2.17
38	2.51	2.28	78	2.51	2.25	118	2.62	2.15
39	2.51	2.28	79	2.51	2.25	119	2.62	2.15
40	2.51	2.28	80	2.51	2.25	120	2.62	2.15

TABLE A-2

RESULTS OF DISPERSION MODELING
YEAR 2002 - P.M. PEAK HOUR

Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)	
	1-hr	8-hr		1-hr	8-hr		1-hr	8-hr
1	2.28	2.10	41	2.17	2.00	81	2.96	2.15
2	2.28	2.10	42	2.17	2.00	82	2.96	2.28
3	2.28	2.10	43	2.17	2.00	83	2.96	2.28
4	2.28	2.09	44	2.17	2.00	84	2.96	2.29
5	2.28	2.09	45	2.17	2.00	85	2.96	2.29
6	2.28	2.06	46	2.17	2.00	86	2.96	2.31
7	2.28	2.06	47	2.17	2.00	87	2.96	2.31
8	2.28	2.06	48	2.17	2.00	88	2.96	2.33
9	2.28	2.05	49	2.17	2.00	89	2.96	2.33
10	2.28	2.05	50	2.17	2.00	90	2.96	2.34
11	2.17	2.00	51	2.17	2.00	91	2.85	2.33
12	2.05	1.95	52	2.17	1.95	92	2.85	2.30
13	2.05	1.94	53	2.05	1.94	93	2.85	2.33
14	2.05	1.94	54	2.05	1.94	94	2.74	2.30
15	1.94	1.94	55	2.05	1.94	95	2.74	2.30
16	1.94	1.93	56	1.94	1.93	96	2.62	2.29
17	1.94	1.93	57	1.94	1.93	97	2.62	2.31
18	1.94	1.93	58	1.94	1.92	98	2.74	2.29
19	1.94	1.93	59	1.94	1.88	99	2.74	2.29
20	1.94	1.93	60	1.94	1.84	100	2.74	2.27
21	1.94	1.93	61	1.94	1.84	101	2.74	2.27
22	1.94	1.93	62	1.94	1.86	102	2.74	2.23
23	1.94	1.93	63	1.94	1.88	103	2.74	2.23
24	1.94	1.94	64	1.94	1.89	104	2.74	2.23
25	2.05	1.94	65	1.94	1.93	105	2.74	2.22
26	2.05	1.94	66	2.05	1.94	106	2.62	2.22
27	2.05	1.95	67	2.05	1.94	107	2.62	2.21
28	2.17	2.00	68	2.05	1.94	108	2.62	2.21
29	2.28	2.05	69	2.05	1.95	109	2.62	2.21
30	2.28	2.05	70	2.17	2.00	110	2.51	2.20
31	2.28	2.05	71	2.17	2.00	111	2.51	2.20
32	2.28	2.05	72	2.17	2.00	112	2.51	2.18
33	2.28	2.05	73	2.17	2.00	113	2.51	2.15
34	2.28	2.05	74	2.17	1.97	114	2.51	2.12
35	2.28	2.05	75	2.17	1.95	115	2.39	2.12
36	2.28	2.05	76	2.17	1.94	116	2.39	2.11
37	2.28	2.05	77	2.17	1.94	117	2.39	2.11
38	2.28	2.05	78	2.17	1.94	118	2.39	2.11
39	2.28	2.03	79	2.17	1.94	119	2.39	2.11
40	2.28	2.00	80	2.17	1.88	120	2.39	2.11

TABLE A-3

RESULTS OF DISPERSION MODELING
YEAR 2010 - A.M. PEAK HOUR
(2 DRIVEWAYS)

Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)	
	1-hr	8-hr		1-hr	8-hr		1-hr	8-hr
1	2.39	2.04	41	2.62	2.33	81	4.56	3.34
2	2.28	2.09	42	2.62	2.33	82	4.67	3.39
3	2.28	2.11	43	2.62	2.31	83	4.67	3.39
4	2.39	2.13	44	2.62	2.31	84	4.67	3.39
5	2.51	2.13	45	2.62	2.31	85	4.67	3.41
6	2.51	2.15	46	2.62	2.31	86	4.67	3.41
7	2.62	2.18	47	2.62	2.31	87	4.67	3.41
8	2.62	2.20	48	2.62	2.31	88	4.56	3.35
9	2.62	2.21	49	2.62	2.31	89	4.56	3.35
10	2.62	2.25	50	2.62	2.31	90	4.56	3.32
11	2.39	2.07	51	2.62	2.31	91	4.45	3.29
12	2.17	2.02	52	2.39	2.20	92	4.45	3.29
13	2.05	1.95	53	2.39	2.12	93	4.33	3.26
14	2.05	1.95	54	2.28	2.06	94	4.33	3.19
15	2.05	1.94	55	2.28	2.02	95	4.22	3.15
16	2.05	1.94	56	2.17	1.98	96	4.10	3.09
17	2.05	1.89	57	2.17	1.96	97	3.99	3.04
18	1.94	1.88	58	2.17	1.96	98	3.88	3.00
19	1.94	1.87	59	2.05	1.96	99	3.88	2.95
20	1.94	1.89	60	2.05	1.94	100	3.76	2.88
21	1.94	1.89	61	2.05	1.95	101	3.65	2.82
22	2.05	1.94	62	2.05	1.96	102	3.53	2.72
23	2.05	1.94	63	2.17	1.96	103	3.53	2.66
24	2.05	1.94	64	2.17	1.96	104	3.42	2.58
25	2.05	1.95	65	2.17	2.00	105	3.42	2.46
26	2.17	2.00	66	2.28	2.02	106	3.31	2.42
27	2.28	2.03	67	2.28	2.09	107	3.31	2.39
28	2.39	2.09	68	2.39	2.12	108	3.19	2.37
29	2.74	2.31	69	2.39	2.21	109	3.19	2.34
30	2.74	2.29	70	2.62	2.33	110	3.08	2.31
31	2.74	2.31	71	2.62	2.33	111	3.08	2.30
32	2.62	2.31	72	2.62	2.33	112	2.96	2.28
33	2.62	2.31	73	2.62	2.31	113	2.96	2.25
34	2.62	2.31	74	2.62	2.31	114	2.85	2.25
35	2.62	2.31	75	2.62	2.31	115	2.85	2.22
36	2.62	2.31	76	2.62	2.31	116	2.74	2.19
37	2.62	2.29	77	2.62	2.31	117	2.74	2.18
38	2.62	2.29	78	2.62	2.31	118	2.74	2.18
39	2.62	2.29	79	2.62	2.31	119	2.62	2.17
40	2.62	2.33	80	2.62	2.31	120	2.62	2.15

TABLE A-4

RESULTS OF DISPERSION MODELING
YEAR 2010 - P.M. PEAK HOUR
(2 DRIVEWAYS)

Receptor	CO Concentration (mg/m^3)		Receptor	CO Concentration (mg/m^3)		Receptor	CO Concentration (mg/m^3)	
	1-hr	8-hr		1-hr	8-hr		1-hr	8-hr
1	2.28	2.12	41	2.28	2.05	81	2.96	2.17
2	2.28	2.11	42	2.28	2.05	82	3.08	2.28
3	2.28	2.11	43	2.28	2.05	83	3.08	2.29
4	2.28	2.10	44	2.28	2.04	84	3.08	2.34
5	2.28	2.10	45	2.28	2.03	85	3.08	2.34
6	2.28	2.10	46	2.28	2.02	86	3.08	2.34
7	2.28	2.10	47	2.17	2.00	87	3.08	2.35
8	2.28	2.09	48	2.17	2.00	88	3.08	2.34
9	2.28	2.11	49	2.17	2.00	89	3.08	2.35
10	2.51	2.22	50	2.17	2.00	90	2.96	2.36
11	2.39	2.10	51	2.17	2.02	91	2.96	2.35
12	2.17	2.04	52	2.17	1.97	92	2.96	2.36
13	2.17	1.97	53	2.05	1.94	93	2.85	2.34
14	2.17	1.94	54	2.05	1.94	94	2.85	2.36
15	1.94	1.94	55	2.05	1.94	95	2.74	2.35
16	1.94	1.94	56	2.05	1.94	96	2.74	2.35
17	1.94	1.93	57	1.94	1.93	97	2.74	2.33
18	1.94	1.93	58	1.94	1.93	98	2.74	2.33
19	1.94	1.93	59	1.94	1.88	99	2.74	2.31
20	1.94	1.93	60	1.94	1.88	100	2.74	2.30
21	1.94	1.93	61	1.94	1.86	101	2.74	2.27
22	1.94	1.93	62	1.94	1.87	102	2.74	2.27
23	1.94	1.94	63	1.94	1.88	103	2.74	2.25
24	1.94	1.94	64	1.94	1.89	104	2.74	2.23
25	2.05	1.94	65	2.05	1.93	105	2.74	2.23
26	2.05	1.95	66	2.05	1.94	106	2.74	2.23
27	2.05	1.97	67	2.05	1.94	107	2.74	2.22
28	2.28	2.00	68	2.05	1.94	108	2.62	2.22
29	2.62	2.10	69	2.17	1.95	109	2.62	2.21
30	2.51	2.06	70	2.28	2.00	110	2.62	2.21
31	2.39	2.05	71	2.17	2.00	111	2.62	2.21
32	2.39	2.05	72	2.17	2.00	112	2.51	2.20
33	2.28	2.05	73	2.17	2.00	113	2.51	2.20
34	2.28	2.05	74	2.17	2.00	114	2.51	2.18
35	2.28	2.05	75	2.17	1.97	115	2.51	2.20
36	2.28	2.05	76	2.17	1.95	116	2.62	2.18
37	2.28	2.05	77	2.17	1.94	117	2.51	2.22
38	2.28	2.05	78	2.17	1.94	118	2.62	2.12
39	2.28	2.05	79	2.17	1.94	119	2.39	2.11
40	2.28	2.05	80	2.17	1.88	120	2.39	2.11

TABLE A-5

RESULTS OF DISPERSION MODELING
YEAR 2010 - A.M. PEAK HOUR
(1 DRIVEWAY)

Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)	
	1-hr	8-hr		1-hr	8-hr		1-hr	8-hr
1	2.39	2.04	41	2.62	2.33	81	4.56	3.34
2	2.28	2.09	42	2.62	2.33	82	4.67	3.39
3	2.28	2.11	43	2.62	2.31	83	4.67	3.39
4	2.39	2.13	44	2.62	2.31	84	4.67	3.39
5	2.51	2.13	45	2.62	2.31	85	4.67	3.41
6	2.51	2.15	46	2.62	2.31	86	4.67	3.41
7	2.62	2.18	47	2.62	2.31	87	4.67	3.41
8	2.62	2.20	48	2.62	2.31	88	4.56	3.35
9	2.62	2.21	49	2.62	2.31	89	4.56	3.35
10	2.62	2.25	50	2.62	2.31	90	4.56	3.32
11	2.39	2.07	51	2.62	2.31	91	4.45	3.29
12	2.17	2.02	52	2.39	2.20	92	4.45	3.31
13	2.05	1.95	53	2.39	2.12	93	4.33	3.26
14	2.05	1.95	54	2.28	2.06	94	4.33	3.19
15	2.05	1.94	55	2.28	2.02	95	4.22	3.15
16	2.05	1.94	56	2.17	1.98	96	4.10	3.09
17	2.05	1.89	57	2.17	1.96	97	3.99	3.04
18	1.94	1.88	58	2.17	1.96	98	3.88	3.00
19	1.94	1.87	59	2.05	1.96	99	3.88	2.95
20	1.94	1.89	60	2.05	1.94	100	3.76	2.88
21	1.94	1.89	61	2.05	1.95	101	3.65	2.82
22	2.05	1.94	62	2.17	1.96	102	3.53	2.72
23	2.05	1.94	63	2.28	1.96	103	3.53	2.66
24	2.05	1.94	64	2.28	1.98	104	3.42	2.58
25	2.05	1.95	65	2.28	2.02	105	3.42	2.46
26	2.17	2.00	66	2.39	2.05	106	3.31	2.42
27	2.28	2.03	67	2.39	2.12	107	3.31	2.39
28	2.39	2.07	68	2.51	2.15	108	3.19	2.37
29	2.62	2.28	69	2.51	2.23	109	3.19	2.34
30	2.62	2.28	70	2.62	2.33	110	3.08	2.31
31	2.62	2.29	71	2.74	2.36	111	3.08	2.30
32	2.62	2.31	72	2.74	2.38	112	2.96	2.28
33	2.62	2.31	73	2.74	2.39	113	2.96	2.25
34	2.62	2.31	74	2.74	2.38	114	2.85	2.25
35	2.62	2.31	75	2.74	2.33	115	2.85	2.22
36	2.62	2.31	76	2.74	2.33	116	2.74	2.19
37	2.62	2.29	77	2.74	2.33	117	2.74	2.18
38	2.62	2.29	78	2.62	2.31	118	2.74	2.18
39	2.62	2.29	79	2.62	2.31	119	2.62	2.17
40	2.62	2.33	80	2.62	2.31	120	2.62	2.15

TABLE A-6

RESULTS OF DISPERSION MODELING
YEAR 2010 - P.M. PEAK HOUR
(1 DRIVEWAY)

Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)		Receptor	CO Concentration (mg/m³)	
	1-hr	8-hr		1-hr	8-hr		1-hr	8-hr
1	2.28	2.12	41	2.28	2.05	81	2.96	2.17
2	2.28	2.11	42	2.28	2.05	82	3.08	2.28
3	2.28	2.11	43	2.28	2.05	83	3.08	2.29
4	2.28	2.10	44	2.28	2.04	84	3.08	2.34
5	2.28	2.10	45	2.28	2.03	85	3.08	2.34
6	2.28	2.10	46	2.28	2.02	86	3.08	2.34
7	2.28	2.10	47	2.17	2.00	87	3.08	2.35
8	2.28	2.09	48	2.17	2.00	88	3.08	2.34
9	2.28	2.09	49	2.17	2.00	89	3.08	2.35
10	2.28	2.06	50	2.28	2.05	90	2.96	2.37
11	2.17	2.00	51	2.51	2.22	91	2.96	2.35
12	2.05	1.97	52	2.39	2.15	92	2.96	2.36
13	2.05	1.95	53	2.28	2.04	93	2.85	2.34
14	2.05	1.94	54	2.28	1.98	94	2.85	2.37
15	1.94	1.94	55	2.05	1.94	95	2.74	2.36
16	1.94	1.94	56	2.05	1.94	96	2.74	2.36
17	1.94	1.93	57	2.05	1.93	97	2.74	2.33
18	1.94	1.93	58	1.94	1.93	98	2.74	2.33
19	1.94	1.93	59	1.94	1.88	99	2.74	2.31
20	1.94	1.93	60	1.94	1.88	100	2.74	2.30
21	1.94	1.93	61	1.94	1.86	101	2.74	2.27
22	1.94	1.93	62	1.94	1.87	102	2.74	2.27
23	1.94	1.94	63	1.94	1.88	103	2.74	2.25
24	1.94	1.94	64	1.94	1.89	104	2.74	2.23
25	2.05	1.94	65	2.05	1.93	105	2.74	2.23
26	2.05	1.95	66	2.05	1.94	106	2.74	2.23
27	2.05	1.96	67	2.05	1.94	107	2.74	2.22
28	2.17	2.00	68	2.05	1.95	108	2.62	2.22
29	2.28	2.06	69	2.28	1.97	109	2.62	2.21
30	2.28	2.05	70	2.74	2.04	110	2.62	2.21
31	2.28	2.05	71	2.39	2.00	111	2.62	2.21
32	2.28	2.05	72	2.28	2.00	112	2.51	2.20
33	2.28	2.05	73	2.28	2.00	113	2.51	2.20
34	2.28	2.05	74	2.28	2.00	114	2.51	2.18
35	2.28	2.05	75	2.17	1.97	115	2.51	2.15
36	2.28	2.05	76	2.17	1.95	116	2.51	2.12
37	2.28	2.05	77	2.17	1.94	117	2.39	2.12
38	2.28	2.05	78	2.17	1.94	118	2.39	2.11
39	2.28	2.05	79	2.17	1.94	119	2.39	2.11
40	2.28	2.05	80	2.17	1.88	120	2.39	2.11

APPENDIX IX

GUIDELINES FOR SUSTAINABLE BUILDING DESIGN IN HAWAII

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Office of
Environmental Quality Control
Hawaii State Department of Health

Guidelines for Sustainable Building Design in Hawai`i

A planner's checklist

(Adopted by the Environmental Council on October 13, 1999)

Introduction

Hawai`i law calls for efforts to conserve natural resources, promote efficient use of water and energy and encourage recycling of waste products. Planning a project from the very beginning to include sustainable design concepts can be a critical step toward meeting these goals.

The purpose of the state's environmental review law (HRS Ch. 343) is to encourage a full, accurate and complete analysis of proposed actions, promote public participation and support enlightened decision making by public officials. The Office of Environmental Quality Control offers the following guidelines for preparers of environmental reviews under the authority of HRS 343 to assist agencies and applicants in meeting these goals.

These guidelines do not constitute rules or law. They have been refined by staff and peer review to provide a checklist of items that will help the design team create projects that will have a minimal impact on Hawai`i's environment and make wise use of our natural resources. In a word, projects that are *sustainable*.

A sustainable building is built to minimize energy use, expense, waste, and impact on the environment. It seeks to improve the region's sustainability by meeting the needs of Hawai`i's residents and visitors today without compromising the needs of future generations. Compared to conventional projects, a resource-efficient building project will:

1. Use less energy for operation and maintenance

2. Contain less *embodied* energy (e.g. locally produced building products often contain less *embodied* energy than imported products because they require less energy-consuming transportation.)

3. Protect the environment by preserving/conserving water and other natural resources and by minimizing impact on the site and ecosystems

4. Minimize health risks to those who construct, maintain, and occupy the building

5. Minimize construction waste

6. Recycle and reuse generated construction wastes

7. Use resource-efficient building materials (e.g. materials with recycled content and low embodied energy, and materials that are recyclable, renewable, environmentally benign, non-toxic, low VOC (Volatile Organic Compound) emitting, durable, and that give high life cycle value for the cost.)

8. Provide the highest quality product practical at competitive (affordable) first and life cycle costs.

In order to avoid excessive overlapping of items, the checklist is designed to be read in totality, not just as individual sections. This checklist tries to address a range of project types, large scale as well as small scale. Please use items that are appropriate to the type and scale of the project.

Although this list will help promote careful and sensitive planning, mere compliance with this checklist does not confirm sustainability. Compliance with and knowledge of current building codes by users of this checklist is also required.

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4. Energy Use
5. Water Use
6. Landscape and Irrigation
7. Building Materials and Solid Waste Management
8. Indoor Air Quality
9. Commissioning & Construction Project Close-out
10. Occupancy and Operation
11. Resources

I. Pre Design

___1. Hold programming team meeting with client representative, Project Manager, planning consultant, architectural consultant, civil engineer, mechanical, electrical, plumbing (MEP) engineer, structural engineer, landscape architect, interior designer, sustainability consultant and other consultants as required by the project. Identify project and sustainability goals. Client representatives and consultants need to work together to ensure that project and environmental goals are met.

✓2. Develop sustainable guideline goals to insert into outline specifications as part of the Schematic Design documents. Select goals from the following sections that are appropriate for the project.

✓3. Use Cost-Benefit Method for economic analysis of the sustainability measures chosen. (Cost-Benefit Method is a method of evaluating project choices and investments by comparing the present and life cycle value of expected benefits to the present and life cycle value of expected costs.)

___4. Include "Commissioning" in the project budget and schedule. (Building "Commissioning" is the process of ensuring that systems are designed, installed, functionally

tested, and capable of being operated and maintained in accordance with specifications that meet the owner's needs, and recognize the owner's financial and operational capacity. It improves the performance of the building systems, resulting in energy efficiency and conservation, improved air quality and lower operation costs. *Refer to Section IX.*)

II. Site Selection & Site Design

A. Site Selection

✓ 1. Analyze and assess site characteristics such as vegetation, topography, geology, climate, natural access, solar orientation patterns, water and drainage, and existing utility and transportation infrastructure to determine the appropriate use of the site.

✓ 2. Whenever possible, select a site in a neighborhood where the project can have a positive social, economic and/or environmental impact.

___ 3. Select a site with short connections to existing municipal infrastructure (sewer lines, water, waste water treatment plant, roads, gas, electricity, telephone, data communication lines and services). Select a site close to mass transportation, bicycle routes and pedestrian access.

B. Site Preparation and Design

✓ 1. Prepare a thorough existing conditions topographic site plan depicting topography, natural and built features, vegetation, location of site utilities and include solar information, rainfall data and direction of prevailing winds. Preserve existing resources and natural features to enhance the design and add aesthetic, economic and practical value. Design to minimize the environmental impact of the development on vegetation and topography.

✓ 2. Site building(s) to take advantage of natural features and maximize their beneficial effects. Provide for solar access, daylighting and natural cooling. Design ways to integrate the building(s) with the site that maximizes and preserves positive site characteristics, enhances human comfort, safety and health, and achieves operational efficiencies.

___ 3. Locate building(s) to encourage bicycle and pedestrian access and pedestrian oriented uses. Provide

bicycle and pedestrian paths, bicycle racks, etc. Racks should be visible and accessible to promote and encourage bicycle commuting.

✓ 4. Retain existing topsoil and maintain soil health by clearing only the areas reserved for the construction of streets, driveways, parking areas, and building foundations. Replant exposed soil areas as soon as possible. Reuse excavated soils for fill and cut vegetation for mulch.

✓ 5. Grade slopes to a ratio of less than 2 : 1 (run to rise). Balance cut and fill to eliminate hauling. Check grading frequently to prevent accidental over excavation.

✓ 6. Minimize the disruption of site drainage patterns. Provide erosion and dust controls, positive site drainage, and siltation basins as required to protect the site during and after construction, especially, in the event of a major storm.

___ 7. Minimize the area required for the building footprint. Consolidate utility and infrastructure in common corridors to minimize site degradation, and cost, improve efficiency, and reduce impermeable surfaces.

___ 8. For termite protection, use non toxic alternatives to pesticides and herbicides, such as Borate treated lumber, Basaltic Termite Barrier, stainless steel termite barrier mesh, and termite resistant materials.

III. Building Design

___ 1. Consider adaptive re-use of existing structures instead of demolishing and/or constructing a new building. Consult the State Historic Preservation Officer for possible existing historic sites that may meet the project needs.

✓ 2. Plan for high flexibility while designing building shell and interior spaces to accommodate changing needs of the occupants, and thereby extend the life span of the building.

___ 3. Design for re-use and/or disassembly. (For recyclable and reusable building products, see Section VII).

___ 4. Design space for recycling and waste diversion

opportunities during occupancy.

___5. Provide facilities for bicycle and pedestrian commuters (showers, lockers, bike racks, etc.) in commercial areas and other suitable locations.

✓ 6. Plan for a comfortable and healthy work environment. Include inviting outdoor spaces, wherever possible. *(Refer to Section VIII.)*

✓ 7. Provide an Integrated Pest Management approach. The use of products such as Termi-mesh, Basaltic Termite Barrier and the Sentricon "bait" system can provide long term protection from termite damage and reduce environmental pollution.

✓ 8. Design a building that is energy efficient and resource efficient. *(See Sections IV, V, VII.)* Determine building operation by-products such as heat gain and build up, waste/gray-water and energy consumption, and plan to minimize them or find alternate uses for them.

✓ 9. For natural cooling, use:

- o Reflective or light colored roofing, radiant barrier and/or insulation, roof vents
- o Light colored paving (concrete) and building surfaces
- o Tree Planting to shade buildings and paved areas
- o Building orientation and design that captures trade winds and/or provides for convective cooling of interior spaces when there is no wind.

IV. Energy Use

___1. Obtain a copy of the State of Hawai`i Model Energy Code (available through the Hawai`i State Energy Division, at Tel. 587-3811). Exceed its requirements. (Contact local utility companies for information on tax credits and utility-sponsored programs offering rebates and incentives to businesses for installing qualifying energy efficient technologies.)

✓ 2. Use site sensitive orientation to:

a. Minimize cooling loads through site shading and carefully planned east-west orientation.

b. Incorporate natural ventilation by channeling trade winds.

c. Maximize daylighting.

✓ 3. Design south, east and west shading devices to minimize solar heat gain.

___4. Use spectrally selective tints or spectrally selective low-e glazing with a Solar Heat Gain Coefficient (SHGC) of 0.4 or less.

___5. Minimize effects of thermal bridging in walls, roofs and window systems.

✓ 6. Maximize efficiencies for lighting, Heating, Ventilation, Air Conditioning (HVAC) systems and other equipment. Use insulation and/or radiant barriers, natural ventilation, ceiling fans and shading to avoid the use of air conditioning whenever appropriate.

✓ 7. Eliminate hot water in restrooms when possible.

___8. Provide tenant sub-metering to encourage utility use accountability.

___9. Use renewable energy. Use solar water heaters and consider the use of photovoltaics and Building Integrated Photovoltaics (BIPV).

__10. Use available energy resources such as waste heat recovery, when feasible.

A. Lighting

___1. Design for at least 15% lower interior lighting power allowance than the Energy Code.

✓ 2. Select lamps and ballasts with the highest efficiency, compatible with the desired level of illumination and color rendering specifications. Examples that combine improved color rendering with efficient energy use include compact flourescents and T8 flourescents that use tri-phosphor gases.

___3. Select lighting fixtures which maximize system efficacy and which have heat removal capabilities

✓ 4. Reduce light absorption on surfaces by selecting

colors and finishes that provide high reflectance values without glare.

___5. Use task lighting with low ambient light levels.

___6. Maximize daylighting through the use of vertical fenestration, light shelves, skylights, clerestories, building form and orientation as well as through translucent or transparent interior partitions. Coordinate daylighting with electrical lighting for maximum electrical efficiency.

___7. Incorporate daylighting controls and/or motion activated light controls in low or intermittent use areas.

✓8. Avoid light spillage in exterior lighting by using directional fixtures.

✓9. Minimize light overlap in exterior lighting schemes.

__10. Use lumen maintenance procedures and controls.

B. Mechanical Systems

___1. Design to comply with the Energy Code and to exceed its efficiency requirements.

___2. Use "Smart Building" monitor/control systems when appropriate.

___3. Utilize thermal storage for reduction of peak energy usage.

✓4. Use Variable air volume systems to save fan power.

___5. Use variable speed drives on pumping systems and fans for cooling towers and air handlers.

___6. Use air-cooled refrigeration equipment or use cooling towers designed to reduce drift.

___7. Specify premium efficiency motors.

✓8. Reduce the need for mechanical ventilation by reducing sources of indoor air pollution. Use high efficiency air filters and ultraviolet lamps in air handling units. Provide for regular maintenance of filtration

systems. Use ASHRAE standards as minimum.

✓ 9. Locate fresh air intakes away from polluted or overheated areas. Locate on roof where possible. Separate air intake from air exhausts by at least 40 ft.

✓ 10. Use separate HVAC systems to serve areas that operate on widely differing schedules and/or design conditions.

✓ 11. Use shut off or set back controls on HVAC system when areas are not occupied.

__ 12. Use condenser heat, waste heat or solar energy. (Contact local utility companies for information on the utility-sponsored Commercial and Industrial Energy Efficiency Programs which offer incentives to businesses for installing qualifying energy efficient technologies.)

__ 13. Evaluate plug-in loads for energy efficiency and power saving features.

__ 14. Improve comfort and save energy by reducing the relative humidity by waste reheat, heat pipes or solar heat.

__ 15. Minimize heat gain from equipment and appliances by using:

1. Environmental Protection Agency (EPA) Energy Star rated appliances.
2. Hoods and exhaust fans to remove heat from concentrated sources.
3. High performance water heating that exceeds the Energy Code requirements.

__ 16. Specify HVAC system "commissioning" period to reduce occupant exposure to Indoor Air Quality (IAQ) contaminants and to maximize system efficiency.

V. Water Use

A. Building Water

✓ 1. Install water conserving, low flow fixtures as required by the Uniform Plumbing Code.

✓2. If practical, eliminate hot water in restrooms.

✓3. Use self closing faucets (infrared sensors or spring loaded faucets) for lavatories and sinks.

B. Landscaping and Irrigation

(See Section VI.)

VI. Landscape and Irrigation

✓1. Incorporate water efficient landscaping (xeriscaping) using the following principles:

a. Planning, Efficient irrigation: Create watering zones for different conditions. Separate vegetation types by watering requirements. Install moisture sensors to prevent operation of the irrigation system in the rain or if the soil has adequate moisture. Use appropriate sprinkler heads.

b. Soil analysis/improvement: Use (locally made) soil amendments and compost for plant nourishment, improved water absorption and holding capacity.

c. Appropriate plant selection: Use drought tolerant and/or slow growing hardy grasses, native and indigenous plants, shrubs, ground covers, trees, appropriate for local conditions, to minimize the need for irrigation.

d. Practical turf areas: Turf only in areas where it provides functional benefits.

e. Mulches: Use mulches to minimize evaporation, reduce weed growth and retard erosion.

Contact the local Board of Water Supply for additional information on xeriscaping such as efficient irrigation, soil improvements, mulching, lists of low water-demand plants, tours of xeriscaped facilities, and xeriscape classes.

___2. Protect existing beneficial site features and save

trees to prevent erosion. Establish and carefully mark tree protection areas well before construction.

___3. Limit staging areas and prevent unnecessary grading of the site to protect existing, especially native, vegetation.

✓4. Use top soil from the graded areas, stockpiled on the site and protected with a silt fence to reduce the need for imported top soil.

✓5. Irrigate with non-potable water or reclaimed water when feasible. Collect rainwater from the roof for irrigation.

___6. Sub-meter the irrigation system to reduce water consumption and consequently water and sewer fees. Contact the local county agency to obtain irrigation sub-metering requirements and procedures. Locate irrigation controls within sight of the irrigated areas to verify that the system is operating properly.

___7. Use pervious paving instead of concrete or asphalt paving. Use natural and man-made berms, hills and swales to control water runoff.

___8. Avoid the use of solvents that contain or leach out pollutants that can contaminate the water resources and runoff. Contact the State of Hawai`i Clean Water Branch at 586-4309 to determine whether a NPDES (National Pollutant Discharge Elimination System) permit is required.

___9. Use Integrated Pest Management (IPM) techniques. IPM involves a carefully managed use of biological and chemical pest control tactics. It emphasizes minimizing the use of pesticides and maximizing the use of natural process

✓10. Use trees and bushes that are felled at the building site (i.e. mulch, fence posts). Leave grass trimmings on the lawn to reduce green waste and enhance the natural health of lawns.

✓11. Use recycled content, decay and weather resistant landscape materials such as plastic lumber for planters, benches and decks.

VII. Building Materials & Solid

Waste Management

A. Material Selection and Design

✓ 1. Use durable products.

___2. Specify and use natural products or products with low embodied energy and/or high recycled content. Products with recycled content include steel, concrete with glass, drywall, carpet, etc. Use ground recycled concrete, graded glass cullet or asphalt as base or fill material.

___3. Specify low toxic or non-toxic materials whenever possible, such as low VOC (Volatile Organic Compounds) paints, sealers and adhesives and low or formaldehyde-free materials. Do not use products with CFCs (Chloro-fluoro-carbons).

✓ 4. Use locally produced products such as plastic lumber, insulation, hydro-mulch, glass tiles, compost.

___5. Use advanced framing systems that reduce waste, two stud corners, engineered structural products and prefabricated panel systems.

___6. Use materials which require limited or no application of finishing or surface preparation. (i.e. finished concrete floor surface, glass block and glazing materials, concrete block masonry, etc.).

___7. Use re-milled salvaged lumber where appropriate and as available. Avoid the use of old growth timber.

___8. Use sustainably harvested timber.

___9. Commit to a material selection program that emphasizes efficient and environmentally sensitive use of building materials, and that uses locally available building materials. (A list of Earth friendly products and materials is available through the Green House Hawai'i Project. Call Clean Hawai'i Center, Tel. 587-3802 for the list.)

B. Solid Waste Management, Recycling and Diversion Plan

___1. Prepare a job-site recycling plan and post it at the

job-site office.

___2. Conduct pre-construction waste minimization and recycling training for employees and sub-contractors.

___3. Use a central area for all cutting.

___4. Establish a dedicated waste separation/diversion area. Include Waste/Compost/Recycling collection areas and systems for use during construction process and during the operational life cycle of the building.

___5. Separate and divert all unused or waste cardboard, ferrous scrap, construction materials and fixtures for recycling and/or forwarding to a salvage exchange facility. Information on "Minimizing C&D (construction and demolition) waste in Hawai`i" is available through Department of Health, Office of Solid Waste Management, Tel. 586-4240.

___6. Use all green waste, untreated wood and clean drywall on site as soil amendments or divert to offsite recycling facilities.

___7. Use concrete and asphalt rubble on-site or forward the material for offsite recycling.

✓8. Carefully manage and control waste solvents, paints, sealants, and their used containers. Separate these materials from C&D (construction and demolition) waste and store and dispose them of them carefully.

✓9. Donate unused paint, solvents, sealants to non-profit organizations or list on HIMEX (Hawai`i Materials Exchange). HIMEX is a free service operated by Maui Recycling Group, that offers an alternative to landfill disposal of usable materials, and facilitates no-cost trades. See web site, www.himex.org.

__10. Use suppliers that re-use or recycle packaging material whenever possible.

VIII. Indoor Air Quality

✓1. Design an HVAC system with adequate supply of outdoor air, good ventilation rates, even air distribution, sufficient exhaust ventilation and appropriate air cleaners.

___2. Develop and specify Indoor Air Quality (IAQ) requirements during design and contract document phases of the project. Monitor compliance in order to minimize or contain IAQ contaminant sources during construction, renovation and remodeling.

✓3. Notify occupants of any type of construction, renovation and remodeling and the effects on IAQ.

___4. Inspect existing buildings to determine if asbestos and lead paint are present and arrange for removal or abatement as needed.

✓5. Supply workers with, and ensure the use of VOC (Volatile Organic Compounds)-safe masks where required.

___6. Ensure that HVAC systems are installed, operated and maintained in a manner consistent with their design. Use UV lamps in Air Handling Units to eliminate mold and mildew growth. An improperly functioning HVAC system can harbor biological contaminants such as viruses, bacteria, molds, fungi and pollen, and can cause Sick Building Syndrome (SBS).

___7. Install separate exhaust fans in rooms where air polluting office equipment is used, and exhaust directly to the exterior of the building, at sufficient distance from the air intake vents.

✓8. Place bird guards over air intakes to prevent pollution of shafts and HVAC ducts.

___9. Control indoor air pollution by selecting products and finishes that are low or non-toxic and low VOC emitting. Common sources of indoor chemical contaminants are adhesives, carpeting, upholstery, manufactured wood products, copy machines, pesticides and cleaning agents.

✓10. Schedule finish application work to minimize absorption of VOCs into surrounding materials e.g. allow sufficient time for paint and clear finishes to dry before installing carpet and upholstered furniture. Increase ventilation rates during periods of increased pollution.

✓11. Allow a flush-out period after construction, renovation, remodeling or pesticide application to minimize occupant exposure to chemicals and

contaminants.

IX. Commissioning & Construction Project Closeout

___1. Appoint a Commissioning Authority to develop and implement a commissioning plan and a preventative maintenance plan. Project Manager's responsibilities must include coordination of commissioning activities during project closeout.

___2. Commissioning team should successfully demonstrate all systems and perform operator training before final acceptance.

_✓_3. Provide flush-out period to remove air borne contaminants from the building and systems.

_✓_4. Provide as-built drawings and documentation for all systems. Provide data on equipment maintenance and their control strategies as well as maintenance and cleaning instructions for finish materials.

X. Occupancy and Operation

A. General Objectives

_✓_1. Develop a User's Manual for building occupants that emphasizes the need for Owner/Management commitment to efficient sustainable operations.

_✓_2. Management's responsibilities must include ensuring that sustainability policies are carried out.

B. Energy

_✓_1. Purchase EPA rated, Energy Star, energy-efficient office equipment, appliances, computers, and copiers. (Energy Star is a program sponsored by U.S. Dep. Of Energy. Use of these products will contribute to reduced energy costs for buildings and reduce air pollution.)

_✓_2. Institute an employee education program about the efficient use of building systems and appliances, occupants impact on and responsibility for water use, energy use, waste generation, waste recycling programs, etc.

___3. Re-commission systems and update performance documentation periodically per recommendations of the Commissioning Authority, or whenever modifications are made to the systems.

C. Water

_✓_1. Start the watering cycle in the early morning in order to minimize evaporation.

___2. Manage the chemical treatment of cooling tower water to reduce water consumption.

D. Air

_✓_1. Provide incentives which encourage building occupants to use alternatives to and to reduce the use of single occupancy vehicles.

_✓_2. Provide a location map of services within walking distance of the place of employment (child care, restaurants, gyms, shopping).

_✓_3. Periodically monitor or check for indoor pollutants in building.

___4. Provide an IAQ plan for tenants, staff and management that establishes policies and documentation procedures for controlling and reporting indoor air pollution. This helps tenants and staff understand their responsibility to protect the air quality of the facility.

E. Materials and Products

_✓_1. Purchase business products with recycled content such as paper, toners, etc.

___2. Purchase Furniture made with sustainably harvested wood, or with recycled and recycled content materials, which will not off gas VOC's.

_✓_3. Remodeling and painting should comply with or improve on original sustainable design intent.

___4. Use low VOC, non-toxic, phosphate and chlorine free, biodegradable cleaning products.

F. Solid Waste

✓ 1. Collect recyclable business waste such as paper, cardboard boxes, and soda cans.

✓ 2. Avoid single use items such as paper or Styrofoam cups and plates, and plastic utensils.

XI. Resources

Financing: Energy Efficiency in Buildings. U.S. Department of Energy, DOE/EE-0152, May, 1998 (Call Tel.1-800-DOE-EREC or visit local office)

Building Commissioning: The Key to Quality Assurance. U.S. Department of Energy, DOE/EE-0153, May, 1998 (Call Tel.1-800-DOE-EREC or visit local office)

Guide to Resource-Efficient Building in Hawaii. University of Hawai'i at Manoa, School of Architecture and Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, October 1998. (Call Tel. 587-3804 for publication)

Hawaii Model Energy Code. Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, November 1997 (Call Tel. 587-3810 for publication)

Photovoltaics in the Built Environment: A Design Guide for Architects and Engineers. NREL Publications, DOE/GO #10097-436, September 1997 (Call Tel.1-800-DOE-EREC or visit local office)

Building Integrated Photovoltaics: A Case Study. NREL Publications #TP-472-7574, March 1995 (Call Tel.1-800-DOE-EREC or visit local office)

Solar Electric Applications: An overview of Today's Applications. NREL Publications, DOE/GO #10097-357, Revised February, 1997 (Call Tel.1-800-DOE-EREC or visit local office)

Green Lights: An Enlightened Approach to Energy Efficiency and Pollution Prevention. U.S. Environmental Protection Agency, Pacific Island Contact Office (Call Tel. 541-2710 for publication.)

Healthy Lawn, Healthy Environment. U.S. Environmental Protection Agency, Pacific Island Contact

Office. (Call Tel. 541-2710 for this and related publications)

How to Plant a Native Hawaiian Garden. Office of Environmental Quality Control (OEQC), Department of Health, State of Hawai`i (Call Tel. 586-4185 for publication)

Buy Recycled in Hawai`i. Clean Hawai`i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, November 1997. (Call Tel. 587-3802 for publication)

Hawai`i Recycling Industry Guide and other recycling and reuse related fact sheets. Clean Hawai`i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, July 1999. (Call Tel. 587-3802 for publication)

Minimizing Construction and Demolition Waste. Office of Solid Waste Management, Department of Health and Clean Hawai`i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, February 1998. (Call Tel. 586-4240 for publication)

Contractor's Waste Management Guide and Construction and demolition Waste Management Facilities Directory. Clean Hawai`i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, 1999. (Call Tel. 587-3802 for publication)

Waste Management and Action: Construction Industry. Department of Health, Solid and Hazardous Waste Branch (Call Tel. 586-7496 for publication)

Business Guide For reducing Solid Waste. U.S. Environmental Protection Agency, Pacific Island Contact Office, Tel. 541-2710 (Call for publication.)

The Inside Story: A Guide to Indoor Air Quality. U.S. Environmental Protection Agency, Pacific Island Contact Office, Tel. 541-2710 (Call for this and related publications.) Additional information is available from the American Lung Association, Hawai`i, Tel. 537-5966

Selecting Healthier Flooring Materials. American Lung Association and Clean Hawai`i Center, February 1999.

(Call Tel. 537-5966 x307)

Office Paper Recycling: An Implementation Manual. U.S. Environmental Protection Agency, Pacific Island Contact Office, Tel. 541-2710 (Call for publication.)

Acknowledgments

OEQC and the Environmental Council would like to thank Allison Beale, Gary Gill, Nick H. Huddleston, Gail Suzuki-Jones, Purnima McCutcheon, Virginia B. MacDonald, Steve Meder, Ramona Mullahey, Thomas P. Papandrew, Victor Olgay, Howard Tanaka, and Howard Wiig for their assistance with this project.

Return to the OEQC Home Page

Office of Environmental Quality Control
235 S. Beretania St., Suite 702
Honolulu, Hawaii 96813

Phone: (808) 586-4185 Fax: (808) 586-4186
E-Mail: OEQC@mail.health.state.hi.us

APPENDIX X

AGENCY AND PUBLIC REVIEW LETTERS

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENT QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

July 22, 2002

Michael Amii
Department of Community Services
715 South King Street, Suite 205
Honolulu, Hawaii 96813

Attn: Arnold Wong

Dear Mr. Amii:

Subject: Draft Environmental Assessment (EA) for **Aloha Gardens at Helemano**

Please include the following in the final EA:

Agency Contacts:

From the text of the draft EA it appears that you consulted with the State Department of Transportation, although this agency is not on your pre-consultation list. In the final EA include a complete list along with copies of any correspondence. If the DOT has not been consulted, send this agency a copy of the draft EA.

Be sure to include a letter of concurrence from the Historic Preservation Division of DLNR regarding lack of impacts to historic and archeological resources.

Community contacts: Have you pre-consulted with any members of your intended client populations? Those using the services should have an opportunity for input into this process. If you have not, include them, or any agencies representing their interests, in your draft EA distribution, allowing them sufficient time to review the draft EA and submit comments.

Buildout: At full buildout what will the average daily census be? This includes the resident population plus an average number of visitors daily. How will this affect traffic? What mitigation measures will you employ to reduce or eliminate these effects?

Visual impacts:

a. Include drawings of the proposed buildings and any proposed landscaping that show the final appearance of the project.

b. The scale of Appendix I, the Conceptual Plan, is too small to clearly see details. In the final EA enclose a copy of the plan using an enlarged scale.

Soil contamination: It is possible that pesticide residue remains in the soil after years of crop cultivation. We recommend soil testing and remediation if required. The Hazard Evaluation and Emergency Response Office of the Department of Health (586-4249) can be contacted for guidance on this.

Paving; landscaping: Hawaii Revised Statutes 103D-407 requires the use of recycled glass in paving materials whenever possible, and HRS 103D-408 requires the use of native Hawaiian flora whenever and wherever possible. For the text of these sections of HRS contact our office for a paper copy or go to our website at *http://www.state.hi.us/health/oeqc/guidance/index.html.*

Sustainable building techniques: Please consider applying sustainable building techniques presented in the "Guidelines for Sustainable Building Design in Hawaii." In the final EA include a description of any of the techniques you will implement. For a paper copy contact our office or go to our homepage at *http://www.state.hi.us/health/oeqc/guidance/sustainable.htm.*

If you have any questions call Nancy Heinrich at 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

c: Keith Kurahashi

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
HONOLULU, HAWAII 96822

BUS. (808) 988-2231
FAX. (808) 988-1140
E-Mail: kurahashi1@cs.com

November 23, 2002

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
236 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Attention: Ms. Nancy Heinrich

Dear Ms. Salmonson:

Subject: ***Draft Environmental Assessment for Aloha Gardens***
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated July 22, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

In response to your comments:

Agency Contacts

The traffic engineer had some preliminary discussions with the Department of Transportation (DOT), as noted in the Traffic Impact Assessment Report, however, no written correspondence has been received from DOT. The Draft EA has been sent to DOT for their review and comment. A complete list along with any copies of any correspondence from agencies consulted on the Draft EA will be included in the Final EA.

A letter of concurrence on the lack of impacts to historic and archaeological resources has been received from the Department of Land and Natural Resources, Hisroric Preservation Division in response to the request for comments on the Draft EA and will be included in the Final EA.

Community Contacts

Our intended client population are the existing handicapped who may require housing and vocational training and services but are not being served and seniors who are living with their children or alone who need daytime supervision and care. This client population is not readily definable and because they are not presently receiving care, they are not represented by any agencies. Our proposed Aloha Gardens plan has been prepared based on our own experiences with the handicapped at the Helemano Plantation and our understanding of the services and needs of this population in working with Federal, State and City agencies.

Buildout

At full buildout it is projected that approximately 350 to 500 persons will utilize the property daily, including the resident population, employees (staff) and the average number of daily visitors. The impact of this daily population has been considered and is discussed in the Traffic Impact Assessment Report. The recommendations of the Report indicate that utilizing one access point will minimize delays on Kamehameha Highway and that a traffic signal, subject to approval by the DOT would help to assist traffic exiting the property.

Visual Impacts

We will provide floor plans that will provide a better understanding of the size of each building, along with the heights of each building in the Final EA to better understand the potential impact of the buildings on views.

Proposed landscaping will be shown on the Conceptual Plan in the Final EA, using an enlarged scale for better clarity.

Soil Contamination

The applicant will contact the Hazard Evaluation and Emergency Response Office of the Department of Health to determine whether soil testing and remediation will be necessary.

Paving, Landscaping

The applicant will comply with the requirements of Hawaii Revised Statutes Section 103D-407 and 408 regarding the use of recycled glass in paving materials and the use of native Hawaiian flora. Native Hawaiian flora will be used in landscaping and in the nursery area.

Sustainable Building Techniques

The applicant will consider applying certain sustainable building techniques presented in the "Guidelines for Sustainable Building Design in Hawaii". The Final EA will include a list of the techniques that we will implement.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

Arnold –

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HI 96707
(808) 692-5159, fax: (808) 692-5113

Jeremy Harris
Mayor

Timothy E. Steinberger, P.E.
Director

Frank J. Doyle, P.E.
Deputy Director

PRO 02-48

RECEIVED
'02 SEP 4 AM 8 18
DEPT. OF COMMUNITY SERVICES

August 29, 2002

MEMORANDUM

TO: MICHAEL T. AMII, DIRECTOR
DEPARTMENT OF COMMUNITY SERVICES

FROM: TIMOTHY E. STEINBERGER, DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ALOHA GARDENS, HELEMANO, OAHU
DRAFT ENVIRONMENTAL ASSESSMENT, MARCH 2002

We have reviewed the subject Draft Environmental Assessment, which was transmitted via your memo dated August 21, 2002.

We note that the project does not plan to connect to the City's sewer system, and solid waste disposal will be by private haulers. Therefore, we expect no significant impacts to our Department's facilities or services.

Should you have any questions, please call me at 692-5159, or Jack Pobuk, Program Coordinator, at 692-5727.

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
HONOLULU, HAWAII 96822

BUS. (808) 988-2231
FAX. (808) 988-1140
E-Mail: kurahashi1@cs.com

November 23, 2002

Mr. Timothy Steinberger, Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Attention: Ms. Jack Pobuk
Program Coordinator

Dear Mr. Steinberger:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated August 29, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

September 12, 2002

TO: MICHAEL T. AMII, DIRECTOR
DEPARTMENT OF COMMUNITY SERVICES

FROM: CLIFFORD S. JAMILE, MANAGER AND CHIEF ENGINEER

SUBJECT: YOUR MEMORANDUM OF AUGUST 21, 2002 ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR ALOHA GARDENS, TMK: 6-4-3: 3

Thank you for the opportunity to review the subject document for the proposed development.

We have the following comments:

1. We have no water facilities in the area. This area is served by a private water system which we provide water service via a master meter.

2. The fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

3. An on-site water system analysis on water demand, pressures and fire protection should be conducted to ensure that private water system's meter, and mains have adequate capacity to accommodate the additional demand. Del Monte Company should be made aware that any upsizing of the meter and lateral will be at the customers expense. The Board of Water Supply will require a letter from Del Monte acknowledging the adequacy of the private water system and approving the ORI connection to their water system.

4. The availability of water will be confirmed when the building permit is submitted for our review and approval. When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission, and daily storage.

If you have any questions, please contact Joseph Kaakua at 527-6123.

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
HONOLULU, HAWAII 96822

BUS. (808) 988-2231
FAX. (808) 988-1140
E-Mail: kurahashi1@cs.com

November 23, 2002

Mr. Clifford S. Jamille, Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Attention: Mr. Joseph Kaakua

Dear Mr. Jamille:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated September 12, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

In response to your comments:

1. The applicant understands that their service will be off of a private water transmission system connected to municipal water service by a master meter.

2. The fire protection requirements for the project will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

3. An on-site water system analysis on water demand, pressures and fire protection will be conducted to ensure that the private water system's emter and mains have adequate capacity to accommodate the additional demand. We will be working with either Del Monte Company or Dole Plantation for water service and will inform the appropriate company that any upsizing of the meter and lateral will be at the customer's expense. We will provide a

letter, prior to submittal of our building permit application, from either Del Monte or Dole Plantation acknowledging the adequacy of the private water system and approving ORI's connection to their water system.

4. The applicant understands that the availability of water will be confirmed when the building permit is submitted for your review and approval and that the applicant will be required to pay your Water System Facilities Charges for resource development, transmission, and daily storage.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

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

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

September 24, 2002

LD-NAV
L-1442/1801/1904

Ref.: ALOHAGARDENS.RCM

Honorable Michael T. Amii, Director
Department of Community Services
Office of Special Projects
City and County of Honolulu
715 South King Street, Suite 311
Honolulu, Hawaii 96813

Attn: Arnold Wong

Dear Mr. Amii:

Subject: City and County of Honolulu Department of Community Services Draft Environmental Assessment (DEA) Covering the Aloha Gardens Vocational Training Center, Helemano, Island of Oahu, Hawaii (March 2002)

Thank you for the opportunity to review and comment on the subject DEA document covering the subject matter.

The Department of Land and Natural Resources' (DLNR) Land Division made available a copy of the DEA document to the following DLNR Divisions for their review and comment:

- Division of Forestry & Wildlife
- Division of Aquatic Resources
- Division of State Parks
- Commission on Water Resource Management
- Land Division Planning and Technical Services
- Land Division Engineering Branch
- Oahu District Land Office

Attached herewith is a copy of the Land Division Engineering Branch comment.

Based on the attached responses, the Department of Land and Natural Resources has no other comment to offer.

If the Land Division receives any comments pertaining to the subject matter, they will be forwarded to your office at that time.

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0438.

Very truly yours,

Charlene E. Unoki
for DIERDRE S. MAMIYA
Administrator

C: Oahu District Land Office

RECEIVED
LAND DIVISION

2002 SEP 13 P 3:39

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

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

August 29, 2002

LD-NAV
L-1442

ALOHAGARDENS.CMT
Suspense Date: 9/11/02

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

'02 SEP 03 AM 10:09 OFC. OF PLANNING & LAND

SUBJECT: City and County of Honolulu Department of Community Services Draft Environmental Assessment (DEA) Covering the Aloha Gardens, Helemano, Oahu, Hawaii (March 2002)

Please review the DEA covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date.

NOTE: One (1) Copy of the DEA is available for your review in the Land Division Office, room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

( ) We have no comments.

(X) Comments attached.

Signed:

Date:

DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Engineering Branch

LD-NAV
L-1442

COMMENTS

Please note that the project site is located in Zone D. This is an area where flood hazards are undetermined.

However, if future studies determine that the project site is within the flood zone, the proposed project must comply with rules and regulations of the National Flood Insurance Program (NFIP) and all applicable County Flood Ordinances. If there are questions regarding the NFIP, please contact the State Coordinator, Mr. Sterling Yong, of the Department of Land and Natural Resources at 587-0248. If there are questions regarding flood ordinances, please contact applicable County representative.

If you have any questions, please call Mr. Eric Yuasa of the Project Planning Section at 587-0229.

Signed: Andrew M. Monden
ANDREW M. MONDEN, CHIEF ENGINEER

Date: 7/13/02

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

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

August 29, 2002

LD-NAV
L-1442

ALOHAGARDENS.CMT
Suspense Date: 9/11/02

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: City and County of Honolulu Department of Community Services Draft Environmental Assessment (DEA) Covering the Aloha Gardens, Helemano, Oahu, Hawaii (March 2002)

Please review the DEA covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date.

NOTE: One (1) Copy of the DEA is available for your review in the Land Division Office, room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

(X) We have no comments.

( ) Comments attached.

Signed:

Date: DOFAW Administrator
9/9/02

RECEIVED
LAND DIVISION
2002 SEP 13 P 3:42

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

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

August 29, 2002

LD-NAV
L-1442

ALOHAGARDENS.CMT
Suspense Date: 9/11/02

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: City and County of Honolulu Department of Community Services Draft Environmental Assessment (DEA) Covering the Aloha Gardens, Helemano, Oahu, Hawaii (March 2002)

Please review the DEA covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date.

NOTE: One (1) Copy of the DEA is available for your review in the Land Division Office, room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

(X) We have no comments. ( ) Comments attached.

Signed:

Date: 9/9/02
BC

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
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E-Mail: kurahashi1@cs.com

November 23, 2002

Ms. Dierdre S. Mamiya, Administrator
Land Division, Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Mr. Nicholas A. Vaccaro
Land Division Support Services Branch

Dear Ms. Mamiya:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated September 24, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

The applicant understands that the project site is in Zone D where flood hazards are undetermined. If future studies determine that the project site is within a flood zone then rules and regulations of the National Flood Insurance Program (NFIP) and all applicable County Flood Ordinances will be met. Should a flood zone determination be made, we will contact the State Coordinator, Mr. Sterling Yong, concerning the NFIP.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

September 30, 2002

TPD8/02-03490R

MEMORANDUM

TO: MICHAEL T. AMII, DIRECTOR
DEPARTMENT OF COMMUNITY SERVICES

ATTN: ARNOLD WONG

FROM: CHERYL D. SOON, DIRECTOR

SUBJECT: ALOHA GARDENS

In response to your August 21, 2002 memorandum, we reviewed the draft environmental assessment (EA) for the subject project.

According to the draft EA, the only roadway affected by the subject project is Kamehameha Highway, which is under the jurisdiction of the State Department of Transportation. In view of this, we have no comments on the traffic impacts of the proposed project.

The only comment that we have is that the project should include accessible pedestrian pathways to and from the City bus stops on Kamehameha Highway.

Should you have any questions regarding this matter, please contact Faith Miyamoto of the Transportation Planning Division at Local 6976.

CHERYL D. SOON

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
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November 23, 2002

Ms. Cheryl D. Soon, Director
Department of Transportation Services
City and County of Honolulu
Pacific Park Plaza
711 Kapiolani Boulevard, Suite 1200
Honolulu, Hawaii 96813

Attention: Ms. Faith Miyamoto
Transportation Planning Division

Dear Ms. Soon:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated September 24, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

The applicant will provide an accessible pedestrian pathway to the City bus stop on Kamehameha Highway.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
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JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

2002/ELOG-2468 (RY)

October 15, 2002

TO: MICHAEL T. AMII, DIRECTOR
DEPARTMENT OF COMMUNITY SERVICES

FROM: RANDALL K. FUJIKI, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA) FOR ALOHA GARDENS
TAX MAP KEY 6-4-3: PORTION 3, PAALAA-UKA, WAIALUA, OAHU

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

A. North Shore Sustainable Communities Plan (SCP)

The proposed project will be located within the SCP's Agriculture Boundary (AB) and outside of the Rural Community Boundary (RCB). The SCP's vision for lands within the AB is to protect important agricultural land for their economic and open space values. Whereas lands within the RCB are intended to contain existing "built-up" or "settled" areas of rural communities and to provide adequate lands to support established communities. The RCB also supports the vision for lands within the AB by protecting lands outside the RCB for agriculture and other resource or open space values.

The SCP states that the primary use of these lands is for agriculture or for uses that directly support the agriculture industry. The SCP also provides for exceptions to the primary use and included residential uses if permitted under the zoning code, outdoor recreational uses where compatible and appropriate, environmental and educational activities that are resource compatible, and "institutional" uses and environmentally compatible earth stations and communications facilities that prove to be compatible with agricultural uses.

The proposed project would retain open space and include activities of an agricultural nature. However, some of the recreational activities and institutional uses may not be compatible with the area's resources or qualify as a use that directly supports the agriculture industry.

In addition, the applicant also proposes to reclassify a 7.5-acre portion of the project from the State Agricultural District to the Urban District and rezone said portion to the B-1 Neighborhood Business District. The proposed project is not consistent with the SCP's vision for the area and will require an amendment to the SCP. Thus, the vision appears to accommodate some of the proposed uses but not a reclassification to the Urban District or the rezoning to the B-1 Neighborhood Business District.

The City Council on May 29, 2002, adopted Resolution No. 02-144 directing the Department of Planning and Permitting (DPP) to process an amendment to the SCP. The resolution proposes changes to various sections of the North Shore SCP which would allow the proposed Aloha Gardens and an expansion to Dole Plantation visitor facilities.

B. State Land Use Boundary Amendment and Special Use Permit (SUP)

1. The area and amount of land being proposed for the State Urban District reclassification needs to be clearly defined.

2. Proposed uses within the State Agricultural District must be consistent with permitted uses of Section 205-4.5 of the Hawaii Revised Statutes. Any proposed uses not permitted under said section are not allowed without a Special Use Permit. For example, the proposed overnight cabin accommodations of the recreational camp and associated pavilion, office, and parking and driveways, the Laundry Maintenance Facility, and the Elderly Care Facility, are not permitted without an SUP.

   In addition, the 10 duplexes and Congregate Dining Room/Social Hall and the Managers' and Caretaker's Cottages are not farm dwellings and are not permitted without an SUP.

3. The DPP has received a Variance and a SUP application to allow establishment of the proposed project within the State Agricultural District and the City's AG-1 Restricted Agricultural District. Accordingly, the Final EA should be revised to include additional information relating to the Variance and SUP applications.

C. Zoning

1. The relationship, if any, between the existing ORI facilities and the proposed Aloha Gardens should be explained. For example, please indicate if resources, staff or other facilities will be shared by both the existing facility and the proposed Aloha Gardens.

2. If the proposal represents an expansion of Helemano plantation, then the operation and facilities of the existing plantation should be included in the EA so that the cumulative impacts from the overall development may be assessed.

3. The proposed recreational camp should be further described, including the operation and the type of activities and services to be offered at the camp.

   The LUO defines outdoor recreational facilities as "permanent facilities for active outdoor sports and recreation, other than golf courses. Typical uses include: parks, playgrounds, botanical gardens, golf driving ranges, tennis courts, riding stables, academies and trails, and recreational camps." An outdoor recreational facility is permitted in the AG-2 General Agricultural District with a Conditional Use Permit (CUP) - Minor.

   We note that the proposed cabins in the Recreational Camp appear to be "vacation cabins" under the LUO and are thus not permitted within the City Agricultural Districts. Vacation cabins are only allowed as accessory to outdoor recreational facilities in the P-2 General Preservation District. Accordingly, a variance from the LUO permitted uses may be required.

4. In addition, the AG-2 zoning district permits dwellings as "farm dwellings". Further, a maximum of two farm dwellings is permitted on the site, unless a cluster permit or subdivision is obtained. However, the three dwelling units (two managers and one caretaker) may be evaluated as accessory to the conditional uses. Accessory dwellings for the owner or caretaker of the principal uses on the proposed B-1 zoned portion may also be permitted, provided the dwellings are located above or behind the principal commercial use(s).

5. The operation of the special needs housing should be further described, including whether the units are dwelling or lodging units. Based on the information provided, it could not be confirmed that the operation is a group living facility under the LUO.

A group living facility is permitted within the AG-2 zoning district with an approved Conditional Use Permit (CUP) - Major. We note that the proposed 20 units, plus the manager and caretaker dwellings, exceed the maximum number of dwellings generally permitted under an agricultural cluster. If the operation is a group living facility, then the density of the operation will be further evaluated under the CUP.

6. A day-care facility is permitted within the AG-2 zoning district with an approved CUP - major. Please note the day-care facility is subject to the development and design standards specified in Article 5 of the LUO.

7. *Section III.A.5, Land Use Approvals, of the EA should be revised to include the* various LUO permits which may be required for the project (e.g., CUP for group living facilities and/or day-care facilities and use variance for vacation cabins and off-site parking within the City AG-2 General Agricultural District).

D. Chapter 343, Hawaii Revised Statutes

1. The action that requires compliance with Chapter 343, HRS, is not a change in zoning but the use of City and Federal funds under the Community Development Block Grant Program.

2. The applicant's agent has advised us that a revised site plan is under preparation based on a new layout proposed under the SUP application. The revised site plan should be included in the Final EA.

E. Other Comments

1. We do not understand Page 15, second sentence. The third sentence of this paragraph should be corrected to indicate that it is the use CDBG Program funds that require compliance with Chapter 343, HRS.

2. The ALISH and Land Study Bureau's detailed land classification ratings for the soil should be identified.

3. The DEA discusses air quality impacts from short term construction activities but fails to disclose potential long term impacts from adjoining agricultural operations and activities. Residents, employees and students of the facility may be impacted from airborne particulates, pesticides, and herbicides as a result of nearby agriculture operations. The DEA should discuss these potential hazards and any mitigation measures to protect clients that may be sensitive to these long-term conditions.

Thank you for the opportunity to comment. If you have any questions, please contact Raymond Young of my staff at 527-5839.

Doc: 179858

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
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November 23, 2002

Ms. Loretta Chee, Acting Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Attention: Mr. Raymond Young

Dear Ms. Chee:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated October 15, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

In response to your comments:

A. North Shore Sustainable Communities Plan (SCP)

We understand that the SCP may need to be amended to permit the proposed zone change to B-1 Neighborhood Business District and have filed an application for an amendment to the SCP.

B. State Land Use Boundary Amendment and Special Use Permit (SUP)

1. The land area proposed for a State Urban District reclassification is 7.49 acres as indicated on the Site Development Plan included in the Final EA.

2. At the time the Draft EA was prepared, the following land use regulatory approvals were to be pursued: State Land Use Boundary

Amendment, North Shore Sustainable Communities Plan Amendment, Zone Change, and Special Use Permit. However, since that time, based on comments from the North Shore Neighborhood Board and recommendations from the Department of Planning and Permitting, we are now processing applications for a zoning variance and Special Use Permit to allow the proposed Aloha Gardens to proceed without the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment and Zone Change.

Based on the concerns presented by your staff and comments from the Land Use Commission, we will restrict development not directly related to the open space, outdoor recreation and crop production that would be considered permitted uses on SLU Agricultural District Land to 14.9 acres.

3. The Final EA will be updated to include additional information related to the Variance and SUP application.

C. Zoning

1. The existing ORI residents may utilize the resources, staff and facilities at the Aloha Gardens Development, however, residents and personnel at the Aloha Gardens development, upon its completion is not expected to utilize facilities at the existing Helemano Plantation site.

2. It is being developed as a separate endeavor under a newly formed corporate entity and should not be considered an expansion of the existing Helemano Plantation.

3. The proposed recreational camp, in addition to providing the participants to experience gardening and farming in the surrounding fields and nursery, will be given an opportunity to participate in field sports (according to their abilities) such as soccer, football, and

baseball. In addition, the open lawn area will also be utilized for volleyball, horseshoes, croquet, lawn bowling and Tai Chi.

4. We understand that the proposed living quarters (managers, caretakers and staff quarters) may be considered accessory to the conditional uses or as accessory to the uses on the proposed B-1 zoned portion of the property.

5. The special needs housing will be lodging units and will not include kitchens. There will be a congregate dining area for the residents to take their meals. We understand that there will be 10 total lodging units within the group living facility complex and may be reconfigured to 5 duplexes (10 lodging units). We understand that the density of the operation will be considered under the future conditional use permit application or the current variance application, as applicable.

6. The day-care facility will be designed to meet the design standards specified in Article 5 of the Land Use Ordinance (LUO).

7. Section III.A.5, Land Use Approvals, will be revised in the Final EA to include the various LUO permits that will be required for the project.

D. Chapter 343, Hawaii Revised Statutes (HRS)

1. We will note in the Final EA that the action requiring compliance with Chapter 343, HRS, is the use of City and Federal funds under the Community Development Block Grant program.

2. The revised site plan will be included in the Final EA.

E. Other Comments

1. The third sentence in paragraph three will be deleted and it will be noted in the introduction portion of the Final EA that the action

requiring compliance with Chapter 343, HRS, is the use of City and Federal funds under the Community Development Block Grant program.

2. The ALISH and Land Study Bureau's detailed land classification ratings for the soil will be identified in the Final EA.

3. The Final EA will discuss the potential long term impacts from the adjoining agricultural operations and activities on the residents, employees and students of the facility from airborne particulates, pesticides, and herbicides as a result of nearby agriculture operations. The Final EA will discuss mitigation plans to protect clients sensitive to these long-term conditions.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

DEPARTMENT OF PARKS AND RECREATION

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
PHONE: (808) 692-5561 • FAX: 692-5131 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

WILLIAM D. BALFOUR, JR.
DIRECTOR

EDWARD T. SHIPPAM
DEPUTY DIRECTOR

October 28, 2002

TO: MICHAEL T. AMII, DIRECTOR
DEPARTMENT OF COMMUNITY SERVICES

FROM: WILLIAM D. BALFOUR, JR., DIRECTOR

SUBJECT: REQUEST FOR ENVIRONMENTAL ASSESSMENT REVIEW
ALOHA GARDENS MULTI-PURPOSE CENTER
TAX MAP KEY: 6-4-3: PORTION OF 3

Thank you for the opportunity to review and comment on the Environmental Assessment relating to the Aloha Gardens multi-purpose center.

The Department of Parks and Recreation has no questions or comments on this project.

Should you have any questions, please contact Mr. John Reid, Planner, at 692-5454.

WILLIAM D. BALFOUR, JR.
Director

WDB:cu
(17216)

cc: Mr. Don Griffin, Department of Design and Construction

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
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E-Mail: kurahashi1@cs.com

November 23, 2002

Mr. William D. Balfour, Director
Department of Parks and Recreation
City and County of Honolulu
1000 Uluohia Street, Suite 309
Kapolei, Hawaii 96707

Attention: Mr. John Reid

Dear Mr. Balfour:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated October 28, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LINNEL NISHIOKA

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

October 29, 2002

Arnold Wong, Project Manager
Department of Community Services
City and County of Honolulu
715 South King Street, Suite 205
Honolulu, Hawaii 96813

LOG NO: 31009
DOC NO: 0210EJ20

Dear Mr. Wong:

SUBJECT: Chapter 6E-8 Historic Preservation Review Environmental Assessment for the Aloha Gardens Project by ORI Anuenue Hale, Inc.
Pa`alaa Uka, *Waialua*, O`ahu
TMK: (1) 6-4-03:003 por.

Thank you for the opportunity to comment on the Draft EA for this project. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas.

A review of our records shows that there are no known historic sites within this 43.24 acres parcel. The proposed project is located in an area where intensive cultivation has altered the land, and it is unlikely that significant historic sites have survived decades of sugar cane and pineapple cultivation. Information on traditional Hawaiian sites, as provided by Mr. Tom Lenchenko, appears to pertain to locales outside the project area; he does not indicate that there are any significant historic sites, including traditional cultural properties, within or immediately adjacent to the project area.

Consequently, we do not believe that archaeological monitoring of construction for the proposed Aloha Gardens project is warranted. Since we do not regulate cultural monitoring, we cannot comment on the recommendation contained in the cultural assessment to have cultural monitoring during construction. In summary, we believe that this action will have "no effect" on significant historic sites.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

c: Mr. Keith Kurahashi, Kusao & Kurahashi, Inc. 2752 Woodlawn Drive, Suite 5-202, Honolulu, HI 96822

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
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November 23, 2002

Mr. Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
State of Hawaii
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Attention: Ms. Sara Collins and Elaine Jourdane

Dear Mr. Hibbard:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated October 29, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

We appreciate your review of our Draft EA and determination that it is unlikely that any other significant historic sites will be found in the area, and your belief that this action will have "no effect" on any historic sites. We further appreciate your belief that further archaeological monitoring of construction is not warranted.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

BENJAMIN J. CAYETANO
GOVERNOR

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD / CWB

10049PKP.02

October 31, 2002

RECEIVED
2002 NOV -5 AM 8:59
DEPT. OF COMMUNITY SERVICES
CITY & COUNTY

Mr. Arnold Wong
Project Manager
Department of Community Services
715 South King Street, #311
Honolulu, Hawaii 96813

Dear Mr. Wong:

Subject: Request for Environmental Assessment Review
Aloha Gardens

The Department of Health, Clean Water Branch (CWB) has reviewed the subject document and has the following comments:

1. The Army Corps of Engineers should be contacted to identify whether a Federal permit (including a Department of Army permit) is required for this project. If it is determined that a Federal permit is required for the subject project, then a Section 401 Water Quality Certification would also be required from our office.

2. If the construction project involves any of the following activities, a National Pollutant Discharge Elimination System (NPDES) permit coverage is required for each activity:

   a. Construction activities, including clearing, grading, and excavation that result in the disturbance of equal to or greater than five (5) acres of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the commencement of the construction activities.

      Note: *After March 10, 2003, an NPDES permit will be required for construction activities, including clearing, grading, and excavation that result in the disturbance of one (1) acre or more.*

   b. Discharges of hydrotesting water.

   c. Discharges of construction dewatering effluent.

The CWB requires that Notices of Intent (NOI) for NPDES general permits be submitted 30days before the commencement of the respective activities. The proposed amendments to HAR, Chapter 11-55 may also require a copy of the NOI or NPDES permit application to be submitted to the State Department of Land and Natural Resources, State Historic Preservation Division. The NOI forms can be picked up at our office or downloaded from our website at *http://www.state.hi.us/doh/eh/cwb/forms/index.html.*

Should you have any questions, please contact Ms. Kris Poentis of the Engineering Section, CWB, at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:ndp

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
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November 23, 2002

Mr. Denis R. Lau, P.E., Chief
Clean Water Branch
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Mr. Lau:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated October 31, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

In response to your comments:

1. We will contact the Army Corps of Engineers to identify whether a Federal Permit (including a Department of Army permit is required for this project. If it is determined that a Federal permit is required for the subject project, then a Section 401 Water Quality Certification application will be filed and requested from your office.

2. The applicant understands the requirements for the National Pollutant Discharge Elimination System (NPDES) and will probably be required to file an application for the clearing, grading and excavation of land which will probably exceed the 5 acres of total land area that would trigger NPDES permit coverage requirements.

   The applicant further understands that the Clean Water Branch requires that the Notices of Intent (NOI) for NPDES general permits be submitted 30 days before commencement of the respective activity and that copies of

the NOI or NPDES permit application be submitted to the State Department of Land and Natural Resources, State Historic Preservation Division.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

BENJAMIN J. CAYETANO
Governor

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 South King Street
Honolulu, Hawaii 96814-2512

JAMES J. NAKATANI
Chairperson, Board of Agriculture

LETITIA N. UYEHARA
Deputy to the Chairperson

Mailing Address:
P.O. Box 22159
Honolulu, Hawaii 96823-2159

Fax: (808) 973-9613

November 14, 2002

FACSIMILE TRANSMITTAL (4 pages) 527-5498

To: Arnold Wong
Project Manager
Department of Community Services
City and County of Honolulu

From: James J. Nakatani, Chairperson
Board of Agriculture

Subject: Draft Environmental Assessment
Mixed use development
Aloha Gardens
ORI Anuenue Hale, Inc.
TMK: 6-4-03: por. 3 Wahiawa, Oahu
43.24 acres

The Department of Agriculture has reviewed the subject document and offers the following comments.

Background

The proposed project is adjacent to and is an expansion of the existing Helemano Plantation facility which itself is adjacent to the existing Dole Plantation Store and Maze. The proposed facilities will provide services for rehabilitation/therapy, elder

care, education, and employment training. The project site requires zoning changes to two contiguous areas:

1. 7.49 acres from Agricultural to Urban District; and change of zone from AG-1 Restricted Agriculture to B-1 Neighborhood Business for commercial uses, wellness/learning centers, vocational training, country market, mini-golf, 180 parking stalls; and amendment to the North Shore Sustainable Communities Plan by adding language that references this project and site and existing facilities, and institutional language that may be applicable on similar projects throughout the region.

2. 35.75 acres, change of zone from AG-1 Restricted to AG-2 General Agriculture and subsequent Conditional Use Permit for 10 duplex housing units, social hall, 10 recreational cabins and 2 guest cottages, office, 3 office staff cottages, laundry/maintenance, elderly daycare, farm shed, landscaped buffer, gardens, an agricultural production area of about 10 acres for vegetable and fruit production, and educational crop areas growing crops of cultural significance to Asian and Hawaiian cultures, and rose propagation.

The project site is not in agricultural use, however, the surrounding area is in pineapple cultivation. The affected soils have the capacity for good productivity. Immediately adjacent to the subject site and subject of a separate change of zone and development proposal is the 7.5-acre Dole Plantation commercial area expansion, and adjoining 242.5 agricultural production/outdoor recreation area.

The educational/employment training aspects of the project are somewhat linked to the vegetable and fruit production areas (EA, page 17). The produce grown will be used to feed residents and clients of the proposed facility as well as outside sales to the community via the Ohana Country Market (EA, pages 39-40). Furthermore, the proposed educational crop areas are to "...be an integral part of the elder care program" (EA, page 18).

Comments and Recommendation

We do not question the need for the health and welfare services to be provided. We are concerned that the 7.49-acre portion of the project that is to be reclassified from the Agricultural to the Urban District constitutes a significant "spot zone" in the midst of the vast agricultural area between Wahiawa/Whitmore and Waialua/Haleiwa. If authorized, this spot zone creates a precedent that other non-agricultural development interests may use as leverage (whether by virtue of physical proximity or similarity of use) to acquire land use entitlements elsewhere in the north shore or other large agricultural tracts on Oahu.

The Department of Agriculture offers the following recommendations for your consideration:

1. A land use permit vehicle(s) of a less permanent nature than a land use district boundary amendment be used.
2. The relationship of the proposed agricultural uses to the health and welfare programs (food production, income generation, education and work training) should be strengthened, clearly defined, and made a condition of approval.
3. The footprint of the built-up area be reduced,

4. The use of the recreational cabins, housing facilities, cottages, and other non-commercial facilities should be limited to the clients and their guests, and to staff and administration.

5. Clients, visitors, and employees should be informed that the surrounding agricultural activities may produce dust, smoke, odors, and noise. The Hawaii Right-to-Farm Act (Chapter 165, Hawaii Revised Statutes) limits the circumstances under which these emissions may be considered nuisances.

Should you have any questions, please call me at 973-9551, or Earl Yamamoto at 973-9466; fax: 973-9467; email Earl J Yamamoto@hawaii.gov.

C: Keith Kurahashi
Kusao and Kurahashi
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813
Fax: 527-6743

alohagarden.s02

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November 23, 2002

Mr. James J. Nakatani, Chairperson
Board of Agriculture
Department of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814-2512

Attention: Mr. Earl Yamamoto

Dear Mr. Nakatani:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated November 14, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

In response to your comments:

1. The applicant is pursuing a variance and Special Use Permit for the proposed development that may eliminate the need for the State Land Use Boundary Amendment and the zone change. These processes represent less permanent land use permits than the boundary amendment.

2. The health and wellness facility will focus on a number of programs, one of which will be diet and the benefits of certain produce and herbs, some of which will be grown on site and distributed or sold to the participants. The therapeautic benefits of gardening will also be one of wellness programs for seniors and other participants. The work training will focus on crop production and the food preparation and service industries and the restaurant will utilize produce grown on the property in their meal preparation.

The applicant would welcome a condition that the planned crop production be required on the site and that it be integrated to a certain extent into programs on the site. However, we require the ability to provide other training and health programs to provide well rounded individuals flexible enough to seek employment in other industries should food service and agriculture positions not be available in the private sector. This flexibility also recognizes that health and wellness programs need to incorporate a number of different fields, including diet, relaxation techniques (meditation), therapeautic gardening, physical activity (where possible) and other endeavors to strengthen the mind and body.

3. The applicant will look into the possibility of reducing the footprint of the built-up area, however, the development planned is necessary to provide the one-stop service center envisioned at Aloha Gardens.

4. With the exception of the recreational cabins, the housing facilities, cottages, and other non-commercial facilities will be restricted to clients and their guest and to staff and administration. The recreational cabins are planned to be offered to the handicap and their families who for a short period would be clients but may not have a longer term relationship to the programs on the property.

5. Clients, visitors, and employees will be informed that the surrounding agricultural activities may produce dust, smoke, odors, and noise and that the Hawaii Right-to-Farm Act (Chapter 165, Hawaii Revised Statutes) limits the circumstances under which these emissions may be considered nuisances.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

BENJAMIN J. CAYETANO
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF BUSINESS SERVICES

November 1, 2002

Mr. Arnold Wong, Project Manager
Department of Community Service
City and County of Honolulu
715 South King Street, #311
Honolulu, Hawai`i 96813

Dear Mr. Wong:

Subject: Aloha Gardens
Draft Environmental Assessment (DEA) for
Wahiawa, Oahu, TMK: 6-4-3:por 3

The Department of Education (DOE) has reviewed the DEA for Aloha Gardens a 43.24-acre mixed-use development being proposed for former agricultural lands owned by Dole Food Company, Inc. The applicant is Opportunities for the Retarded (ORI) Anuenue Hale, Inc. ORI is proposing to rezone the property from 43.24 acres of AG-1 Restricted Agriculture to 7.49 acres of B-1 Neighborhood Business District and 35.75 acres of AG-2 General Agricultural District.

Aloha Gardens is proposed to serve as a social service delivery center, a group residential facility, and a recreational complex. The residential activities within the proposed project would involve three cottages for managers and a caretaker and 20 units of group living facilities for up to 50 residents and 13 staff members.

The DEA states that Aloha Gardens will not impact local schools because there is no housing planned which would generate school-age children as the housing is specifically for special needs persons. That is not the same as stating that no children would be allowed to live within the project. While the number of residential units is small and would not trigger a request for a fair-share contribution for area schools, it is not clear whether children would be prohibited from living in the three staff cottages or whether residents of the group home might be under the age of 18 and participating in DOE programs.

The DOE has no further comment on the DEA and appreciates the opportunity to review the plans. Should you have any questions, please call Ms. Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

Sincerely yours,

Raynor M. Minami, Director
Facilities and Support Services Branch

RMM:hy

cc: A. Suga, OBS

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November 23, 2002

Mr. Raynor M. Minami, Director
Facilities and Support Services Branch
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

Attention: Ms. Heidi Meeker

Dear Mr. Minami:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated November 1, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

We do not plan to restrict children from the staff cottages. The residents of the group home will all be adults, over 18 years in age.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Department of Community Services

BENJAMIN J. CAYETANO
GOVERNOR

ANTHONY J.H. CHING
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

November 15, 2002

Mr. Arnold Wong
Department of Community Services
715 South King Street, #311
Honolulu, Hawaii 96813

Dear Mr. Wong:

Subject: Request for Environmental Assessment Review
Aloha Gardens Project by ORI Anuenue Hale, Inc.
64-1510 Kamehameha Highway, Wahiawa, Hawaii 96786
TMK No: 6-4-03: por. 3

We have reviewed the subject draft Environmental Assessment forwarded by your memorandum dated October 15, 2002, and confirm that the project site, as generally represented on the State Land Use Map (Exhibit 2), is designated within the boundary of the State Land Use (SLU) Agricultural District. As uses within the SLU Agricultural District are governed in part by Chapter 205 (HRS) and the State Land Use Commission (LUC), we welcome the opportunity to offer the following comments.

Under separate cover from the Department of Planning and Permitting, we received information that the project, known as Aloha Gardens, will include a group living facility (10 units and congregate dining/social hall), elderly daycare facility (including therapy pool and spa), outdoor recreation facility (10 cabins, pavilion/restrooms, office, and staff quarters-2 family dwellings), manager's/caretakers' cottages (3 dwellings–connected, triplex), laundry/maintenance building, vocational training center, health and wellness center, learning center, administrative offices, farmers' market, mini-golf facility, and parking and driveways on approximately 14.9 acres of a 43.388-acre parcel. We also understand that the proposed Aloha Gardens project is intended to serve as a

one-stop, multi-purpose center for the developmentally disabled, the elderly, and the economically disadvantaged.

In its request for our comment, the Department of Planning and Permitting indicated that the project is seeking a State Land Use Special Permit from the City & County of Honolulu for 14.9 acres of the project upon which non-permissible uses in the State Land Use (SLU) Agricultural Districts are contemplated. On the other hand, the draft Environmental Assessment only notes that a proposed change in zoning from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District for a lot of approximately 7.49 acres is also being pursued. Finally, *page 47 of the draft* Environmental Assessment notes that the project will require a State Land Use Boundary Amendment from the City Council.

Based on this conflicting description of the land use regulatory approvals being contemplated by the project and information contained in the draft environmental assessment, we would request that the developer/applicant provide additional description and clarification as to:

- the total project acreage;
- the specific elements of the proposed development; and
- the land use regulatory approvals which will be pursued.

It may be that the proposed Aloha Gardens project is of such magnitude and scope so as to constitute a major urban use in the Agricultural District. If the project is found to constitute a major urban use and the total acreage of the project exceeds 15 acres, the Aloha Gardens project should process a district boundary amendment petition with the LUC rather than seek special permit and/or district boundary amendment exclusively from the City & County of Honolulu.

We note that in Neighborhood Board No. 24, et al. v. State Land Use Commission, et al., 64 Haw. 265, 639 P.2d 1097 (1982), the Hawaii State Supreme Court found that "...the unlimited use of the special permit to effectuate essentially what amounts to a boundary change would undermine the protection from piecemeal changes to the

zoning scheme guaranteed landowners by the more extensive procedural protections of boundary amendment statutes." The Court further recognized that the special permit process should not be "...used as a method of circumventing district boundary amendment procedures to allow the ad hoc infusion of major urban uses into agricultural districts." Although we acknowledge that the applicant proposes to reclassify at some undetermined time approximately 7.5 acres of the project site from the Agricultural District to the Urban District in conjunction with Aloha Gardens' other land use approvals, it is unclear as to which portion of the Aloha Gardens project site this reclassification refers and under what circumstances such reclassification would be initiated in the approval process.

It appears that the remaining acreage (exact total is unclear) of the parcel/project site would be integrated within the overall development concept of Aloha Gardens for crop production and for outdoor recreational use to benefit its residents and participants. While crop production and outdoor recreational use are permissible activities within the Agricultural District, consideration should be given to include this acreage under the umbrella of any and all land use approvals associated with the Aloha Gardens project. This would allow the City & County of Honolulu, Land Use Commission (LUC) and/or other appropriate regulatory agency to view the Aloha Gardens project as an integrated whole rather than on a segmented, component-by-component basis. Recent rulings handed down by the Third Circuit Court have affirmed that these types of projects need to be reviewed by state and county agencies in a comprehensive manner.

Thank you for the opportunity to comment on the subject application. Please feel free to contact Bert Saruwatari of my office at 587-3822, should you require clarification or any further assistance.

Sincerely,

ANTHONY J. H. CHING
Executive Officer

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November 23, 2002

Mr. Anthony J. H. Ching, Executive Director
Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Attention: Mr. Bert Saruwatari

Dear Mr. Ching:

Subject: Draft Environmental Assessment for Aloha Gardens
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated November 15, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

At the time the Draft EA for Aloha Gardens was prepared, the proposal included a rezoning of 7.49 acres on the 43.24 acre site (in accordance with more precise subdivision information received since preparation of the Draft EA, the project site is 43.388 acres in size) and a State Land Use Boundary amendment for the 7.49 acres from Agriculture to Urban.

The uses planned on the remainder of the property were uses that have been permitted in the past on State Land Use (SLU) Agricultural District Land subject to approval of a Conditional Use Permit from the Department of Planning and Permitting and a Special Use Permit from the Planning Commission. These uses will occur on about 7.5 acres, with the balance of the property (approximately 28.4 acres) remaining in open space, outdoor recreation and crop production, which as you have noted are permitted uses within the SLU Agricultural District Land.

The specific elements of the proposed development are provided as follows:

- The proposed development will allow the applicant to become a one-stop location to access a variety of community services. It is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation (Outdoor Recreation Facility, day camp with overnight accommodations), a Group Living Facility and an Elderly Daycare Facility. In addition, accessory uses to include a Vocational Training Facility for residents of the Group Living Facility; a Health and Wellness Center to service the residents of the Group Living Facility and the participants in the Elderly Daycare Facility; a Learning Center to support the residents of the Group Living Facility and the participants in the Elderly Daycare Facility; and Administrative Offices to support all the uses on the property.

The proposed development would allow the applicant to provide services in the areas of special needs housing, elderly day care, rehabilitation/therapy services, health care, ADA accessible outdoor recreation (day camp with overnight accommodations) and employment training to better accommodate the Central Oahu, North Shore and Koolauloa areas in which there are limited opportunities. The project will also provide a farmers market to help market produce grown on the property and in the surrounding community. This will help promote diversified agriculture and will provide employment opportunities on the property and in the surrounding community. Currently, residents in this area often have difficulty accessing these types of services due to geographic and transportation barriers.

The center will offer a variety of services to the community: medical and rehabilitative opportunities; physical, occupational, and speech therapy; development of wellness plans for participants; recreational therapy activities; health education and awareness; alternative healing; fitness, and other holistic wellness activities.

The elder day care program will provide a safe and active place for families to drop off their loved ones during the day. This will provide

respite and relief to families and allow them to maintain employment, while ensuring that their family member is cared for. The participant will be offered a variety of activities based on individual needs and circumstances, and can range from therapeutic activities, to educational and learning opportunities in the Learning Center, to social and recreational interactions with peers, to communing with nature in a variety of gardens and agricultural activities. It will provide them with companionship and both physical and mental stimulation.

The Vocational Training Center and Learning Center will provide a variety of classroom instruction and hands on opportunities for community members. It will offer education and employment training in a number of areas, including, but not limited to: food service, care giving for the elderly and/or handicapped, agriculture and horticulture, aquaculture, landscaping, hospitality services, recreational services, technology, communications, and interrelated employment areas.

The project will retain much of its site in diversified agriculture. In addition to providing for crop production, it will develop educational crop areas in three distinct horticultural/agricultural areas. One area's focus will be on Asian cultures where its varieties of plants will reflect the multi-cultural ethnicity of Hawaii. Whether it is lychee or longan trees, kai choy, pak choy, tea, ornamentals or plants used in herbal healing, the planting will be representative of the many wonderful cultures here in Hawaii. Another will focus on the Hawaiian culture featuring not just native plants, but those used in everyday living here in Hawaii, including plants used medicinally, or for aesthetic enjoyment. The third area will focus on the horticultural aspects of rose production. The educational crop areas will also be an integral part of the elder care program, encouraging its participants to enjoy the fresh air and even take part in horticultural therapy activities.

The Vocational Training Center, Learning Center, Health and Wellness Center, Ohana Country Market and Mini-Golf will operate from 9:00 am to 5:00 pm. The Administrative Office hours will be from 7:30

am to 4:30 pm. The Elderly Daycare will operate from 6:00 am to 6:00 pm.

The proposed 43.388 acre site will be utilized in the following manner. An area of 7.49 acres will allow construction of a new Administration Building, Learning Center, Health and Wellness Center, Vocational Training Center with a Dining Room and Kitchen, Ohana Country Market (Farmers Market) for produce grown on the site and in the North Shore and Central Oahu areas, development of a Mini Golf area, and parking lots. Approximately 7.5 acres would be utilized for facilities for overnight camping (including a day camp), for special needs housing (group living facility), Elderly Daycare Facility, and managers'/caretaker's cottages (three).

With the proposed zone change and State Land Use District Boundary amendment planned for 7.49 acres, a Special Use Permit will be required for the 7.5 acre site. The remaining 28.4 acres would be utilized for crop production (including cultivated fields and a garden area), open space and for outdoor recreational use.

At the time the Draft EA was prepared, the following land use regulatory approvals were to be pursued: State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment, Zone Change, and Special Use Permit. However, since that time, based on comments from the North Shore Neighborhood Board and recommendations from the Department of Planning and Permitting, we are now processing applications for a zoning variance and Special Use Permit to allow the proposed Aloha Gardens to proceed without the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment and Zone Change.

All permit application processes will continue, however, should the zoning variance and Special Use Permit be approved, the applicant has agreed to withdraw its support for the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment and Zone Change.

Based on the concerns that you have presented and discussions with the staff at the Department of Planning and Permitting we will restrict development not directly related to the open space, outdoor recreation and crop production that would be considered permitted uses on SLU Agricultural District Land to 14.9 acres.

We understand that, while the remaining acreage for open space, outdoor recreation and crop production and its continued use for those purposes will be considered in all permit applications and may even become a condition of approval, we do not believe that it will count toward the 14.9 acres limitation for review by the Planning Commission in the case of the Special Use Permit, since these uses are permitted in the SLU Agricultural District.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

cc: Department of Community Services

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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SEIJI F. NAYA, Ph.D.
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Ref. No. P-9884

November 15 , 2002

Mr. Anthony Wong
Department of Community Services
715 South King Street #311
Honolulu, Hawaii 96813

Dear Mr. Wong:

Subject: Request for Environmental Assessment Review
Aloha Gardens Project by ORI Anuenue Hale, Inc.

We have reviewed ORI Anuenue Hale, Inc.'s (applicant) Draft Environmental Assessment (DEA) for the proposed Aloha Gardens development on a 43.24-acre lot located within the Paalaa Uka region of Waialua, Oahu.

The 43.24-acre lot is located within the State Agricultural District. The Land Study Bureau Detailed Land Classification (productivity rating) for the Property is "B" and the parcel contains land classified as "Unique" according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) map.

The site is located adjacent and mauka of Kamehameha Highway at approximately the 1,000 foot level, between two stream corridors. (Kiikii Stream and Paukauila Stream). Kiikii Stream corridor is approximately ½ mile south of the project site. The upper portions of the Kiikii Stream Corridor east of the Military Reservation, from approximately the 1,000 to the 1,200 foot level (to the Conservation District boundary line) were recommended in the Five Year Boundary Review for reclassification from the State Agricultural District to the Conservation District. Approximately one (1) mile north of the site is an area encompassing approximately 3,406 acres of the Paukauila/Helemano/Opaeula Stream corridor. This area was recommended in the Five-year Boundary Review for reclassification from the State Agricultural District to the Conservation District to protect native and candidate endangered plant and aquatic species. The areas are identified in the Hawaii Stream Assessment for their outstanding aquatic resources and abundance of native aquatic species throughout the streams and

their tributaries. It was recommended that any development proposed in this area that may have a negative impact on the stream's resources should be thoroughly and critically reviewed.

The site for the proposed Aloha Gardens is located in the southeasterly portion of the North Shore Sustainable Communities Plan, and is approximately 3 miles north of Wahiawa and approximately 6 miles southeast of Haleiwa. The lot was used for pineapple cultivation and represents a portion that has been subdivided from the 749.365-acre parcel owned by Castle and Cooke Properties, and leased by the Dole Food Company for pineapple cultivation. ORI Anuenue Hale, Inc. plans to purchase approximately 33 acres of the 43.24-acre lot, and the remaining 10 acres for the project will be donated by Dole.

ORI Anuenue Hale, Inc. is a private, non-profit agency that was formed to provide services to a larger population needing assistance in the Central and North Shore communities of Oahu. The agency's parent company, Opportunities for the Retarded Inc., widely recognized for its work with the mentally challenged, operates a sheltered workshop on 5.054 acres of State land identified by tax map key numbers 6-4-3: 2, 4, 5, and 6, at Helemano Plantation.

Helemano Plantation was established under Section 201E and 359G of the Hawaii Revised Statues. Section 359G was repealed in 1987 and present provisions of the statute have been incorporated under Section 201E HRS. Section 201E-225 specifies that "...dwelling units shall be used by the nonprofit organizations and government agencies for the purpose of providing housing opportunities and support services to special needs individuals or families...." Helemano Plantation is adjacent to the southern boundary of the site proposed for the Aloha Gardens development and over the years has become a popular tourist attraction. The sheltered workshop provides vocational training and residential services for adults with disabilities. Helemano Plantation has a gift shop, bake shop, silk flower shop, and restaurant using produce from approximately five acres of gardens where fruits and vegetables are cultivated and maintained by the mentally challenged residents at Helemano.

South and adjacent to the Helemano Plantation is the Dole Plantation Pavilion, also a popular tourist destination. The Dole Pavilion offers a cafeteria style restaurant, gift shop, educational areas providing information on the cultivation, harvesting and processing of pineapple and a recreational component consisting of a walk-through maze.

The commercial/urban-like activities at the Helemano Plantation and Dole Plantation were established and continue to function under the AG-1 zoning. We note that the North Shore Sustainable Communities Plan does not recognize the existing commercial activities at Helemano Plantation and Dole Plantation. However,

information provided by the applicant and the City and County of Honolulu indicate that amendments to the North Shore Sustainable Communities Plan are currently under consideration by the City and County Department of Planning and Permitting. On May 29, 2002, the Honolulu City Council recently adopted Resolution No. O2-143 CD1 instructing the Department of Planning and Permitting to amend the North Shore Sustainable Communities Plan to provide for a Planned Development at Helemano. The proposed amendments have been made to the North Shore Sustainable Communities Plan and are currently under consideration by the City Council.

ORI Anuenue Hale, Inc. proposes the Aloha Gardens development as a mixed use development that will include commercial, recreational, educational, residential and agricultural components. Services will be directed to the entire community and will target the elderly, developmentally disabled, economically disadvantaged, immigrants, displaced workers, and the unemployed. Although not stated in the EA, Aloha Gardens will be an expansion of the services and commercial activity existing at the Helemano Plantation. A variety of services will be offered including a farmer's market, diversified agricultural activities, rehabilitation/therapy services, employment training, and group living facilities with major focus on elder daycare programs.

Pursuant to Section 343-5a (1) actions requiring an environmental assessment include those which propose:

> "...the use of state or county lands or the use of state of county funds...." and
> "....any amendments to existing county plans where such amendment would result in designations other than agriculture, conservation, or preservation..."

ORI Anuenue Hale currently leases a portion (approximately 43.24 acres) of the 749.365-acre parcel owned by the Dole Food Company, Inc. The estimated $10 million cost to implement the project will receive $2 million in *federal* Community Development Block Grant funds. Therefore the requirement for the EA has been triggered by ORI Anuenue Hale Inc.'s zone change request as presented in the EA, from the County's AG-1 Restricted Agricultural District to the B-1 Neighborhood Business District, and a State Land Use District Boundary Amendment to the Urban District for a small portion (7.49 acres) of the 43.24-acre leased area to accommodate the commercial portions of the project. The remainder of the leased area will require a zone change from AG-1 Restricted Agricultural District to AG-2 General Agriculture. The proposed B-1 Neighborhood Business District zoned area will include an administration office, learning cente, health and wellness center, main building, residents and managers dwelling units, dining areas, ohana country market, parking area, and mini golf facility.

Since the distribution of the DEA, ORI Anuenue Hal, Inc. apparently has taken a more realistic look at the various non-agricultural components of the project and allocated acreages for each of these uses. We have addressed the SUP application and provide comments under separate cover.

As presented in the DEA, the urban/commercial-like activities proposed for the Aloha Gardens project are all supportive and compatible with the agricultural activities described in the EA. The residences incorporated in the project will serve the project's clients who in turn will receive food service training and training in the cultivation and preparation of crops from the site for their use in the dining room facilities and for sale in the farmer's market. Use of the market will also be made available to farmers in the area to showcase and sell their produce. The project proposes to make use of lands that are no longer in sugar or pineapple cultivation while providing a venue for the growth of diversified agriculture.

According to the Flood Insurance Rate Maps, the site for the Aloha Gardens is in Zone D. The Zone D designation is used to identify areas where flood hazards are possible, but are undetermined. In areas designated Zone D, no analysis of flood hazards has been conducted.

The project would require the construction of buildings, roadways, driveways, and walkways to facilitate the circulation of pedestrian and vehicular traffic within the project area thereby creating impervious surfaces which may contribute to sheet flows after heavy rains. The DEA mentions the construction of a single driveway from Kamehameha Highway to access the project site and to provide access to the "parking lots throughout the Aloha Gardens".

The applicant states that the Aloha Gardens Development will not generate future projects beyond those addressed in the DEA. However, the nature of the proposed development (the scale of the proposed health, rehabilitation and outdoor recreation facilities), and the proposal to target developmentally disabled, economically disadvantaged, immigrants, displaced workers, unemployed, and elderly, demands constant re-evaluation and consideration of larger facilities and improved services. It would not be unreasonable to assume that this project would eventually require more land for expansion of its facilities.

The DEA estimated that the project will take about five years to complete, and will cost approximately $10 million. Two million of this will be derived from Community Development Block Grants. What will be the source(s) for the remaining $8 million? The Final Environmental Assessment should provide not only information on the source of future funding to complete the project, but also the anticipated monthly/annual operating costs once the project is functioning. The operational costs

should include anticipated costs (including training and wages) associated with using the project's target population to accomplish the agricultural activities.

The applicant provided four alternative considerations in the DEA for the proposed Aloha Gardens project. The alternatives presented are: 'no action'; expansion without the agricultural component; and the development of the Aloha Gardens project through a zone change to the B-1 Neighborhood Business District for 15 acres. All three of these alternatives were dismissed in favor of the fourth alternative to rezone 7.49 acres to B-1 Neighborhood Business District. This decision was later changed and is reflected in ORI Anuenue Hale Inc.'s application for a Special Use Permit, that was submitted to the City and County Department of Planning and Permitting after preparation of the DEA.

The Office of Planning recommends that ORI Anuenue Hale Inc. consider a fifth alternative. Rather than requesting a zone change from the Agricultural District to the B-1 Neighborhood Business District, we recommend that the applicant should consider properties in either of the towns of Wahiawa (3 miles away from the site) or Haleiwa (6 miles from the site) to establish a "campus" for the location of the following uses:

Five Dwelling Units/Cottages for 2 staff, 2 managers, and one caretaker
Laundry/Maintenance Building
Vocational Training Center with a dining room and kitchen
Health and Wellness Center
Learning Center
Elderly Daycare Facility
Administrative Offices
Mini-Golf Facility
Overnight Vacation Units
Parking Facilities

The residents from the group living facility who will participate in the agricultural operations could be bused from the "campus" to their work locations within the Aloha Gardens agricultural area. Then much more of the 43.24-acre lot could remain in the State Agricultural District and be used for bona fide agricultural activities. A Variance and Special Use Permit may be required for the roadside farmers market. Locating the "campus" within or adjacent to an already urbanized area would bring the services and programs closer to the target populations and make use of the existing infrastructure in place. While we recognize the merits of ORI Anuenue Hale Inc.'s project, we are committed to upholding the provisions under Chapter 205 for protecting important agricultural lands. ORI Anuenue Hale Inc.'s proposal for the Aloha Gardens project has the potential to encourage further development of urban uses in the Agricultural District.

Finally we recommend that the Draft Environmental Assessment (DEA) be revised to reflect project plans and information consistent with the information provided in the "Revised State Land Use Permit Application for Aloha Gardens", dated October 2002.

Sincerely,

David W. Blane
Director
Office of Planning

c: Keith Kurasaki
Loretta Chee, City & County of Honolulu DPP
Anthony Ching, LUC

KUSAO & KURAHASHI, INC.
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November 25, 2002

Mr. David W. Blane, Director
Office of Planning
Department of Business, Economic Development &Tourism
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Blane:

Subject: **Draft Environmental Assessment for Aloha Gardens**
Pa'alaa Uka, Waialua, Oahu
Tax Map Key 6-4-3: Portion of 3

Thank you for your response, dated November 15, 2002, to our Draft Environmental Assessment (Draft EA) for Aloha Gardens.

In response to your comments:

The Resolution adopted by the City Council on May 29, 2002, Rsolution No. 02-143, CD1 directs the Department of Planning and Permitting (DPP) to process amendments to the North Shore Sustainable Communities Plan to provide for the development planned at Helemano (for Aloha Gardens). The proposed amendments are being processed by the DPP, which has not prepared a recommendation as to whether the amendments should be approved or denied.

The existing residents at Helemano Plantation may utilize the resources, staff and facilities at the Aloha Gardens Development, however, residents and personnel at the Aloha Gardens development, upon its completion are not expected to utilize facilities at the existing Helemano Plantation site. Aloha Gardens is being developed as a separate endeavor under a newly formed corporate entity and should not be considered an expansion of the existing Helemano Plantation.

The applicant feels that the 7.49-acre site and planned development is large enough to accommodate the demand from its residents and the surrounding community well into the future. The vocational training programs and health and wellness programs will constantly welcome new students and participants, while graduating others. At some point, we hope to put a dent in the number of people needing this type of employment training and just have to deal with new persons preparing to enter the work force that require this training. Similarly our health and wellness programs as time goes on will welcome new participants, while graduating others. However, in this program, new programs will be added as needed to stimulate demand.

The applicant further feels that the camp grounds and activities will cater to a rather select group (handicapped and their families) and that the 10 cabins will adequately serve this population, since the camp period is expected to be on weekends, with the camp able to handle 10 families on 52 weekends each year (520 families each year).

The residential component in the group living facility will be adequate to handle another 50 live-in clients. The program being developed will also be able to accommodate clients that continue to live at home with their families. The applicant feels that with these two options, the demand for programs will be met well into the future.

The elder daycare planned to accommodate about 50 participants may be expanded as necessary within the proposed structure and with participants enjoying various programs within the site should be able to handle additional demand.

The applicant has provided the following breakdown of funds available and needed to complete the Aloha Gardens Development:

Funds Available

1.	Community Development Block Grant	
	Land Acquisition	$ 1,500,000
	Construction	$ 3,500,000

2.	State CIP Funds	$ 500,000
3.	ORI Funds	$ 1,000,000
	Subtotal	**$ 6,500,000**

Future Needed

1.	Weinberg Grant	$ 3,000,000
2.	State CIP Funds	$ 1,000,000
3.	Other Grants or Fundraising	$ as needed
	Subtotal	**$ 4,000,000**
	Total	**$ 10,500,000**

The annual operating expenses are projected at about $1,000,000 per year (including training and wages) and the agricultural operations. The operating expenses will come from the following sources:

1. HUD and USDA rent subsidy programs
2. Federal, State and City job training contracts
3. Fees charged for:
   a. Camping (including meals)
   b. Elderly daycare
   c. Vocational training
   d. Health and wellness classes
4. Other Federal subsidies or grants
5. Any shortfall in operating expenses would be covered through fund raising

The applicant has considered the fifth alternative that you have mentioned, looking for sites in Wahiawa, Haleiwa, Waialua and Kahuku (and this will be mentioned in the Final EA. The applicant even purchased a site in Kahuku and while preparing to apply for the necessary land use permits, the Helemano site became available. The Helemano site held some advantages over Kahuku and the other sites considered, in that it was located between the two service areas of Waialua/Haleiwa and Wahiawa. The Helemano site also has available capacity in private water and sewer systems to accommodate the planned development due to its current level of development (existing Helemano Plantation, Dole

Plantation, Dole packaging plant, and Helemano Military Reservation). The project site although near to Helemano Military Reservation and Whitmore Village (both about a mile away) is adequately buffered from these residential communities to minimize its impact on them.

The applicant is attempting to create a one-stop location to access a variety of community services. It is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation, a learning center, a health and wellness center for elders, a group living facility, administrative facilities, diversified agricultural activities and a farmer's market. Each of the targeted clients will benefit from the proximity of services and the ability to easily travel between the different activity nodes throughout the day. This interaction throughout the day is an important component of the one-stop nature of this development and was an important consideration in attempting to find an appropriate site.

The Final EA will include project plans and information consistent with the "Revised State Land Use Permit Application for Aloha Gardens", dated October 2002.

Your letter and this response will be included in the Final EA for the project.

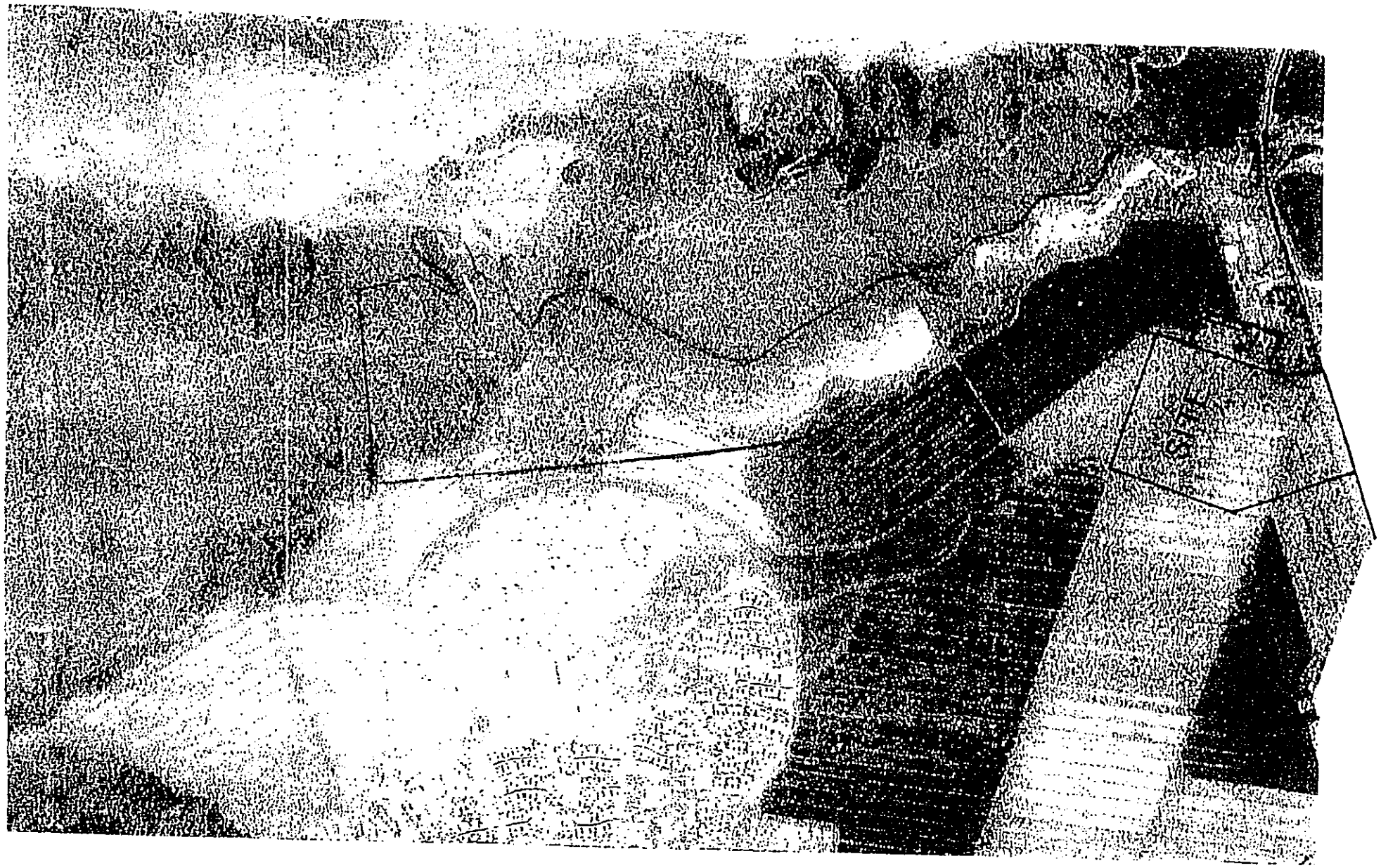
Very truly yours,

Keith Kurahashi

cc: ORI Anuenue Hale, Inc.

APPENDIX XI

AERIAL PHOTO



APPENDIX XII

HUD ENVIRONMENTAL ASSESSMENT

U.S. Department of Housing
and Urban Development
California State Office of
Community Development
Environmental Branch

Environmental Assessment

(HUD recommended format per
24 CFR 58.36, revised 1/99)

Project Identification: Aloha Gardens

Responsible Entity: City and County of Honolulu

Environmental Assessment

Responsible Entity: City and County of Honolulu
[24 CFR 58.2(a)(7)]
Certifying Officer: Jeremy Harris, Mayor
[24 CFR 58.2(a)(2)]
Project Name: Aloha Gardens

Project Location: Helemano, Oahu, Hawaii

Tax Map Key 6-4-03: Portion of 3

Estimated total project cost: $10,000,000

Grant Recipient: Department of Community Services
[24 CFR 58.2(a)(5)]
Recipient Address: 715 So. King Street, Suite 408

Honolulu, Hawaii 96813

Project Representative: Susanna F. Cheung

Telephone Number: (808) 622-3929

Conditions for Approval: (List all mitigation measures adopted by the responsible entity to eliminate or minimize adverse environmental impacts. These conditions must be included in project contracts or other relevant documents as requirements). [24 CFR 58.40(d), 40 CFR 1505.2(c)]

See Page 47, Section VI. Mitigation Measures of the "Draft Environmental Assessment Aloha Gardens" (enclosed)

FINDING: [58.40(g)]

___ **Finding of No Significant Impact**
(The project will not result in a significant impact on the quality of the human environment)

___ **Finding of Significant Impact**
(The project may significantly affect the quality of the human environment)

Preparer Signature: Keith Kurahashi Keith Kurahashi
Title/Agency: President/Kusao & Kurahashi, Inc. **Date:** 3/29/2002

RE Approving Official Signature: _____
Title/ Agency: **Date:**

Statement of Purpose and Need for the Proposal: [40 CFR 1508.9(b)]

See Pages 12-29, Section V. Need for Proposed Development, of the "Application for State Land Use District Boundary Amendment From Agricultural District to Urban District For Aloha Gardens". (enclosed)

Description of the Proposal: Include all contemplated actions which logically are either geographically or functionally a composite part of the project, regardless of the source of funding. [24 CFR 58.32, 40 CFR 1508.25]

See Pages 10-20, Section III. Description of Proposed Action, of the "Draft Environmental Assessment Aloha Gardens".

Existing Conditions and Trends: Describe the existing conditions of the project area and its surroundings, and trends likely to continue in the absence of the project. [24 CFR 58.40(a)]

The project area is vacant and unutilized. The surrounding area is in pineapple cultivation and agricultural support uses, except for an adjacent development that provides educational, vocational and housing services for the developmentally disabled/mentally retarded and a nearby Military installation. In the absence of the project the project area is expected to remain vacant and the surrounding uses are expected to continue.

Statutory Checklist

[24CFR §58.5]

For each listed statute, executive order or regulation, record the determinations made. Note reviews and consultations completed as well as any applicable permits or approvals obtained. Attach evidence that all required actions have been taken. Record any conditions or mitigation measures required. Then, make a determination of compliance or consistency.

Factors	Determinations and Compliance Documentation
Historic Preservation [36 CFR 800]	See Pages 32-36, Subsection 1. Historical and Archaeological Resources and Appendix IV of Draft EA
Floodplain Management [24 CFR 55, Executive Order 11988]	See Pages 29-30, Subsection 4. Drainage, of Draft EA
Wetlands Protection [Executive Order 11990]	Not situated in or near any wetlands
Coastal Zone Management Act [Sections 307(c),(d)]	Not situated in an area subject to Coastal Zone Management review
Sole Source Aquifers [40 CFR 149]	Not over or affecting a Sole Source Aquifer
Endangered Species Act [50 CFR 402]	See Appendix VI - Avifaunal and Feral Mammal Survey of Draft EA
Wild and Scenic Rivers Act [Sections 7 (b), (c)]	Not situated near any rivers
Air Quality [Clean Air Act, Sections 176 (c) and (d), and 40 CFR 6, 51, 93]	See Appendix VIII - Air Quality Impact Report of Draft EA
Farmland Protection Policy Act [7 CFR 658]	See Pages 39-40, Subsection h. Agricultural Lands of Draft EA. In addition, non-agriculture portion of project represents minimal portion of 5,000 acre pineapple plantation.
Environmental Justice [Executive Order 12898]	Draft EA enclosed

HUD Environmental Standards	Determinations and Compliance Documentation
Noise Abatement and Control [24 CFR 51 B]	See Appendix VII - Environmental Noise Assessment of Draft EA
Toxic or Hazardous Substances and Radioactive Materials [HUD Notice 79-33]	None on existing site and none proposed.
Siting of HUD-Assisted Projects near Hazardous Operations [24 CFR 51 C]	No hazardous operations nearby
Airport Clear Zones and Accident Potential Zones [24 CFR 51 D]	Not situated near an airport and not subject to airport clear zones and accident potential zones.

Draft EA - "Draft Environmetal Assessment Aloha Gardens"

Environmental Assessment Checklist

[Environmental Review Guide HUD CPD 782, 24 CFR 58.40; Ref. 40 CFR 1508.8 &1508.27]

Evaluate the significance of the effects of the proposal on the character, features and resources of the project area. Enter relevant base data and verifiable source documentation to support the finding. Then enter the appropriate impact code from the following list to make a finding of impact. Impact Codes: (1) - No impact anticipated; (2) - Potentially beneficial; (3) - Potentially adverse; (4) - Requires mitigation; (5) - Requires project modification. Note names, dates of contact, telephone numbers and page references. Attach additional materials as needed.

Land Development	Code	Source or Documentation
Conformance with Comprehensive Plans and Zoning	4	Draft EA - Consistent with General Plan and State Plan, needed amendments applied for.
Compatibility and Urban Impact	1	Draft EA
Slope	1	Draft EA
Erosion	1	Draft EA
Soil Suitability	1	Draft EA
Hazards and Nuisances including Site Safety	1	Draft EA
Energy Consumption	1	Draft EA
Noise - Contribution to Community Noise Levels	1	Draft EA
Air Quality Effects of Ambient Air Quality on Project and Contribution to Community Pollution Levels	1	Draft EA
Environmental Design Visual Quality - Coherence, Diversity, Compatible Use and Scale	1	Draft EA

Socioeconomic	Code	Source or Documentation
Demographic Character Changes	1	Draft EA
Displacement	1	Draft EA
Employment and Income Patterns	1	Draft EA

Community Facilities and Services	Code	Source or Documentation
Educational Facilities	1	Draft EA
Commercial Facilities	1	Draft EA
Health Care	1	Draft EA
Social Services	1	Draft EA
Solid Waste	1	Draft EA
Waste Water	1	Draft EA
Storm Water	1	Draft EA
Water Supply	4	Draft EA
Public Safety - Police	1	Draft EA
- Fire	1	Draft EA
- Emergency Medical	1	Draft EA
Open Space and Recreation - Open Space	1	Draft EA
- Recreation	1	Draft EA
- Cultural Facilities	1	Draft EA
Transportation	4	Draft EA

Natural Features		Source or Documentation
Water Resources	1	Draft EA
Surface Water	1	Draft EA
Unique Natural Features and Agricultural Lands	1	Draft EA
Vegetation and Wildlife	1	Draft EA

Other Factors		Source or Documentation

NOTE: The Responsible Entity must additionally document compliance with 24 CFR §58.6 in the ERR, particularly with the Flood Insurance requirements of the Flood Disaster Protection Act and the Buyer Disclosure requirements of the HUD Airport Runway Clear Zone/Clear Zone regulation at 24 CFR 51 Subpart D.

Summary of Findings and Conclusions

See Pages 48-55, Sections VIII and IX, Significance Criteria and Anticipated Determination, respectively, of the Draft EA.

ALTERNATIVES TO THE PROPOSED ACTION ..

Alternatives and Project Modifications Considered [24 CFR 58.40(e), Ref. 40 CFR 1508.9] (Identify other reasonable courses of action that were considered and not selected, such as other sites, design modifications, or other uses of the subject site. Describe the benefits and adverse impacts to the human environment of each alternative and the reasons for rejecting it.)

See Pages 45-46, Section V. Major Impacts and Alternatives Considered, of the Draft EA.

No Action Alternative [24 CFR 58.40(e)] (Discuss the benefits and adverse impacts to the human environment of not implementing the preferred alternative).

See Pages 45-46, Section V. Major Impacts and Alternatives Considered, of the Draft EA.

Mitigation Measures Recommended [24 CFR 58.40(d), 40 CFR 1508.20]
(Recommend feasible ways in which the proposal or external factors relating to the proposal should be modified in order to eliminate or minimize adverse environmental impacts.)

See Page 47, Section VI. Mitigation Measures, of the Draft EA.

Additional Studies Performed
(Attach studies or summaries)

See Draft EA

List of Sources, Agencies and Persons Consulted [40 CFR 1508.9(b)]

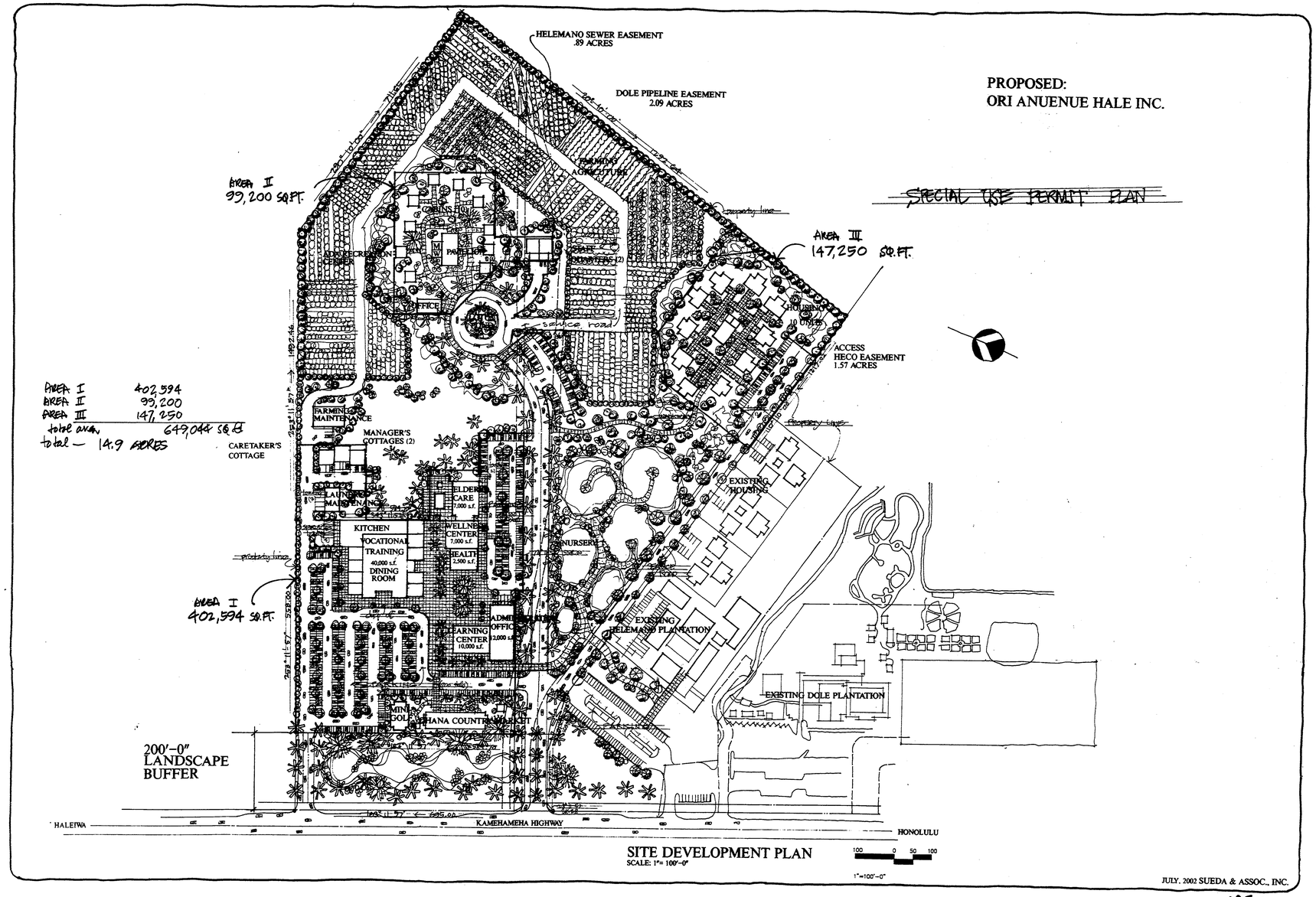
Department of Planning and Permitting
Board of Water Supply
North Shore Neighborhood Board
Wahiawa Neighborhood Board

APPENDIX XIII

FULL SIZE CONCEPTUAL PLAN

MAP/DRAWING

105a


HELEMANO SEWER EASEMENT
.89 ACRES
DOLE PIPELINE EASEMENT
2.09 ACRES
PROPOSED:
ORI ANUENUE HALE INC.
SPECIAL USE PERMIT PLAN
AREA II
99,200 SQ.FT.
AREA III
147,250 SQ.FT.
AREA I
402,594
AREA II
99,200
AREA III
147,250
total area
649,044 SQ.FT.
total — 14.9 ACRES
CARETAKER'S COTTAGE
FARMING MAINTENANCE
MANAGER'S COTTAGES (2)
LAUNDRY MAINTENANCE
ELDERLY CARE 7,000 s.f.
KITCHEN
VOCATIONAL TRAINING 40,000 s.f.
DINING ROOM
WELLNESS CENTER 7,000 s.f.
HEALTH 2,500 s.f.
LEARNING CENTER 10,000 s.f.
ADMIN. OFFICE 2,000 s.f.
NURSERY
EXISTING HOUSING
EXISTING HELEMANO PLANTATION
EXISTING DOLE PLANTATION
ACCESS HECO EASEMENT 1.57 ACRES
AREA I
402,594 SQ.FT.
200'-0" LANDSCAPE BUFFER
HALEIWA
KAMEHAMEHA HIGHWAY
HONOLULU
SITE DEVELOPMENT PLAN
SCALE: 1"= 100'-0"
1"=100'-0"
JULY, 2002 SUEDA & ASSOC., INC.

105a

2002-12-08-OA-FEA-

FINAL
ENVIRONMENTAL ASSESSMENT
ALOHA GARDENS
HELEMANO, OAHU, HAWAII

Tax Map Key: 6-4-3: Portion of 3

ORI ANUENUE HALE, INC.
64-1510 KAMEHAMEHA HIGHWAY
WAHIAWA, HAWAII 96786

APPLICANT

Kusao & Kurahashi, Inc.
Planning and Zoning Consultants
Manoa Market Place
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

AGENT

NOVEMBER 2002

FINAL
ENVIRONMENTAL ASSESSMENT
ALOHA GARDENS
HELEMANO, OAHU, HAWAII

Tax Map Key: 6-4-3: Portion of 3

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AGENT

NOVEMBER 2002

TABLE OF CONTENTS

LIST OF EXHIBITS

APPENDICES

FINAL ENVIRONMENTAL ASSESSMENT
ALOHA GARDENS
HELEMANO, OAHU, HAWAII
Tax Map Key: 6-4-3: Portion of 3

I. INTRODUCTION

This Final Environmental Assessment Report for the development of Aloha Gardens (located at Helemano) was prepared pursuant to and in accordance with the requirements of Chapter 343 HRS and Chapter 200 of Title 11, Administrative Rules - Environmental Impact Statement Rules. The Aloha Gardens development is a proposed mixed use development that will include commercial, recreational, educational, residential and agricultural components. The applicant, ORI Anuenue Hale, Inc., is a private, non-profit agency based in Helemano that intends to develop Aloha Gardens to assist a broad spectrum of the community, including, but not limited to: the elderly, persons developmentally disabled, the economically disadvantaged (low income), immigrants, displaced workers, and the unemployed. The action that triggers this environmental assessment is the proposed use of City and Federal funds under the Community Development Block Grant Program.

The project will allow ORI Anuenue Hale, Inc. to assist in developing and empowering the disadvantaged by improving their status through a combination of job skills development, elder care, accessible recreation, special needs housing, and support of diversified agriculture and related accessory activities. The applicant proposes a change in zoning from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District for a lot of approximately 7.49 acres. The project also entails rezoning approximately

35.9 acres from AG-1 Restricted Agricultural District to AG-2 General Agricultural District. The project will also require a State Land Use District Boundary amendment from the Agricultural District to the Urban District for the 7.49-acre site planned for a B-1 zoning and a Special Use Permit and Conditional Use Permit for about 7.41 acres within the proposed AG-2 zoned area.

At the time the Draft Environmental Assessment was prepared, the following land use regulatory approvals were to be pursued: State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment, Zone Change, and Special Use Permit. However, since that time, based on comments from the North Shore Neighborhood Board and recommendations from the Department of Planning and Permitting, we are now processing applications for a zoning variance and Special Use Permit to allow the proposed Aloha Gardens to proceed without the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment and Zone Change. The project and its impacts have remained the same, however, we are pursuing alternative land use permit approvals that are favored by the North Shore Neighborhood Board and may be more acceptable to the Department of Planning and Permitting.

All permit application processes will continue, however, should the zoning variance and Special Use Permit be approved, the applicant has agreed to withdraw its support for the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment and Zone Change.

The project will be a one-stop location to access a variety of community services. It is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation, a learning center, a health and wellness center for elders, a group living facility, administrative facilities, diversified agricultural activities and a farmer's market.

II. GENERAL INFORMATION

A.	APPLICANT	:	ORI Anuenue Hale, Inc. 64-1510 Kamehameha Highway Wahiawa, Hawaii 96786
B.	RECORDED FEE OWNER	:	Dole Food Company, Inc. 1116 Whitmore Avenue Wahiawa, Hawaii 96786
C.	ACCEPTING AGENCY:		Department of Planning & Permitting City and County of Honolulu 650 South King Street, 7th Floor Honolulu, Hawaii 96813
D.	TAX MAP KEYS	:	6-4-3: Portion of 3
E.	AGENT	:	Kusao & Kurahashi, Inc. Planning and Zoning Consultants 2752 Woodlawn Drive, Suite 5-202 Honolulu, Hawaii 96822 (808) 988-2231
F.	LOCATION	:	64-1510 Kamehameha Highway Wahiawa, Hawaii (Exhibit 1)

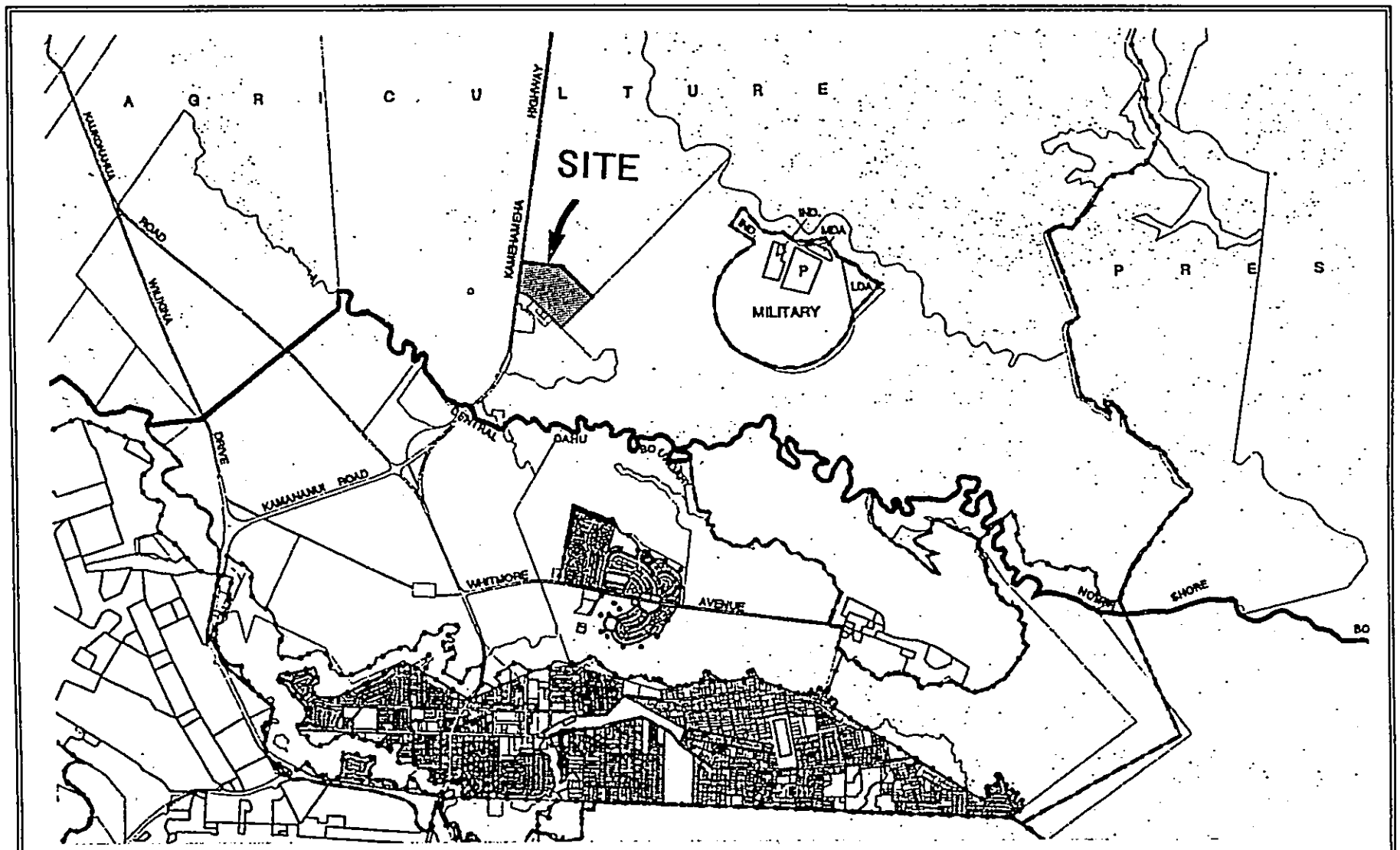


EXHIBIT 1
LOCATION MAP

G. LOT AREA : Approximately 43.388 acres

H. STATE LAND USE : Agriculture (Exhibit 2)

I. NORTH SHORE SUSTAINABLE COMMUNITIES PLAN

LAND USE MAP : Agriculture (Exhibit 3)

PUBLIC FACILITIES MAP : No improvements affecting this site appear on the map (Exhibit 4)

J. EXISTING ZONING : AG-1 Restricted Agricultural District (Exhibit 5)

K. PROPOSED ZONING : AG-1 Restricted Agricultural District to B-1 Neighborhood Business District and AG-2 General Agricultural District (Exhibit 6)

L. SPECIAL DISTRICT : Not in a Special District

M. EXISTING USE : Vacant, unimproved land.

N. LIST OF AGENCIES CONSULTED (Preconsultation)

During the pre-consultation phase prior to development of the Draft EA meetings were held with the Department of Planning and Permitting. In addition, the civil engineering consultant contacted the Board of Water Supply and the traffic engineer contacted the Department of Transportation. The proposed development was also presented to the North Shore and Wahiawa Neighborhood Boards.

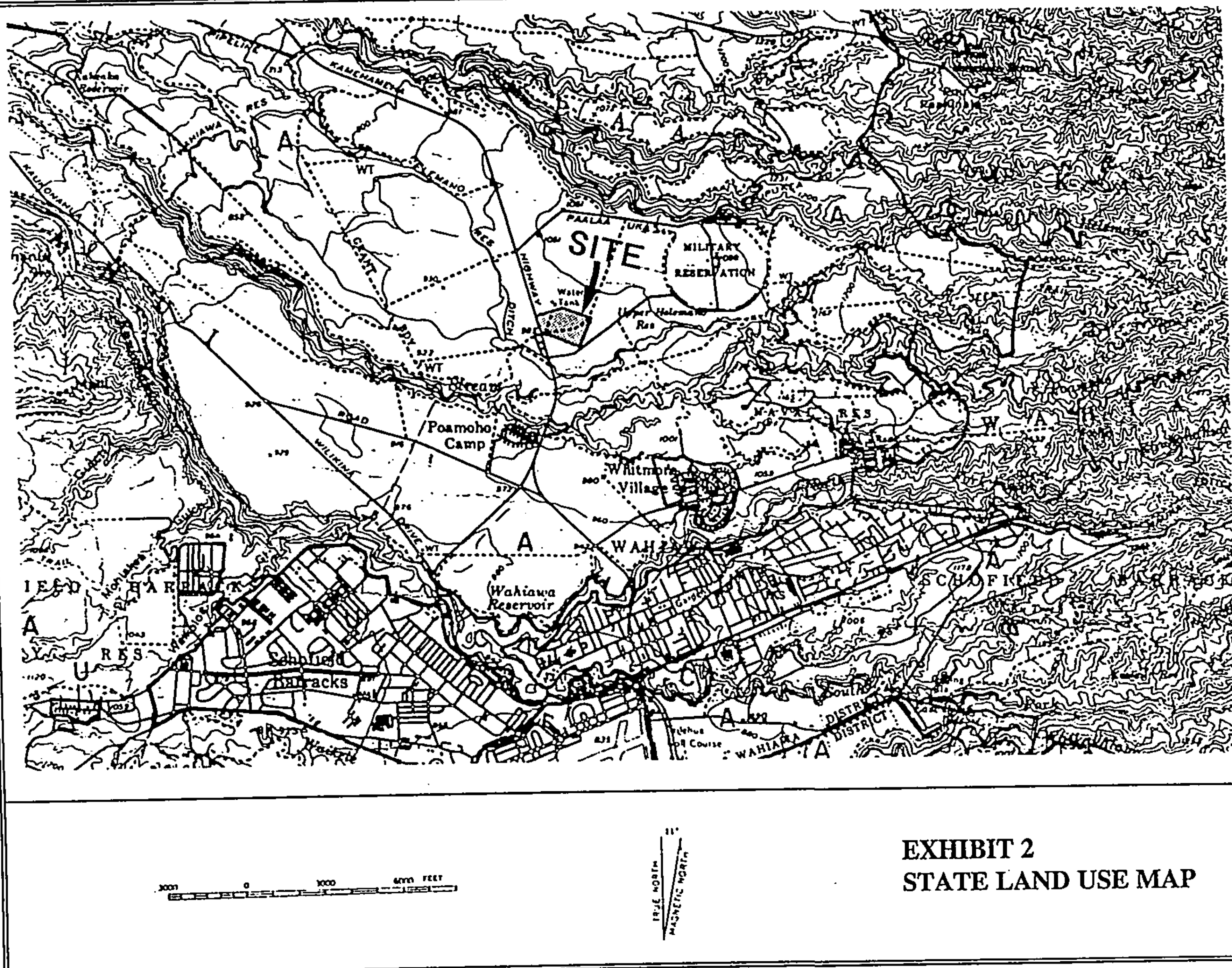
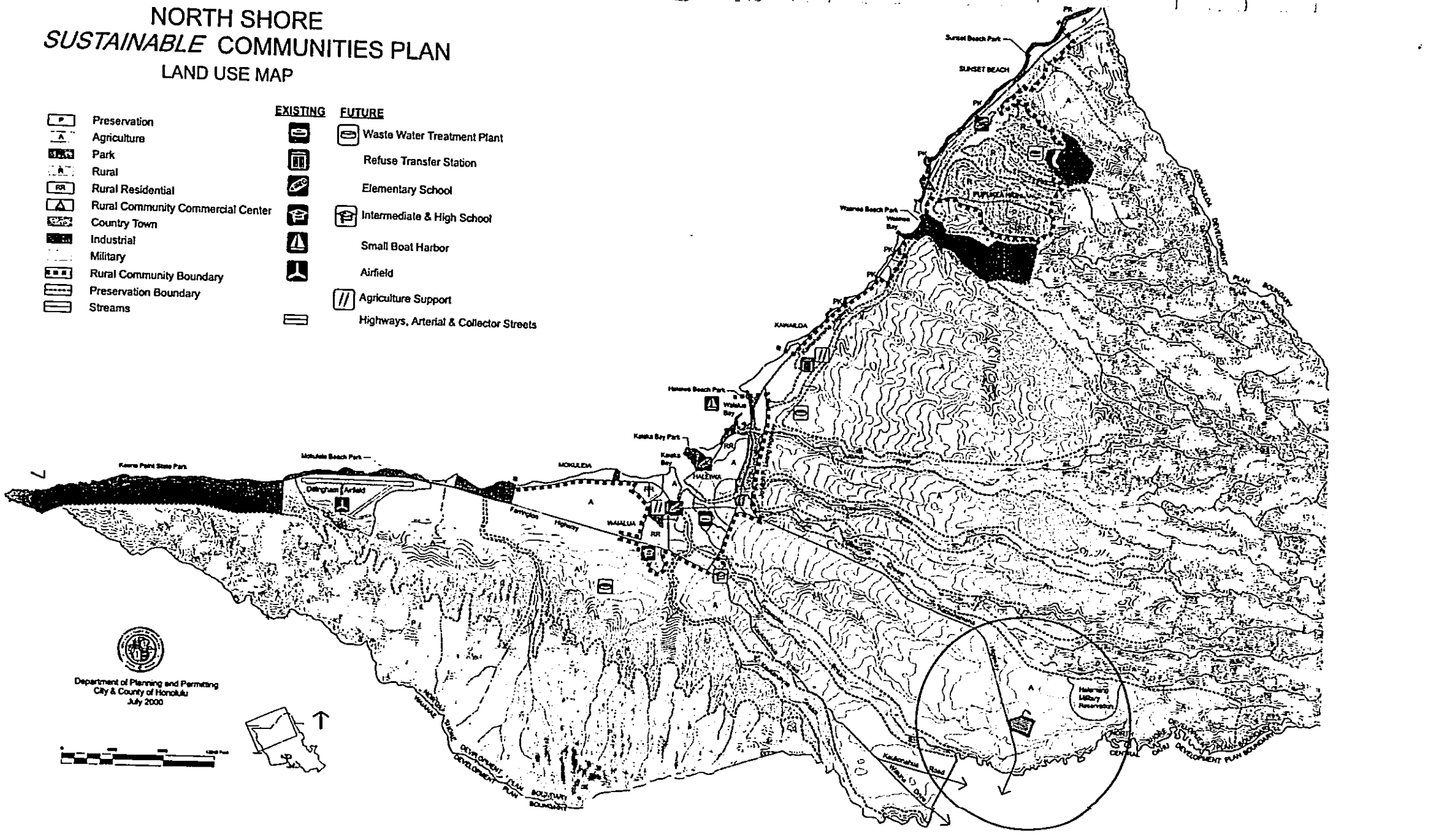


EXHIBIT 2
STATE LAND USE MAP

NORTH SHORE
SUSTAINABLE COMMUNITIES PLAN
LAND USE MAP

- Preservation
- Agriculture
- Park
- Rural
- Rural Residential
- Rural Community Commercial Center
- Country Town
- Industrial
- Military
- Rural Community Boundary
- Preservation Boundary
- Streams

EXISTING	FUTURE
	Waste Water Treatment Plant
	Refuse Transfer Station
	Elementary School
	Intermediate & High School
	Small Boat Harbor
	Airfield
	Agriculture Support
	Highways, Arterial & Collector Streets



Department of Planning and Permitting
City & County of Honolulu
July 2000

EXHIBIT 3

NORTH SHORE
SUSTAINABLE COMMUNITIES PLAN
PUBLIC FACILITIES MAP

	EXISTING	FUTURE / IMPROVEMENTS
Preservation		
Agriculture		
Rural Communities		
Parks		Waste Water Treatment Plant
Military		Refuse Transfer Station
Rural Community Boundary		Elementary School
Preservation Boundary		Intermediate & High School
Streams		Small Boat Harbor
		Airfield
		Agriculture Support
		Highways, Arterial & Collector Streets (Improvements)
		Bikeways

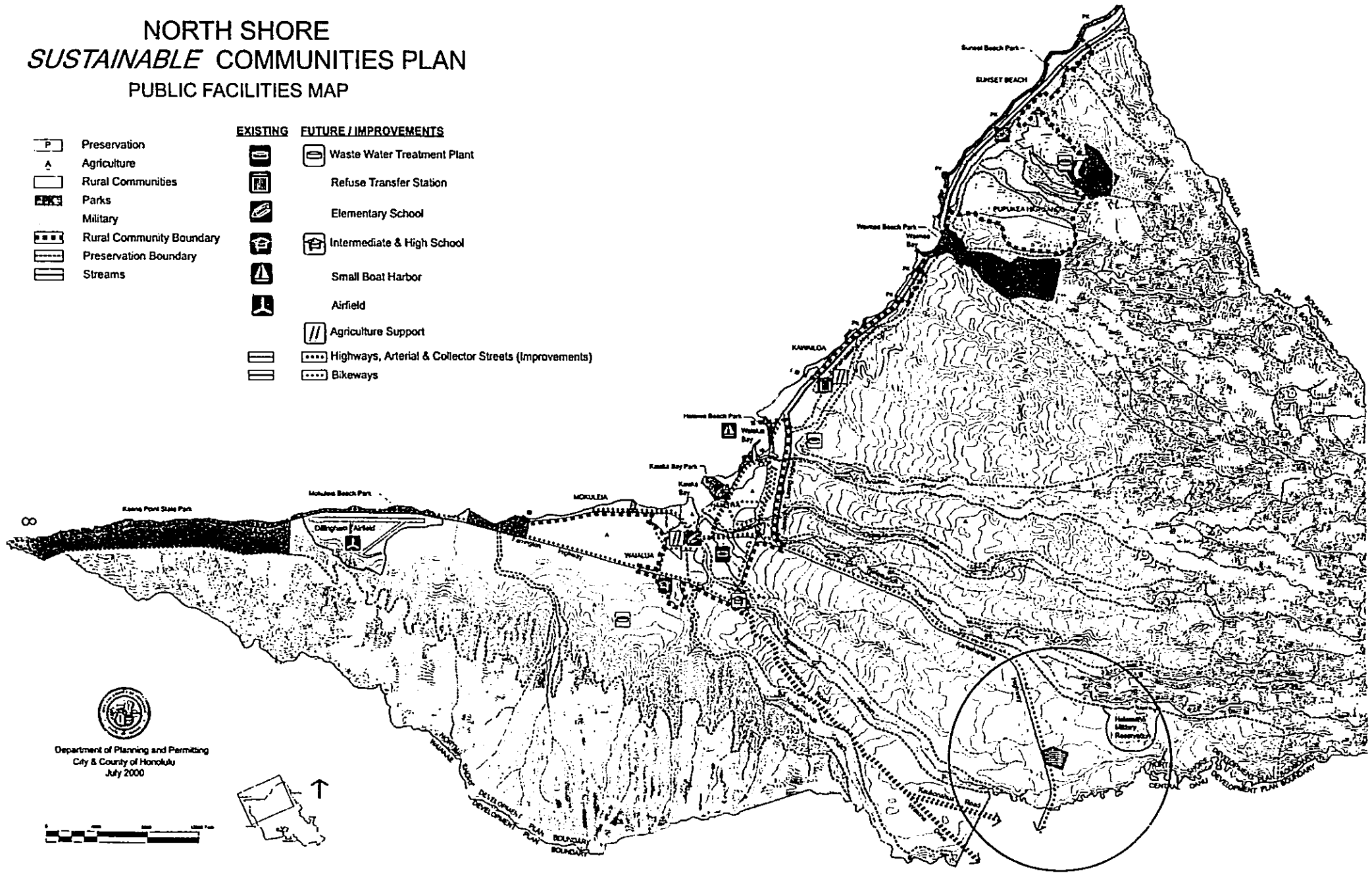


EXHIBIT 4

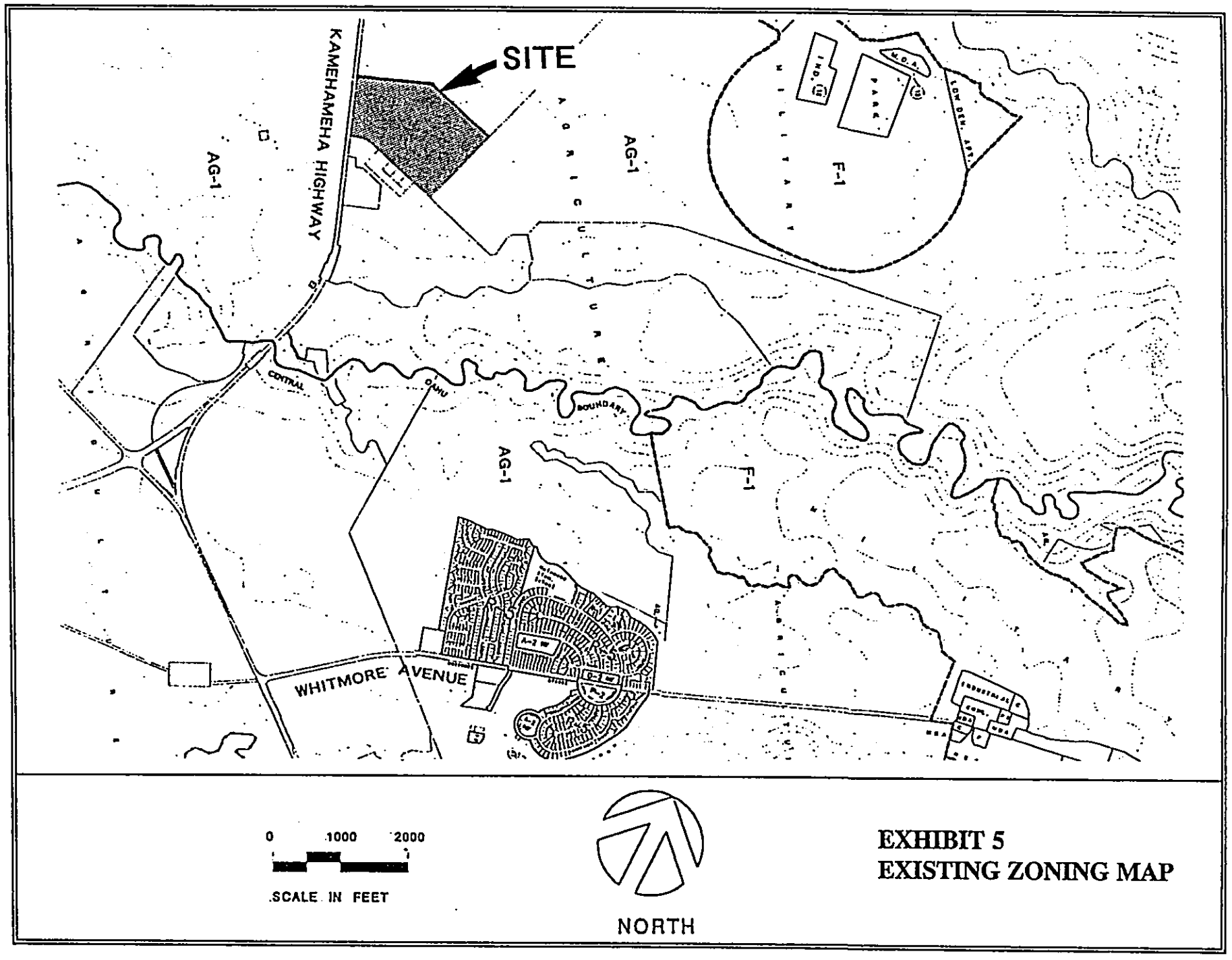


EXHIBIT 5
EXISTING ZONING MAP

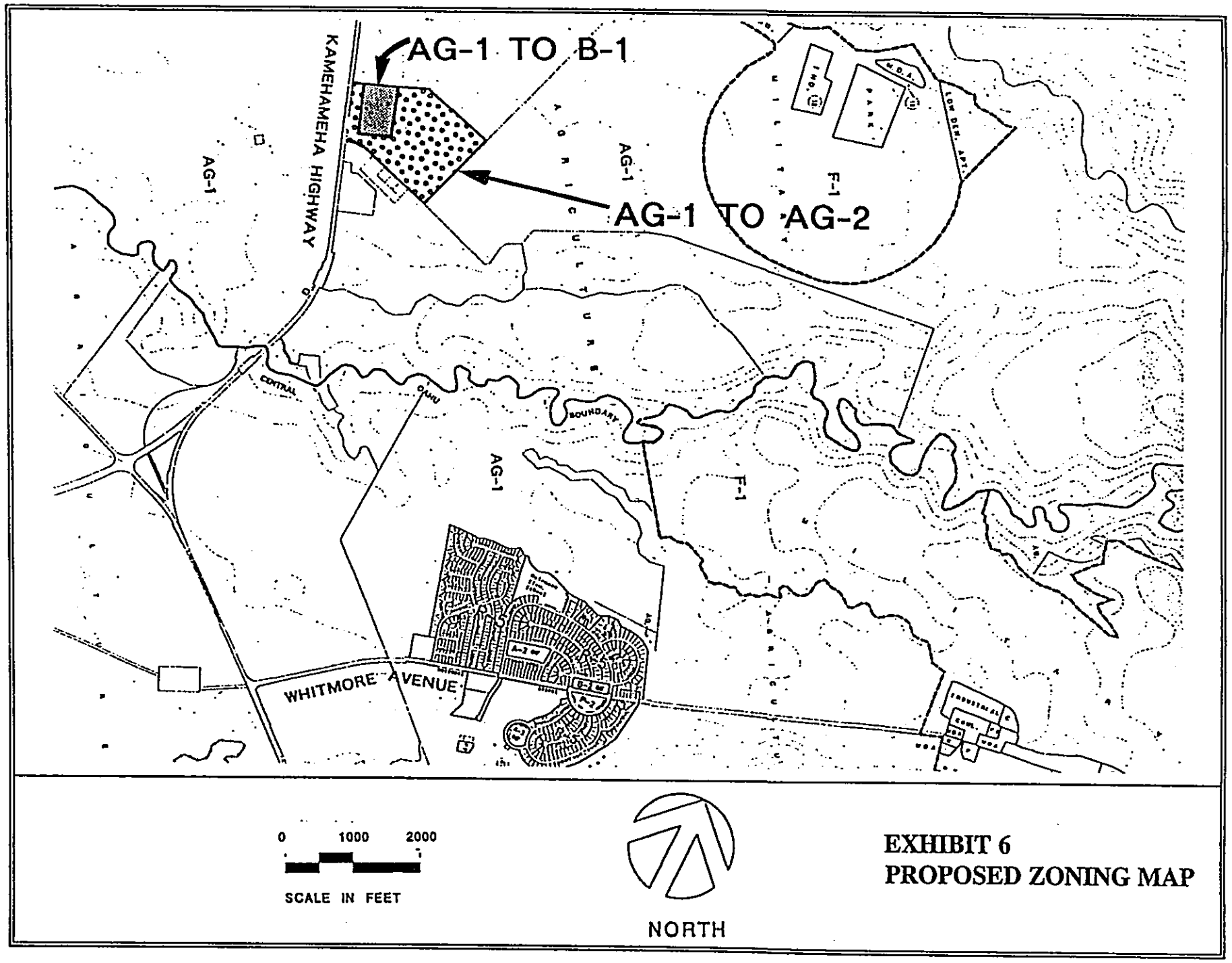


EXHIBIT 6
PROPOSED ZONING MAP

The list of agencies consulted on the Draft Environmental Assessment is included in Section IX of this Final Environmental Assessment.

Our intended client population are the existing handicapped who may require housing and vocational training and services but are not being served and seniors who are living with their children or alone who need daytime supervision and care. This client population is not readily definable and because they are not presently receiving care, they are not represented by any agencies. Our proposed Aloha Gardens plan has been prepared based on our own experiences with the handicapped at the Helemano Plantation and our understanding of the services and needs of this population in working with Federal, State and City agencies.

III. DESCRIPTION OF PROPOSED ACTION

A. GENERAL DESCRIPTION

1. Proposed Development

The proposed development will allow the applicant to become a one-stop location to access a variety of community services. It is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation (Outdoor Recreation Facility), a Group Living Facility and an Elderly Daycare Facility. In addition, accessory uses to include a Vocational Training Facility for residents of the Group Living Facility; a Health and Wellness Center to service the residents of the Group Living Facility and the participants in the Elderly

Daycare Facility; a Learning Center to support the residents of the Group Living Facility and the participants in the Elderly Daycare Facility; and Administrative Offices to support all the uses on the property. The accessory uses are to be expanded to offer services to the elderly and persons with special needs within the surrounding greater community, subject to approval of a variance.

Based on the concerns presented by several agencies, we will restrict development not directly related to the open space, outdoor recreation and crop production that would be considered permitted uses on State Land Use Agricultural District Land to 14.9 acres.

The proposed development would allow the applicant to provide services in the areas of rehabilitation/therapy services, elder care, and employment training to better accommodate the rural areas of Central Oahu, North Shore and Koolauloa in which there are limited opportunities. Currently, residents in this area often have difficulty accessing these types of services due to geographic and transportation barriers.

The center will offer a variety of services to the community: medical and rehabilitative opportunities; physical, occupational, and speech therapy; development of wellness plans for participants; recreational therapy activities; health education

and awareness; alternative healing; fitness, and other holistic wellness activities.

A major focus of the center will be in elder day care. In Hawaii's multi-cultural society, it is still common to find extended families living under the same roof. At times, this can be very challenging as the elder members of the family require assistance with normal activities of daily living, such as bathing and eating, require close supervision due to memory deficiencies, or just need stimulation through physical and mental activities. It is very stressful for someone to have to work full-time and meet all of the physical and mental demands of caring for a loved one.

The elder day care program will provide a safe and active place for families to drop off their loved ones during the day. This will provide respite and relief to families and allow them to maintain employment, while ensuring that their family member is cared for. The participant will be offered a variety of activities based on individual needs and circumstances, and can range from therapeutic activities, to educational and learning opportunities in the Learning Center, to social and recreational interactions with peers, to communing with nature in a variety of gardens and agricultural activities. It will provide them with companionship and both physical and mental stimulation.

The Vocational Training Center and Learning Center will provide a variety of classroom instruction and hands on opportunities for community members. It will offer education and employment training in a number of areas, including, but not limited to: food service, care giving for the elderly and/or handicapped, agriculture and horticulture, aquaculture, landscaping, hospitality services, recreational services, technology, communications, and interrelated employment areas.

The Group Living Facility will be "of an agricultural nature" in accordance with Section 21-5.290 of the Land Use Ordinance (LUO). The residents will take part in the cultivation, harvesting and processing of the crops grown on the property. Should the proposed agricultural bill be approved, the applicant will ensure that 50% of the activity of the residents will be agricultural in nature.

The project will retain much of its site in diversified agriculture. In addition to maintaining truck farming and orchards, it will develop educational crop areas in three distinct horticultural/agricultural areas. One area's focus will be on Asian cultures where its varieties of plants will reflect the multi-cultural ethnicity of Hawaii. Whether it is lychee or longan trees, kai choy, pak choy, tea, ornamentals or plants used in herbal healing, the plantings will be representative of the many

wonderful cultures here in Hawaii. Another will focus on the Hawaiian culture featuring not just native plants, but those used in everyday living here in Hawaii, including plants used medicinally, or for aesthetic enjoyment. The third area will focus on the horticultural aspects of rose production. The educational crop areas will also be an integral part of the elder care program, encouraging its participants to enjoy the fresh air and even take part in horticultural therapy activities.

2. Operations

A description of the planned development and operations is provided in the following table:

Development and Operations - Table 1

Building	Use	Students	Staff	Floor Area	Height	Hours
Mini-Golf	Accessory		2	4,000 sf	18 feet	9:00 am-5:00 pm
Ohana Country Market	Accessory - Farmers and Crafts Market		1	8,000 sf	18 feet	9:00 am-5:00 pm
Administration Office	Accessory Office		30	12,000 sf	15 feet	7:30 am-4:30 pm
Learning Center Office space Classroom space Restrooms Lobby Storage Hallways	Accessory	50	6	10,000 sf (1,500 sf) (6,500 sf) (700 sf) (300 sf) (200 sf) (800 sf)	18 feet	9:00 am-5:00 pm

Building	Use	Students	Staff	Floor Area	Height	Hours
Vocational Training /Dining Room Office space Classroom space Dining room Kitchen/Prep Area Restrooms Storage Hallways	Accessory Classrooms /Dining	50	10	40,000 sf (1,280 sf) (4,000 sf) (19,800 sf) (8,800 sf) (1,440 sf) (1,000 sf) (1,000 sf)	25 feet	9:00 am-5:00 pm
Elderly Care Office space Classroom space Staff Overnite Rm ADA Respite Rm Dining/Lanai Kitchen Restrooms Lobby/Halls Open Area Therapy Pool Jacuzzi	Daycare for the elderly	50	15	7,000 sf (160 sf) (2,688 sf) (416 sf) (468 sf) (1,908 sf) (260 sf) (476 sf) (624 sf) 760 sf 100 sf	15 feet	6:00 am-6:00 pm
Health and Wellness Center	Accessory health and wellness training for the elderly		10	9,500 sf	18 feet	9:00 am-5:00 pm
Laundry/ Maintenance	Accessory to daycare, recreation camp and group living		2	2,500 sf	16 feet	9:00 am-5:00 pm
Two Managers, two staff and one caretakers cottage	Dwellings (5)			1,500 sf each 7,500 sf total	15 feet	

Building	Use	Students	Staff	Floor Area	Height	Hours
Office	Accessory office for recreational camp		5	3,500 sf	15 feet	
Recreational Camp Cabins Pavilion Restrooms	Outdoor recreation			768 sf each 7,680 sf 3,200 sf 960 sf	18 feet	
Group Living 10 units - 60 beds 50 residents 10 resident mgrs.	Group Living Facility		13	1,000 sf per unit 10,000 sf total	15 feet	
Congregate Dining Room/Social Hall	Accessory to Group Living Facility			3,200 sf	20 feet	
Total		**150**	**94**	**129,040 sf**		

The proposed Aloha Gardens is being considered under two permit processing scenarios. The first would include a rezoning of 7.49 acres on the 43.388 acre site and a State Land Use Boundary amendment for the 7.49 acres from Agriculture to Urban. The uses planned on the remainder of the property were uses that have been permitted in the past on State Land Use (SLU) Agricultural District Land subject to approval of a Conditional Use Permit from the Department of Planning and Permitting and a Special Use Permit from the Planning Commission. These uses will occur on about 7.41 acres, with the

balance of the property (approximately 28.4 acres) remaining in open space, outdoor recreation and crop production, which are permitted uses within the SLU Agricultural District Land. The first Site Development Plan in Appendix I shows the location of the 7.49 acre site and the 7.41 acres requiring a Special Use Permit.

The second permit processing scenario is the processing of a variance and a Special Use Permit request on 14.90 acres of a 43.388 acre site. The Special Use Permit is required for the proposed Group Living Facility (10 units and Congregate Dining/Social Hall), Elderly Daycare Facility (including therapy pool and spa), Outdoor Recreation Facility (10 cabins, Pavilion/Restrooms, office, and staff quarters-2-family dwelling), manager's/caretaker's cottages (3 dwellings-connected, triplex), laundry/maintenance building, Vocational Training Center, Health and Wellness Center, Learning Center, Administrative Offices, Farmers Market, Mini-Golf Facility, and parking areas and driveways to support theses uses. These uses will be situated on 14.90 acres of the Aloha Gardens site. The uses on the balance of the site, 28.488 acres, are uses permitted in the State Agricultural District, including crop production, open space and a nursery area. The second Site Development Plan also titled

Special Use Permit Plan in Appendix I shows the location of the 14.9 acre site requiring a Special Use Permit.

3. Location

The Aloha Gardens is located adjacent, on it's southern boundary, to the existing Helemano Plantation agricultural community center, located at 64-1510 Kamehameha Highway, about three miles from Wahiawa and six miles from Haleiwa. The Helemano Plantation consists of a retail gift shop, eating establishment, fresh fruit and produce store, gardens, aquaculture facility, and training facilities and living quarters for the handicapped. Also to the south is the Dole Plantation, a 250-acre lot, which cultivates, processes and markets pineapple. The Poamoho Gulch, pineapple fields and Whitmore Village, which is a residential community is located farther south. The Aloha Gardens property is bounded by Kamehameha Highway to the west, with the Dole Fresh Fruit Package Plant across Kamehameha Highway and pineapple fields further west. To the north and east are pineapple fields. Further east is the Helemano Military Reservation. Helemano Plantation is located in the North Shore Neighborhood Board District.

4. Surrounding Area

The project site is located three miles north of Wahiawa town and about six miles from Haleiwa. The surrounding area is

predominately in agricultural use, pineapple and formerly sugar cane, and the Dole Plantation, a 250-acre lot, which cultivates, processes and sells pineapple. The Dole Pineapple Plantation cultivates a total of about 5,000 acres in pineapple. Also in the greater surrounding area are residential and military uses.

5. Land Use Approvals

a. State Land Use

The proposed 7.49-acre lot planned to be rezoned to B-1 Neighborhood Business District to accommodate the commercial portion of the Aloha Gardens development is designated Agricultural District under State Land Use and will require a State Land Use Boundary Amendment.

b. Sustainable Communities Plan

The project site is planned for Agriculture on the North Shore Sustainable Communities Plan Land Use Map. The North Shore Sustainable Communities Plan presently recognizes certain urban type uses located outside of the rural communities boundary and within the Agricultural Boundary, but fails to recognize the existing urban activity at Dole Plantation and Helemano Plantation. The Department of Planning and Permitting is considering a North Shore Sustainable Communities Plan Amendment to

recognize the existing urban/commercial activity at both Helemano Plantation and Dole Plantation.

No improvements affecting this site appear on the North Shore Sustainable Communities Plan Public Facilities Map.

c. Zoning

The project site is zoned AG-1 Restricted Agricultural District. The proposed Aloha Garden development will require a rezoning of approximately 43.388 acres from AG-1 Restricted Agricultural District to 7.49 acres of B-1 Neighborhood Business District and 975 acres to AG-2 General Agricultural District.

d. Special Use Permit

The proposed development will require a Special Use Permit for the proposed recreational camp, group living facility and daycare on the Agricultural State Land Use District area.

e. Conditional Use Permit

The proposed development will require a Conditional Use Permit for the proposed recreational camp, group living facility and daycare on the area planned for an AG-2 General Agricultural District zoning (Agricultural State Land Use District area).

f. Alternative Land Use Approvals

Based on comments from the North Shore Neighborhood Board and recommendations from the Department of Planning and Permitting, we are now processing applications for a zoning variance and Special Use Permit to allow the proposed Aloha Gardens to proceed without the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment, Zone Change and Conditional Use Permit.

1) Variance

The project will require variances from the Land Use Ordinance (LUO) to allow the Group Living Facility, an Elderly Daycare Facility, and Outdoor Recreation Facility which are permitted in the AG-2 General Agricultural District subject to approval of Conditional Use Permits but not in the AG-1 Restricted Agricultural District.

The project will also require variances from the LUO for the proposed Vocational Training Facility, the Health and Wellness Center, the Learning Center, the Administrative Offices, the Farmers Market, the Mini-Golf and the cabins for the recreational camp.

2) Special Use Permit

The SUP request is for uses occurring on 14.90 acres of a 43.388 acre site. The SUP is required for the proposed Group Living Facility (10 units and Congregate Dining/Social Hall), Elderly Daycare Facility (including therapy pool and spa), Outdoor Recreation Facility (10 cabins, Pavilion/Restrooms, office, and staff quarters-2-family dwelling), manager's/caretaker's cottages (3 dwellings-connected, triplex), laundry/maintenance building, Vocational Training Center, Health and Wellness Center, Learning Center, Administrative Offices, Farmers Market, Mini-Golf Facility, and parking areas and driveways to support theses uses. These uses will be situated on 14.90 acres of the Aloha Gardens site. The uses on the balance of the site, 28.488 acres, are uses permitted in the State Agricultural District, including crop production, open space and a nursery area.

B. TECHNICAL CHARACTERISTICS

1. Use Characteristics

The proposed development will allow the applicant to become a one-stop location to access a variety of community

services. It is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation, a learning center, a health and wellness center for elders, a group living facility, administrative facilities, diversified agricultural activities and a farmer's market.

The proposed development would allow the applicant to offer needed services, particularly in the areas of rehabilitation/therapy services, elder care, and employment training to better accommodate the rural areas of Central Oahu, North Shore and Koolauloa in which there are limited opportunities. Currently, residents in this area often have difficulty accessing these types of services due to geographic and transportation barriers.

The center will offer a variety of services to the community: medical and rehabilitative opportunities; physical, occupational, and speech therapy; development of wellness plans for participants; recreational therapy activities; health education and awareness; alternative healing; fitness, and other holistic wellness activities.

The elder day care program will provide a safe and active place for families to drop off their loved ones during the day. This will provide respite and relief to families and allow them to maintain employment, while ensuring that their family member

is cared for. The participant will be offered a variety of activities based on individual needs and circumstances, and can range from therapeutic activities, to educational and learning opportunities in the Learning Center, to social and recreational interactions with peers, to communing with nature in a variety of gardens and agricultural activities. It will provide them with companionship and both physical and mental stimulation.

The Learning Center will provide a variety of classroom instruction and hands on opportunities for community members. It will offer education and employment training in a number of areas, including, but not limited to: food service, care giving for the elderly and/or handicapped, agriculture and horticulture, aquaculture, landscaping, hospitality services, recreational services, technology, communications, and interrelated employment areas.

The project will retain the bulk of its site in diversified agriculture. In addition to maintaining truck farming and orchards, it will develop educational crop areas in three distinct horticultural/agricultural areas. One area's focus will be on Asian cultures where its varieties of plants will reflect the multi-cultural ethnicity of Hawaii. Whether it is lychee or longan trees, kai choy, pak choy, tea, ornamentals or plants used in herbal healing, the plantings will be representative of the many wonderful cultures here in Hawaii. Another will focus on the

Hawaiian culture featuring not just native plants, but those used in everyday living here in Hawaii, including plants used medicinally, or for aesthetic enjoyment. The third area will focus on the horticultural aspects of rose production. The educational crop areas will also be an integral part of the elder care program, encouraging its participants to enjoy the fresh air and even take part in horticultural therapy activities.

2. Physical Characteristics

The applicant proposes, for the 7.49-acre lot, construction of a new Administration Office, Learning Center, Health & Wellness Center, Main Building (which will provide for Vocational Training, Kitchen and Dining Room), Ohana Country Market, and Mini Golf. Conceptual Plans for Aloha Gardens are included in Appendix I.

The project involves constructing a 10,000 square foot learning center, a 12,000 square foot administration office, a 9,500 square foot health and wellness center. A 4,000 square foot mini golf course and Ohana country market (8,000 square feet) will also be constructed.

The applicant will also construct an approximately 40,000 square foot Main Building which will contain a vocational training room, kitchen and dining room, and restrooms.

The applicant also plans to landscape the open areas and construct a parking lot with about 180 parking stalls.

A 200-foot setback, including a landscape buffer, from the Kamehameha Highway will be established in front of the B-1 zoned 7.49 acre lot to alleviate the screen the urbanized/developed area of the proposed project.

Access to the project site will be via Kamehameha Highway, with one driveway facilitating easy access to and from the buildings and parking spaces.

The applicant proposes to develop on the 35.9 acre AG-2 General Agricultural District lot diversified agriculture, focusing on Asian culture plants, Hawaiian culture plants, and horticultural aspects of rose production. Other planned improvements will help in the marketing of the diversified agriculture cultivated in the orchards. The project plans to partner with other organizations such as the Waialua Community Kitchen to provide an outlet for entrepreneurship in the Central Oahu/North Shore area.

There will be 10 residential units, all designed for persons with special needs. Onsite staff will tailor services to meet the needs of residents. Services may include meals, general assistance, etc.

The project will also include an ADA Recreation Center that will include 10 cabins and 2 guest cottages. There will also be an office and pavilion. Other structures will include a farming/maintenance building, managers and caretakers cottage, elderly care center and a playground. The proposed recreational camp, in addition to providing the participants to experience gardening and farming in the surrounding fields and nursery, will be given an opportunity to participate in field sports (according to their abilities) such as soccer, football, and baseball. In addition, the open lawn area will also be utilized for volleyball, horseshoes, croquet, lawn bowling and Tai chi.

There will also be three parking lot areas which will service the elder day-care facility, the recreational center and the group living facility and will have a total of about 80 parking stalls. The three parking lots will be located in the AG-2 zoned area of the proposed project.

Each of the planned improvements will conform to the Land Use Ordinance (LUO) design standards and requirements of the B-1 Neighborhood Business District.

3. Construction Characteristics.

The project will be constructed over a 5-year period and is estimated to cost approximately $10,000,000. Construction will begin as soon as the applicant is able to receive approval of the

project by the City, including building permit approvals.

Dust control measures appropriate to the situation will be employed by the contractor, including as needed, the use of water wagons, erection of dust barriers and other methods for minimizing dust impacts to neighboring uses.

IV. IMPACTS

A. DEMOGRAPHIC IMPACTS

1. Residential Population

The project will have minimal impact on the residential population of the area due to the project offering a limited number of residential units (about 10 units), all designed for persons with special needs and accessory managers, staff and caretaker's cottages.

2. Visitor Population

The project will have no impact on the visitor population. It will, however, provide visitors with additional attractions to further promote Hawaii, it's agriculture and it's culture through agricultural activities.

3. Character or Culture of the Neighborhood

The project site is currently vacant, unimproved land located in an agricultural setting. The character and culture of the proposed site will be similar in appearance, although on a larger

scale, to the adjacent Helemano Plantation agricultural community center, which includes a retail gift shop, eating establishment, fresh fruit and produce store, gardens, aquaculture facility, training facilities and living quarters for the handicapped. The site is surrounded by agricultural lands, Dole Plantation, Dole Fresh Fruit Package Plant and Helemano Military Reservation.

The proposed Aloha Garden development will be consistent with the existing character of the area with the project being a one-stop location to access a variety of community services. It is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation, a learning center, a health and wellness center for elders, a group living facility, administrative facilities, diversified agricultural activities and a farmer's market.

4. Displacement

The project site is vacant and will not result in the displacement of any residents or businesses.

B. ECONOMIC IMPACTS

1. Economic Growth

The project will have a positive effect on the rate and pattern of economic growth and development in the islands. It will provide temporary employment during the construction phase and a number of long term jobs to support the proposed

development. It could also have a secondary effect of expansion of diversified agricultural activity in the North Shore and Central Oahu areas.

2. Employment

As mentioned earlier the project will provide short term employment during the construction phase and long term service jobs to support the development of Aloha Gardens. As a result of the expansion, 94 permanent new jobs will be created including jobs in the diversified agriculture sector. As mentioned earlier, should the project be successful in marketing and creating an outlet for retail sales for diversified agriculture, it could lead to a secondary employment effect of creating additional farm related employment in diversified agriculture in the North Shore and Central Oahu.

3. Government Revenues/Taxes

Tax revenues will be generated by the short-term construction work and also revenues by the long-term direct employment and secondary employment that may occur from the project.

C. HOUSING IMPACTS

There will be minimal impact on housing due to the project offering a limited number of residential units (about 10 units), all designed for persons with special needs.

D. PUBLIC SERVICES

1. Access and Transportation

Although two driveways were originally planned for the development, access to the project site will be via a single driveway off Kamehameha Highway, as recommended by the State Highways Division. The single driveway will minimize impact to traffic on Kamehameha Highway while providing access to the parking lots throughout the Aloha Gardens.

The proposed development may involve some short term construction disruption of traffic for transportation of construction equipment to and from the site and delivery of building materials to the site. The delays are normally of short duration and will end when the construction is completed. There are ample open areas to stage and store construction equipment and building materials on the project site.

A "Site Access Study Report, Aloha Gardens," dated February 2002, was prepared for ORI Anuenue Hale, Inc. by Julian Ng, Inc. and is included in its entirety in Appendix II. This site access study indicated on the preliminary site plan two driveways from the site. The State Highways Division has recommended that all movements from and onto the highway be consolidated into one location. The traffic analysis shows that there will be sufficient capacity at a single driveway for the

expected traffic during peak hours. The proposed project is not expected to significantly affect traffic volumes on Kamehameha Highway; increased traffic due to other growth, however, will have an effect on future conditions, by increasing delays to traffic leaving the site at the single driveway.

The traffic assessment report indicates that, the existing condition for peak hour traffic on Kamehameha Highway north and south of the project site is Level of Service B and/or C.

The proposed project will develop facilities that will be used for a variety of activities, including group living quarters, camping, offices, vocational training, agricultural activity, a farmer's market, elderly day care, and supporting uses. Vans and other high-occupancy vehicles are expected to provide the transport for many of the students, group living residents and elderly users. Employee traffic, however, would occur at the same time as the highway peak hours and the greatest impacts are expected at these times. Employee traffic is expected to travel opposite from the peak travel direction, during the morning or afternoon peak hour or exit the peak flow direction prior to entering the more congested area beyond Wahiawa in the morning and enter the peak flow direction after Wahiawa in the afternoons.

Highway volumes are expected to increase 10% by the year 2010 and the future densities and levels of service on the highway are similar with or without the project. The analysis indicates that there is sufficient capacity for the vehicular demand on Kamehameha Highway. However, the traffic leaving the site experiences very long delays (Level of Service E) during peak hours.

Several mitigation measures were considered to address the poor future levels of service with a single driveway. Widening the driveway so that separate lanes can be provided for left turns and right turns onto the highway will improve levels of service for right turn traffic, since those vehicles will not be delayed by vehicles waiting to turn left. However, delay for left turning vehicles will be remain greater and the levels of service for left turn traffic will not be improved.

Another mitigation measure considered is the installation of a traffic signal. With traffic signals, the delays encountered by the driveway traffic would be lessened, but delays would be imposed on the highway traffic. However, the traffic volumes at the site driveway would not meet any of the signal warrants. Signalization would only be warranted if access to the southbound lanes of the highway (left turns) from the proposed project, the

existing Helemano Plantation, and the existing and proposed expansion of Dole Plantation were directed to a single location.

Overall, State Highways Division has indicated that all movements from and onto the highway be consolidated into one location. The traffic analysis shows that there will be sufficient capacity at a single driveway for the expected traffic during the peak hours. The proposed project is not expected to significantly affect traffic volumes on Kamehameha Highway; increased traffic due to other growth, however, will have an effect on future conditions, by increasing delays to traffic leaving the site.

At full buildout it is projected that approximately 350 to 500 persons will utilize the property daily, including the resident population, employees (staff) and the average number of daily visitors. The impact of this daily population has been considered and is discussed in the Traffic Impact Assessment Report. The recommendations of the Report indicate that utilizing one access point will minimize delays on Kamehameha Highway and that a traffic signal, subject to approval by the DOT would help to assist traffic exiting the property.

Bus transportation servicing the project site travels along Kamehameha Highway. Aloha Gardens will have van and bus accessible stalls within the parking lot. A van accessible loading space will also be located in the parking lot to accommodate The Handi-Van vehicle.

2. Water

At the present time there is no water service provided to the Aloha Gardens site. There is, however, water service provided to the adjacent Helemano Plantation development via an existing 2½-inch water service line from Del Monte Company, which crosses through Dole Plantation. This line is serviced by The Board of Water Supply through Del Monte's 3-inch water meter (Premise Identification Number: 1153924).

Based on a letter from the Board of Water Supply, dated January 18, 2002, and the recommendations of a consulting engineer, Hida, Okamoto & Associates, Inc., dated January 28, 2002, the applicant plans to utilize the existing 2½-inch water service line from Del Monte Company, which crosses through Dole Plantation and provide one additional reservoir tank and a storage pond to provide reserve storage capacity (potable) and fire protection (non-potable), respectively for the proposed Aloha Gardens development. Both letters are provided in Appendix III.

Castle & Cooke Properties, Inc. has indicated a willingness to work with the applicant to provide, at a reasonable fee, non-potable water as needed for the Aloha Gardens development. By utilizing non-potable water for irrigation and fire protection needs, impacts on the potable water system will be reduced.

The potable water demand for the Aloha Gardens development is projected to be about 30,000 gpd. Through utilization of a privately developed water storage system, the applicant will provide adequate water service for the development.

3. Wastewater

At the present time there is no wastewater service provided to the Aloha Gardens site. There is, however, an existing sewer easement and sewer line, in favor of the Helemano Military Installation. This sewer line serves the Helemano Military Installation, located east of the Aloha Gardens site. Wastewater flows from the 600 homes of the Helemano Military Reservation flows into an existing 12-inch U.S. Army sewer line running along Kamehameha Highway. This 12-inch line also serves Dole Plantation and the Dole Fresh Fruit Packaging Plant, conveying wastewater flows to the Schofield Barracks Wastewater Treatment Plant for treatment and disposal.

The applicant is continuing discussions with the Commander of the Helemano Military Installation to determine whether the additional 30,000 gpd of wastewater projected for the Aloha Gardens development can be accommodated by the existing 12-inch U.S. Army sewer line running along Kamehameha Highway.

4. Drainage

The Helemano Plantation facilities are situated in an area surrounded by agricultural lands previously used primarily for pineapple farming. The existing ground slopes generally in a north to south direction and is relatively flat with slopes less than five percent in this vicinity. Typically, storm runoff patterns in these conditions are generally overland sheet flows interrupted by irrigation ditches and furrows on its way to gulches and streams. There is an existing drainage ditch that crosses through the property and carries flows under Kamehameha Highway to the pineapple fields beyond.

The existing drainage pattern for the site is primarily overland flow towards the existing drainage ditch.

Future expansion of impermeable surfaces related to Aloha Gardens are relatively minor in relation to the overall natural and agriculturally cultivated drainage area which is interspersed with numerous named and unnamed gulches, gullies and drainage ditches which provide adequate drainage for the drainage area. The proposed mitigation measures to be implemented by the applicant to satisfy the flood control standards of the City's Rules Relating to Storm Drainage Standard (RRSDS) will consist primarily of creating detention/retention features in the future garden, recreational playground, 200-foot highway setback area

and the agricultural fields. In addition to utilizing detention/retention systems, storm water quality standards of the RRSDS will be satisfied by directing runoff to grassed swales in landscaped areas.

According to the Flood Insurance Rate Map (FIRM), the project site is in Zone D, an area in which flood hazards are undetermined.

5. Solid Waste Disposal

A private waste disposal company will be contracted to dispose of the waste to an approved sanitary landfill and or through incineration at H-Power. The proposed expansion will not impact municipal refuse services.

6. Schools

The proposed Aloha Gardens development will not impact the local school system, since there is no housing planned which would generate school age children except for the accessory managers, staff and caretaker's cottages. The remainder of the housing is specifically for adult special needs persons.

7. Parks

The project site is on agricultural zoned land, currently vacant and unimproved, and is located in between Wahiawa and Haleiwa. There are no parks in the immediate vicinity. The closest park is on the Helemano Military Reservation. The

closest public park is the Wahiawa District Park. The proposed improvements will not generate demand for park use. However, it will provide a playground area for visitors to the Aloha Gardens as part of the recreational camp and this playground area will be available for use by the residents of the group living facility and the seniors in the elderly day care facility.

8. Police

The Wahiawa Police Station #2 will service the proposed Aloha Gardens development. The police services for the existing developments at Helemano Plantation and Dole Plantation have been minimal and are not expected to increase significantly.

9. Fire

The Wahiawa Fire Station #16 will provide service for the proposed Aloha Gardens development. The fire protection services for the proposed Aloha Gardens development is not expected to increase significantly.

10. Utilities

a. Electric

The Hawaiian Electric Company has existing power lines serving this area and there is existing capacity to support the proposed Aloha Gardens development.

b. Telephone

Verizon formally GTE Hawaiian Telephone Company has existing utility service lines in the area and these service lines are adequate to support the proposed Aloha Gardens development.

E. ENVIRONMENTAL IMPACTS

1. Historical and Archaeological Resources

The project site has been in agricultural use for over 100 years with pineapple cultivation. Because the site has been extensively cultivated with no previous record of historic or archaeological discoveries, the proposed expansion is not expected to have an impact on archaeological resources. A review of the State Historic Preservation Division (SHPD) records shows that there are no known historic sites within the areas proposed for development.

Although it does not appear that the project will impact on any historic sites, the applicant will instruct his contractor (earthwork) to immediately stop work and contact the SHPD for review and approval of proposed mitigation measures should any previously unidentified historic sites (including but not limited to artifacts, shell, bone, or charcoal deposits, human burials, rock or coral alignments, pavings or walls) be encountered during the development of the project approved under this Environmental

Assessment. Work in the immediate area shall be stopped until SHPD is able to assess impacts and make further recommendations for appropriate mitigation measures.

A copy of the "Aloha Gardens - Helemano Cultural Impact Assessment", dated March 7, 2002, prepared by Maria E. Ka'imipono Orr, is included in Appendix IV. The summary and recommendations are provided below:

"The archival data supported by the ethnographic surveys suggest that the project area has a long and broad history regarding land and water management and use that span many centuries. The traditional oral histories indicate that this area was part of the O'ahu ali'i history dating back to well before the 1300s. Late nineteenth century ethnographic works (Kamakau 1991:55) state that this area was "filled with chiefs and people." Early land use studies by Handy & Handy (1978) in the 1930s found that most of the valleys with perennial streams were being utilized by early Hawaiians for cultivation, habitation and ritual purposes."

"The historic use of the lands of and in the vicinity of the project area are well documented by several primary and secondary sources. The land was first used by the Robinson-Holt family as a horse ranch and family estate after purchasing [between 1842-1865] it from and through the guardians of Victoria Kamamalu, a young grandchild of Kamehameha I who "received" it during the transfer of lands to ali'i by Kamehameha III in the Mahele process [see pp 37-38 of this report]. During part of the land history of Wahiawa/Helemano/Waialua lands when it was owned by the Holt Estate, some of it was being used by the Waialua Agricultural Company, Limited, Hawaiian Pineapple Company, Limited and Castle & Cooke (see Holt 1993:340-341). In 1905 the Helemano lands were acquired by the Waialua Agricultural Company, Limited and work began immediately on the upper Helemano ditches, along with the planting of sugar cane and in some areas,

pineapple. It would eventually become mostly pineapple cultivation with a brief period of vegetable gardens."

"The historic multi-cultural fabric of this area was once extensive as American, Chinese, Japanese, Portugese, Russian, Spanish, Korean and Filipino people all made their home here as they worked the land for Waialua Agricultural Company, Ltd., Hawaiian Pineapple Company, Ltd., Dole Plantation and Castle & Cooke, Inc. in the sugar cane, pineapple and fiber [sisal] industries. There is relatively little trace of the various ethnic groups because their camps and houses were all destroyed or re-located when they moved to other places such as Whitmore Village and Wahiawa."

"The Aloha Gardens project area was once a thriving plantation camp community of about 80 wooden houses, a general store, a clubhouse, two community bathhouses and several duplex outhouses. Each resident had gardens of vegetables, fruit, and flowers. And various fruit trees grew throughout the camp called Brodie 2. In the early 1950s all the plantation camps were disassembled, and land graded for pineapple cultivation, removing all traces of the camps. However, most of the houses were re-located to Whitmore Village where some of the consultants were able to purchase them and continued to live in the Brodie 2 Camp houses."

"Just north of the project area is a grove of Eucalyptus trees and bamboo marking the area where the Korean/Filipino Camp was located. In the grove is a mound of rocks that an informant from the early 1900s shared was where wagon loads of human bones were removed. It is believe by one of the consultants to be remains from an old Hawaiian battlefield. A few early nineteenth century ethnographic works support that theory by recounting events of several battles and incidents in the vicinity. However, no information was passed on that indicated where the bones were taken. Sadly, the only person who may have additional information did not return calls by the ethnographer or one of the

consultants. Mr. Nagaki who used to live in Brodie 2 Camp could not recall any names of people who lived in the Korean Camp."

"Other than the site mentioned above, there is no surface evidence of any traditional or historic cultural remains located in the project area due to pineapple cultivation of the land following the dismantling of Brodie 2 Camp. However, due to past history of undertakings encountering sub-surface features/sites, and due to the rich traditional and historic chronicles of the area and vicinity, the following recommendations are advised:

- It is recommended that a cultural monitor and archaeologist be on-site if any grading of consequence [more than one foot] is to be done, as excavation [ditch work] in the nearby Helemano Military Reservation revealed a traditional *imu* or earth oven below the plow level.
- It is recommended that a mitigation plan for the Korean Camp site be designed and implemented.
- It is recommended that a partnership or alliance be developed between ORI Anuenue Hale, Inc. staff and the Wahiawa Hawaiian Civic Club and other interested parties in the vicinity [i.e., Leilehua High School, Waialua High School, Helemano Elementary School] to create a more amicable, equitable and cooperative relationship with the extended communities of Whitmore Village, Wahiawa and Waialua, and to honor past relationships with these lands.
- It is recommended that the traditional history of these lands and district be honored in a significant or prominent manner on-site in order to educate the local and outside visitor as well as to enhance their experience with this knowledge.
- It is recommended that plans that incorporate new plantings first consider using second generation native plants from the immediate area in order to re-establish the native landscape."

The applicant plans to work with Maria E. Ka'imipono Orr, the archaeological/cultural survey consultant, to implement the recommendations of this cultural impact assessment. The applicant plans to preserve the area described as Korean Camp, marked by a grove of eucalyptus trees and bamboo. This area will be buffered from other uses by continued agricultural crop production.

2. Natural Resources

a. Water Resources

The project site does not contain and will not impact any natural water resources.

b. Flood Plain Management

According to the Flood Insurance Rate Map (FIRM), the project site is in Zone D, an area in which flood hazards are undetermined.

c. Wetlands Protection

The project site is an agricultural lot that contains no wetlands.

d. Coastal Zone Management

The project site is not within the coastal zone management area as defined by the City's Special Management Area.

e. Unique Natural Features

The project site is relatively level with no unique natural features, other than an existing drainage ditch that traverses the property. There are many nearly flat tracts of land, used for crop cultivation, but generally the land slopes gently up towards the Koolau mountains. The proposed developments will occur on the flat tracts of land that were formerly in pineapple cultivation.

f. Flora

A "Botanical Resources Assessment Aloha Gardens, Proposed Facility, Helemano, Waialua District, Oahu" study, dated March 2002, prepared by Char & Associates Botanical Consultants, is included in Appendix V. The study was prepared based on a 43.388-acre zone change with a 7.49-acre area being rezoned to B-1 Neighborhood Business District with the balance being rezoned to AG-2 General Agriculture District. The study's "Discussion and Recommendations" are provided below:

"The site proposed for the new facility supports actively cultivated pineapple fields along with an associated network of dirt roads and a drainage ditch. Uncultivated areas, such as along the margins of fields and the drainage ditch, support dense clumps of Guinea grass along with an assortment of weedy species. Soils on the site belong to the Wahiawa series (Foote et al. 1972). These are well-drained, dusky-red colored soils found on the uplands of Oahu. Permeability is moderately rapid; runoff is slow and the erosion hazard is slight."

"The level to gently rolling fields support species commonly associated with agricultural lands. No threatened and endangered species or species of concern (U.S. Fish and Wildlife Service 1999; Wagner et al. 1999) occur on the site. Only one native species was observed during this study. The popolo or glossy nightshade (Solanum americanum) is an indigenous species, that is, it is native to the Hawaiian Islands and elsewhere; it prefers disturbed, open habitats. All the other plants are introduced or alien species, that is, they were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (Cook's arrival in the islands in 1778). A recent botanical survey of the nearby Dole Plantation lands (Char 2001) recorded similar findings."

"Given these findings, the proposed project is not expected to have a significant negative impact on the botanical resources of the site or the general region. There are no botanical reasons to impose any restrictions, conditions, or impediments to the proposed development of the site."

g. Fauna

An "Avifaunal and Feral Mammal Field Survey of TMK: 6-4-3: Portion of 3, Oahu", dated February 2002, prepared by Phil Bruner, Environmental Consultant, is included in Appendix VI. The study was prepared for the 43.388-acre site planned for rezoning. Its "Conclusions" are provided as follows:

"The field survey found the typical array of introduced birds. No unusual or unexpected species were encountered. No endangered or threatened species were found on the property. The only migratory bird recorded was the Pacific Golden-Plover. This species is the most abundant migrant in Hawaii. The Small Indian Mongoose was the only mammal seen on the survey."

"The property contains no natural undisturbed habitat. The entire site is developed for agriculture. No unique natural resources were identified on the survey. The development of this property will produce a more diversified array of habitats that will likely increase the numbers of birds and the variety of species at this site."

h. Agricultural Lands

The majority of this property was devoid of vegetation due to recent plowing. The project site is in an agricultural area where pineapple had been previously cultivated. This proposed Aloha Gardens development will focus on three distinct horticultural/agricultural areas. One area's focus will be on Asian cultures, representing the many wonderful cultures here in Hawaii. Another will focus on the Hawaiian culture featuring not just native plants, but those used in everyday living here in Hawaii, including plants used medicinally, or for aesthetic enjoyment. The third area will focus on the horticultural aspects of rose production. The educational crop areas will also be an integral part of the elder care program, encouraging its participants to enjoy the fresh air and even take part in horticultural therapy activities. As for the diversified agriculture, a wide variety of vegetable and fruit crops will be grown for use in its own facilities and for outside sales to the community. The proposed

development will include an Ohana Country Market to accommodate the additional Hawaii grown products for sale. It will have minimal impact on existing pineapple cultivation in the area and will help in marketing and providing a retail outlet for existing and future diversified crops.

The 7.49 acre area planned for B-1 Neighborhood Business District zoning will provide certain activities, such as the Ohana Country market which will provide a market place for produce grown on site and from surrounding farms in the North Shore and Central Oahu area, focusing on Chinese and Asian herbal/medicinal plants and Hawaiian plants. In addition, fruit and vegetable crops for use in the planned vocational training dining room will provide an additional market for crop produced on site and in the North Shore and Central Oahu communities. The wellness center and learning center will also provide training related to diet, including crops produced on site and agricultural training for residents and visitors.

i. Open Space

The proposed development will have modest impact on open space. The areas planned for structural

development make up a relatively small portion of the 43.388-acre project site and an even smaller portion of the 5,000 acres in pineapple production on surrounding lands. It will not have a significant impact on the open space provided at this site. The majority of the acreage (35.9 acres) will be devoted to diversified agriculture crops and agricultural accessory use.

F. TOPOGRAPHY

The project site is relatively level. There are many nearly flat tracts of land, used for crop cultivation, but generally the land slopes gently up towards the Koolau mountains. The proposed developments will occur on the flat tracts of land that were formerly in pineapple cultivation.

G. SOILS

According to the United States Department of Agriculture, Soil Conservation Service's "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii" the site is classified as Wahiawa silty clay (WaA, WaB, and WaC).

The Wahiawa series consists of well-drained soils on uplands on the island of Oahu. This soil series developed in residuum and old alluvium derived from basic igneous rock.

The Wahiawa silty clay (WaA) is characterized by 0% to 3% slopes. This soil occurs on smooth, broad interfluves. This soil has the

following characteristics: permeability is moderately rapid; runoff is slow; and erosion hazard is no more than slight. In a representative profile the surface layer is very dusky red and dusky red silty clay about 12 inches thick. The subsoil, about 48 inches thick, is dark reddish-brown silty clay that has a subangular blocky structure. The underlying material is weathered basic igneous rock. The soil is medium acid in the surface layer and medium acid to neutral in the subsoil.

The Wahiawa silty clay (WaB) is characterized by 3% to 8% slopes. This soil has the following characteristics: permeability is moderately rapid; runoff is slow; and erosion hazard is slight.

The Wahiawa silty clay (WaC) is characterized by 8% to 15% slopes. This soil has the following characteristics: runoff is medium and erosion hazard is moderate. These soils are used for cultivation of pineapple and sugar cane.

The Agricultural Lands of Importance to the State of Hawaii (ALISH) developed by the Natural Resources Conservation Services of the U.S. Department of Agriculture, University of Hawaii College of Tropical Agriculture and Human Resources, and the State of Hawaii Department of Agriculture classifies the subject property as "Unique" agricultural land. This "Unique" classification reflects the unique crop (unirrigated pineapple) formerly grown on the property.

The overall productivity rating by the University of Hawaii Land Study Bureau for the subject property is "B" which suggests fair to excellent productivity potential for most crops.

H. NOISE

The "Environmental Noise Assessment Aloha Gardens Wahiawa, Hawaii", dated February 2002, was prepared by D.L. Adams Associates, Ltd to assess the noise impacts related to the proposed development and is included in Appendix VII. The noise impacts and recommendations indicated in the summary are provided as follows:

1.1 "The project area and vicinity are currently exposed to daytime ambient noise levels of 40 to 63 dBA, with the dominant noise sources being traffic on Kamehameha Highway, wind, birds and an occasional small aircraft flyover."

1.2 "Traffic noise levels, due to the project, are not expected to significantly increase along the existing roadways in the vicinity of the project."

1.3 "The dominant noise sources during project construction will probably be earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities will occur on the subject property. Noise from construction activities should be short term and must comply with State Department of Health noise regulations."

1.4 "Predicted traffic noise level increases along local roadways in the vicinity of the project following completion were determined to be less than 2 dBA, which is below the threshold of perceptible change in noise level for most people and not considered significant."

I. AIR QUALITY

The "Air Quality Impact Report (AQIR) Aloha Gardens Development", dated March 11, 2002, was prepared by J.W. Morrow Environmental Management Consultant to assess the air quality impacts related to the proposed development and is included in Appendix VIII. The "Conclusions and Mitigation" of the AQIR are provided as follows:

7.1 "Short-Term Impacts. Since, as noted in Section 4, the project area is considered to be "humid" by Thornwaite's climatic classification system with a P/E index substantially greater than that associated with the EPA fugitive dust emission factor, there appears to be a reduced potential for fugitive dust. On the other hand, silty clays soils are common in the area and they typically have a silt content greater than the 30% upon which EPA emission factor is based thus suggesting a somewhat greater dust potential. It will therefore be important to employ adequate dust control measures during the construction period, particularly during the drier summer months. Dust control could be accomplished through frequent watering of unpaved roadways and areas of exposed soil. The EPA estimates that twice daily watering can reduce fugitive dust emissions by as much as 50%. The soonest possible paving of roadways and landscaping of bare areas will also help."

"Short-term air quality impacts due to offsite activities supporting the proposed development, i.e., concrete and asphalt production, appear to be *de minimus* due in large part to the high removal of control devices typically found on such production facilities. Furthermore, any emissions will be strictly regulated by the Department of Health permit which each batch plant must have in order to operate."

7.2 "Mobile Source Impacts. As reported in Section 6, compliance with federal and state carbon monoxide standards is demonstrated under *worst case* conditions of meteorology and peak hour traffic; thus, no special mitigative measures are required."

In addition to the impacts discussed in the AQIR, the surrounding agricultural operations will have a certain limited impact on the residents, clients and visitors to the Aloha Gardens development. Based on the existing experience at Helemano Plantation, the primary air quality impact from airborne particulates comes about every 18 months when fields are cleared and prepared for planting. The problem with pesticides and herbicides has not been as prevalent, since as in most agricultural operations, best management practices of not spraying when its windy and better direction of spraying towards the crops have minimized their impact.

The applicant plans to mitigate the impacts from the surrounding agricultural activities by providing adequate buffer and effective landscaping to reduce some of impact from airborne particulates particularly during the 18-month cycle when fields are being prepared for planting.

J. VISUAL IMPACT

The proposed expansion will not affect any important view planes in this area, and occurs in an area where trees and landscaping tend to soften the impact of structures. Development (Ohana Country Market and Mini Golf) will be set back at least 200 feet from Kamehameha Highway with a landscaped buffer area which will further reduce the

visual impact of planned structures. The larger main structures will be constructed around 400 feet from Kamehameha Highway providing even greater setback for the more dominant visual features. Of the total area which is cultivated with pineapple from Wahiawa to Haleiwa, the area in which the proposed Aloha Gardens development will be located is negligible, particularly with the planned landscape buffer and setback from the highway.

The applicant has provided floor plans in Appendix I that will provide a better understanding of the size of each building, along with the heights of each building to better understand the potential impact of the buildings on views.

Proposed landscaping is shown on the Full Size Conceptual Plan in Appendix XIII, using an enlarged scale for better clarity. The applicant will comply with the requirements of Hawaii Revised Statutes Section 103D-408 related to the use of native Hawaiian flora. Native Hawaiian flora will be used in landscaping and in the nursery area.

K. HAZARDS

The project site does not contain any nuisances, airport clear zones, or other features which would jeopardize its development.

V. MAJOR IMPACTS AND ALTERNATIVES CONSIDERED

As mentioned throughout this report the proposed Aloha Gardens development will not have a significant impact on the surrounding area in terms of public services and the environment.

Positive socio-economic impacts are projected with the increases in employment both short term and long term.

A. NO ACTION

This alternative was considered and rejected. Due to the demise of the sugar industry on Oahu and declining pineapple industry, diversified agriculture may be the last type of agricultural industry remaining and needs to be supported to allow its continuation. The applicant is taking proactive steps to keep alive the declining agricultural industry on Oahu or be threatened by the same fate as the sugar industry. Also, the proposed development will provide both short-term and long-term jobs in the much need agricultural industry.

Currently, there are limited opportunities in the rural areas of Central Oahu/North Shore/Koolauloa, particularly in the areas of rehabilitation/therapy services, elder care, and employment training. Residents in these areas often have difficulty accessing services due to geographic and transportation barriers. The proposed development will provide that service to the Central Oahu/North Shore/Koolauloa area, as well as provide transportation for day users from surrounding communities.

B. PROPOSED EXPANSION WITHOUT DIVERSIFIED AGRICULTURE

This alternative was considered but would result in greater economic hardship to the applicant and the agricultural industry of Hawaii.

Diversified agriculture is the key to the long term viability of the use of these agricultural lands, as well as other agricultural lands in the North Shore and Central Oahu areas. The economic well being of the agricultural industry on Oahu requires consideration of diversified agriculture to replace the sugar industry and to offset the downward trend in pineapple production and demand.

C. PROPOSED EXPANSION WITH ABOUT 15 ACRES OF B-1 NEIGHBORHOOD BUSINESS DISTRICT

This alternative was considered but was not selected because of concerns presented by staff at the Department of Planning and Permitting about the cumulative impact of the surrounding areas.

D. LOCATING PROPOSED DEVELOPMENT IN WAHIAWA, WAIALUA, HALEIWA OR KAHUKU, SEPARATING THE COMMERCIAL AND RESIDENTIAL USES AND OVERNIGHT ACCOMMODATIONS FROM THE AGRICULTURAL USES

The applicant is attempting to create a one-stop location to access a variety of community services. It is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation, a learning center, a health and wellness center for elders, a group living facility, administrative facilities, diversified agricultural activities and a farmer's market. Each of the targeted clients will benefit from the proximity of services and the ability to easily travel between the different activity nodes throughout the day. This interaction throughout the day is an important component of the one-stop nature of this

development and was an important consideration in attempting to find an appropriate site to accommodate all the uses planned.

This being said, the applicant has looked at sites in Wahiawa, Haleiwa, Waialua and Kahuku which were large enough to accommodate the total development and even purchased a site in Kahuku. While preparing to apply for the necessary land use permits for the Kahuku site, the Helemano site became available. The Helemano site held some advantages over Kahuku and the other sites considered, in that it was located between the two service areas of Waialua/Haleiwa and Wahiawa. The Helemano site also has available capacity in private water and sewer systems to accommodate the planned development due to its current level of development (existing Helemano Plantation, Dole Plantation, Dole packaging plant, and Helemano Military Reservation). The project site although near to Helemano Military Reservation and Whitmore Village (both about a mile away) is adequately buffered from these residential communities to minimize its impact on them.

VI. MITIGATION MEASURES

Since impacts from the proposed development are not expected to be significant, no extraordinary mitigation measures are planned. However, in order to minimize the short term construction impacts of the project, the applicant's contractor will employ dust control measures where appropriate,

including the use of water wagons, erection of barriers, and other methods for minimizing dust. The contractor will also be required to apply for a permit from the State Department of Health should noise from construction activities exceed regulatory limits. The contractor will abide by the noise regulations incorporated into the permit.

The applicant will also contact the Hazard Evaluation and Emergency Response Office of the Department of Health to determine whether soil testing and remediation will be necessary.

In order to mitigate the views of the project from Kamehameha Highway, the applicant plans to provide a 200-foot setback and landscape and screening similar to that provided fronting the nearby Dole Plantation development.

In order to minimize the effect of lighting during the evening hours, lights will be shieided and directed to minimize glare impacts on surrounding residents.

The applicant plans to mitigate the impacts from the surrounding agricultural activities on air quality by providing adequate buffer and effective landscaping to reduce some of the impact from airborne particulates particularly during the 18-month cycle when fields are being prepared for planting.

VII. GOVERNMENT PERMITS AND APPROVALS REQUIRED

The project will require the following governmental permits or approvals:

- State Land Use Boundary Amendment, City Council
- North Shore Sustainable Communities Plan Amendment, City Council
- Zone Change, City Council
- Special Use Permit, Planning Commission
- Conditional Use Permit, Department of Planning and Permitting
- Building Permit, Department of Planning and Permitting

At the time the Draft Environmental Assessment was prepared, the previously mentioned government approvals were to be pursued.

However, since that time, based on comments from the North Shore Neighborhood Board and recommendations from the Department of Planning and Permitting, we are now processing applications for a zoning variance and Special Use Permit to allow the proposed Aloha Gardens to proceed without the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment and Zone Change.

All permit application processes will continue, however, should the zoning variance and Special Use Permit be approved, the applicant has agreed to withdraw its support for the State Land Use Boundary Amendment, North Shore Sustainable Communities Plan Amendment and Zone Change.

VIII. SIGNIFICANCE CRITERIA

The following review of the significance criteria indicates that the project will not have a significant impact on the environment.

- **No irrevocable commitment to loss or destruction of any natural or cultural resource would result.**

  The project site is vacant, unimproved land which is in an agricultural zoned area that was primarily used for pineapple cultivation.

  The property is not listed on either the Hawaii or National Registers of Historic Places. With no previous record of historic or archaeological discoveries, the proposed development is not expected to have an impact on archaeological resources as confirmed by the State Historic Preservation Office (Appendix X, Agency and Public Comments).

- **The action would not curtail the range of beneficial uses of the environment.**

  The proposed development will not curtail, but will instead enhance the range of beneficial uses of the environment. In addition to maintaining farming and orchards, it will develop educational crop areas in three distinct horticultural/agricultural areas. One area's focus will be on Asian cultures where its varieties of plants will reflect the multi-cultural ethnicity of Hawaii. Whether it is lychee or longan trees, kai choy, pak choy, tea, ornamentals or plants used in herbal healing, the plantings

will be representative of the many wonderful cultures here in Hawaii. Another will focus on the Hawaiian culture featuring not just native plants, but those used in everyday living here in Hawaii, including plants used medicinally, or for aesthetic enjoyment. The third area will focus on the horticultural aspects of rose production. The educational crop areas will also be an integral part of the elder care program, encouraging its participants to enjoy the fresh air and even take part in horticultural therapy activities.

- **The proposed action does not conflict with the state's long-term environmental policies or goals and guidelines.**

The State's environmental policies and guidelines are set forth in Chapter 344, Hawaii Revised Statutes, "State Environmental Policy". The broad policies set forth include conservation of natural resources and enhancement of the quality of life. As discussed earlier, the project does not adversely affect significant natural resources. With the proposed development, short-term and long-term jobs will be created which will ultimately improve those individuals quality of life through diverse economic activities and will enhance the visitor experience at Aloha Gardens and Helemano Plantation. Environmental impacts from the proposed development will be minimal, as discussed in this environmental assessment. Since

traffic generated by Aloha Gardens is not expected to be significant, impacts on noise and air quality will be minimal.

- **The economic or social welfare of the community or state would not be substantially affected.**

The project will have a positive effect on the economic and social welfare of the state with the provision of short-term construction employment and related tax impacts, and long-term primary jobs with the planned improvements and secondary jobs in the highly needed agriculture industry due to the expansion into diversified agriculture on Aloha Gardens.

- **The proposed action does not substantially affect public health.**

The proposed action will not substantially affect public health. The proposed land use is compatible with the existing surroundings and current land uses and will have minimal impact on the environment or public health. Environmental impacts from the proposed development will be minimal, as discussed in this environmental assessment. Since traffic generated by Aloha Gardens is not expected to be significant, impacts on noise and air quality will be minimal.

The proposed action plans to provide a wellness center and an elderly day care which will actually serve to improve health services to seniors and visitors to the wellness center. The

wellness center will focus on health education and awareness and alternative healing; fitness, and other holistic wellness activities.

- **No substantial secondary impacts, such as population changes or effects on public facilities, are anticipated.**

There will be a nominal secondary impact such as population changes due to the project encompassing elderly care in which they would be residing on property. However, these people would be relocating from another part of the island and will not be increasing the actual population.

As discussed in this Final Environmental Assessment, the existing water system, wastewater, and solid waste facilities are adequate to accommodate the proposed Aloha Garden Development.

Julian Ng, Incorporated has prepared a traffic assessment report for the project. The Aloha Garden development, when completed, would not have a noticeable effect on traffic volumes on Kamehameha Highway.

- **No substantial degradation of environmental quality is anticipated.**

The project will not result in a substantial degradation of the environment. Environmental impacts from the proposed development will be minimal, as discussed in this environmental assessment.

Only minimal impact is projected during the construction phase. The project will be built at or near existing grade. Excavation for the project should be limited to the footings and foundation of the structure. Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust. Only minimal impact is projected during the construction phase of the proposed development.

- **The proposed action does not involve a commitment to larger actions, nor would cumulative impacts result in considerable effect on the environment.**

The proposed project does not involve a commitment to larger actions nor will it result in cumulative impacts to the environment. The proposed Aloha Garden development will not generate future projects beyond those addressed in this Final Environmental Assessment, creating a cumulative impact.

- **No rare, threatened or endangered species or their habitats would be affected.**

No rare, threatened, or endangered species or their habitats would be affected in the proposed development. There are no endangered species of flora on the site. The field survey found the typical array of introduced birds. No unusual or unexpected species were encountered. No endangered or threatened species were found on the property. The only migratory bird recorded

was the Pacific Golden-Plover. This species is the most abundant migrant in Hawaii. The Small Indian Mongoose was the only mammal seen on the survey.

The property contains no natural undisturbed habitat. The entire site was previously developed for agriculture. No unique natural resources were identified on the survey. The development of this property will produce a more diversified array of habitats that will likely increase the numbers of birds and the variety of species at this site.

- **Air quality, water quality or ambient noise levels would not be detrimentally affected.**

Short term impacts on air quality are expected to be primarily related to dust generated by the construction activity. Dust will be generated in the course of excavating for foundations and utility lines. Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust.

Short term noise impacts at construction sites are a normal result of construction activity. The State Department of Health administers rules and regulations relating to the hours during which construction is permitted and the noise levels permitted during those hours. The contractor will be required to apply for a permit from the State Department of Health should noise from

construction activities exceed regulatory limits. The contractor will abide by the noise regulations incorporated into the permit.

Water quality would not be detrimentally affected by the proposed development which is not over a potable water source.

- **The project would not affect environmentally sensitive areas, such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters.**

The project site is in Zone D, areas in which flood hazards are undetermined.

The project will not affect tsunami zones, erosion-prone areas, geologically hazardous land, estuaries, fresh water nor coastal waters.

- **Substantially affects scenic vistas and view planes identified in county or state plans or studies.**

The proposed expansion will not affect any important view planes in this area. The proposed structures will be setback from the road over 200 feet, which will further reduce the visual impact of the structures. The area fronting the project site will also be landscaped to screen the structural development on the lot.

- **Requires substantial energy consumption.**

The Hawaiian Electric Company has existing power lines serving this area and the applicant will coordinate development of the project to ensure that the power lines will be adequate to support the proposed Aloha Garden development. The proposed

development will not require substantial amounts of additional electrical power.

In order to minimize energy use and conserve our natural resources, the applicant plans to consider the concepts sited in the Guidelines for Sustainable Building Design in Hawaii (Appendix IX).

The applicant will comply with the requirements of Hawaii Revised Statutes Section 103D-407 regarding the use of recycled glass in paving materials.

IX. LIST OF AGENCIES CONSULTED

The applicant has prepared point by point responses to each of the comments received during the agency and public review period for the Draft Environmental Assessment. Copies of the agency and public comment letters and the applicant's response are included in Appendix X.

FEDERAL

1. Environmental Protection Agency (EPA), San Francisco

STATE

2. Department of Land and Natural Resources
   - h. Division of Forestry & Wildlife
   - i. Division of Aquatic Resources
   - j. Division of State Parks
   - k. Commission on Water Resource Management

l. Land Division Planning and Technical Services
m. Land Division Engineering Branch
n. Oahu District Land Office

3. Department of Agriculture
4. Department of Hawaiian Home Lands
5. State Historic Preservation Division (Department of Land and Natural Resources)
6. Department of Transportation
7. Environmental Center (University of Hawaii)
8. Department of Health
   a. Environmental Planning Office
   b. Environmental Management Division
   c. Clean Water Branch
9. Department of Business, Economic Development and Tourism
   a. Land Use Commission
   b. Office of Planning
10. Wahiawa Public Library (put on reserve)
11. Department of Education

CITY

12. Department of Planning and Permitting
13. Department of Transportation Services
14. Board of Water Supply
15. Honolulu Fire Department
16. Department of Environmental Services
17. Department of Budget and Fiscal Services
18. Department of Community Services
19. Honolulu Emergency Services
20. Department of Parks and Recreation
21. Honolulu Police Department

OTHER

22. Land Use Research Foundation
23. North Shore Neighborhood Board

24. Wahiawa Neighborhood Board
25. Sierra Club

X. AERIAL PHOTO

An aerial photo of the project site has been provided in Appendix XI.

XI. HUD ENVIRONMENTAL ASSESSMENT

The Environmental Assessment (HUD recommended format per 24 CFR 58.36, revised 1/99) is provided in Appendix XII.

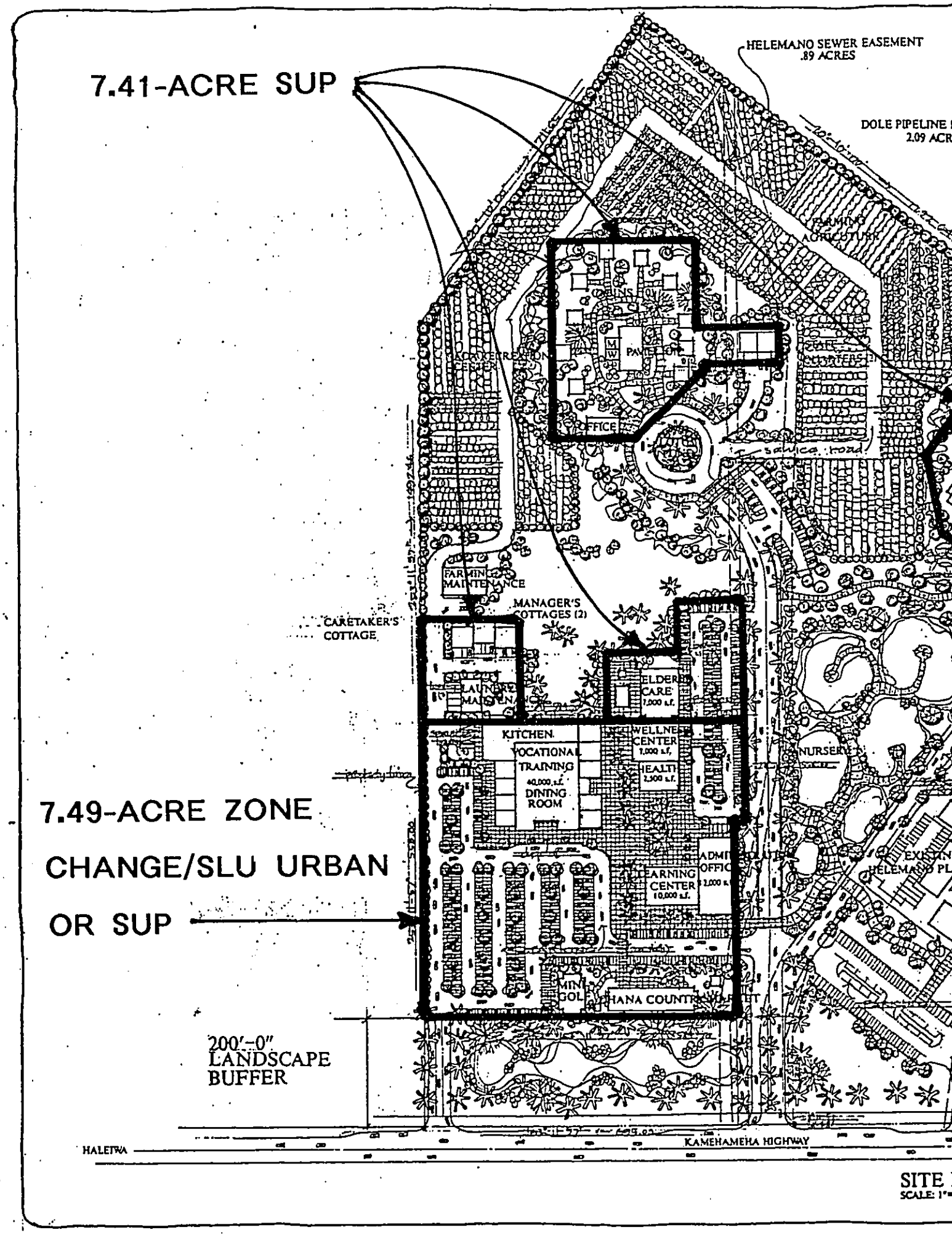
XII. RECOMMENDATION

Based on this Final Environmental Assessment, and a review of the significance criteria set forth in Chapter 200, HAR, we respectfully request a Finding of No Significant Impact (FONSI) for the proposed Aloha Garden development, which will not have a significant impact on the environment.

****

APPENDIX I

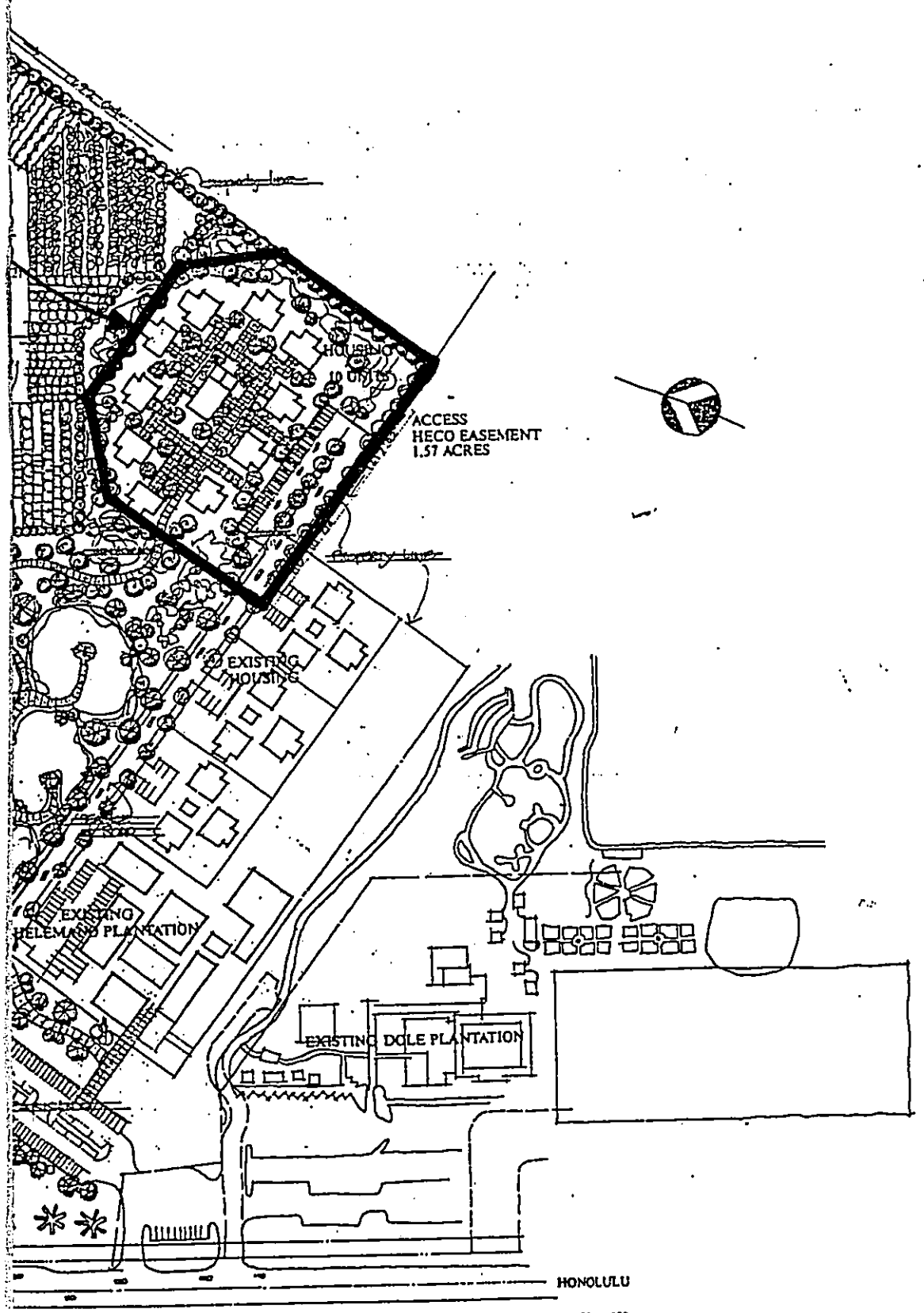
CONCEPTUAL PLANS



ASEMENT

PROPOSED:
ORI ANUENUE HALE INC.

OLE PIPELINE EASEMENT
2.09 ACRES

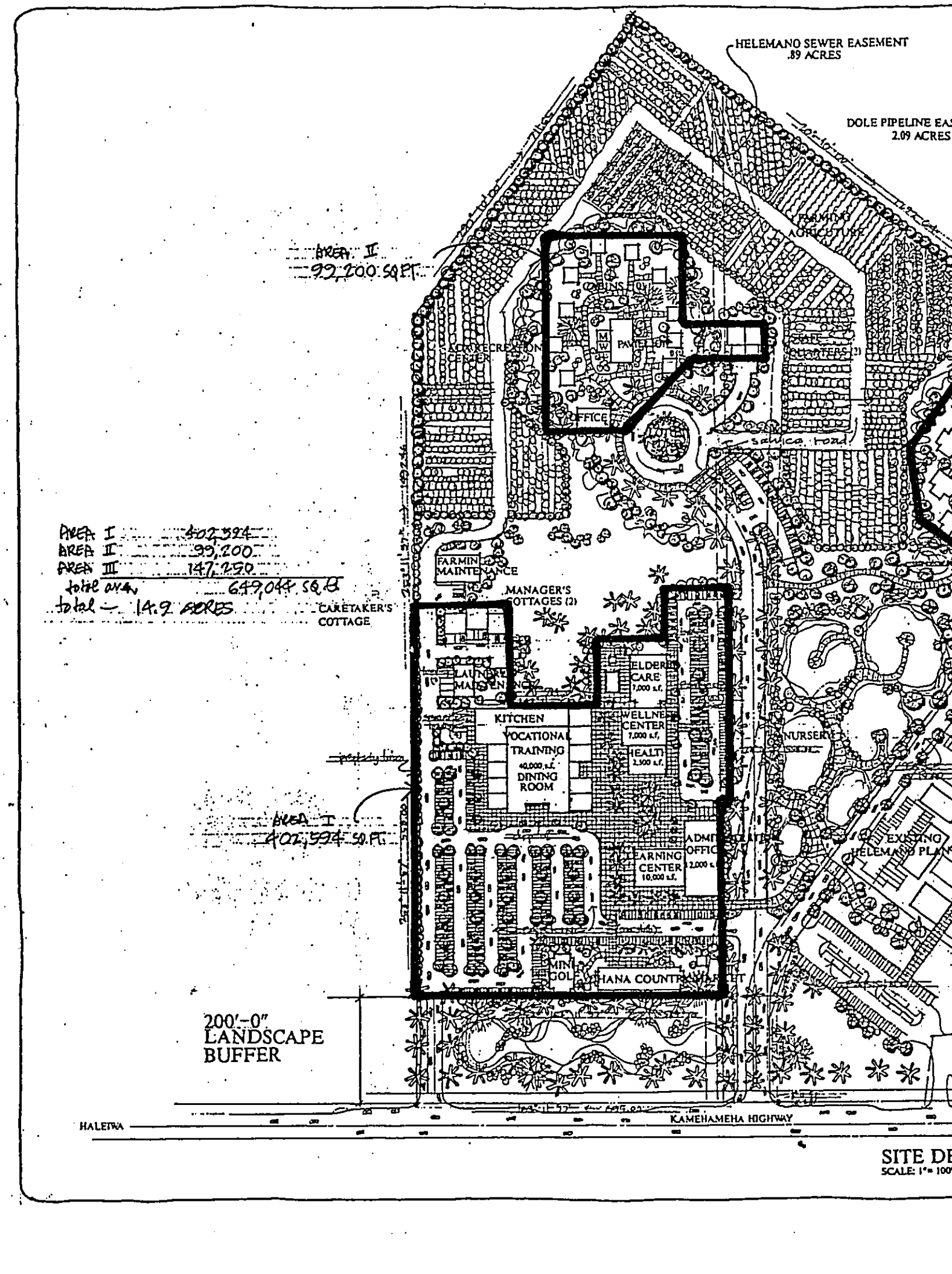


SITE DEVELOPMENT PLAN
SCALE: 1"= 100'-0"

100 0 50 100
1"=100'-0"

10/4/02 ✓
JULY, 2002 SUEDA & ASSOC., INC

DOCUMENT CAPTURED AS RECEIVED



DOCUMENT CAPTURED AS RECEIVED

ASEMENT

OLE PIPELINE EASEMENT
2.09 ACRES

PROPOSED:
ORI ANUENUE HALE INC.

SPECIAL USE PERMIT PLAN

AREA: III
147,250 SQ.FT.

HOUSING
10 UNITS

ACCESS
HECO EASEMENT
1.57 ACRES

EXISTING
HOUSING

EXISTING
HELEMANO PLANTATION

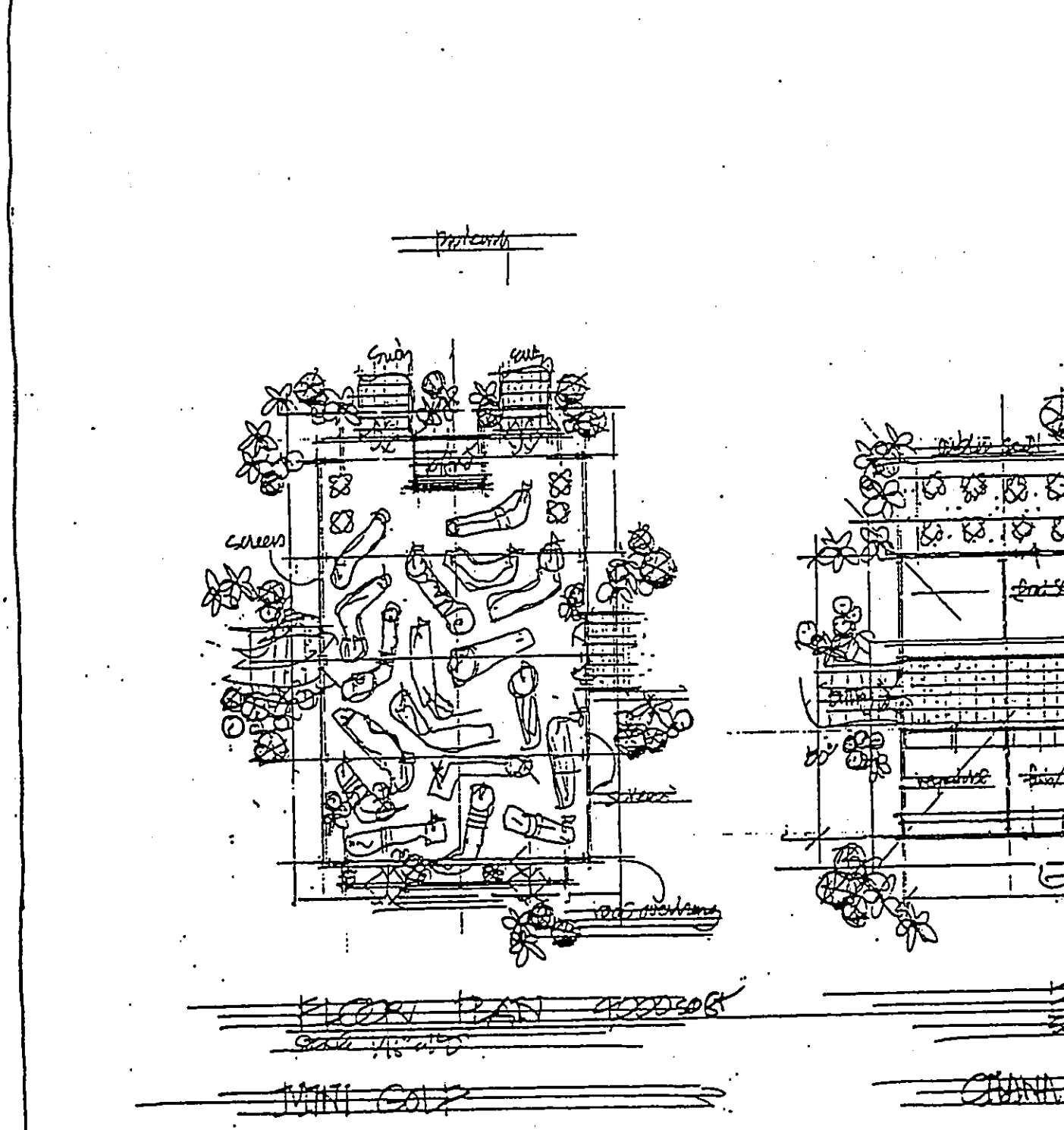
EXISTING DOLE PLANTATION

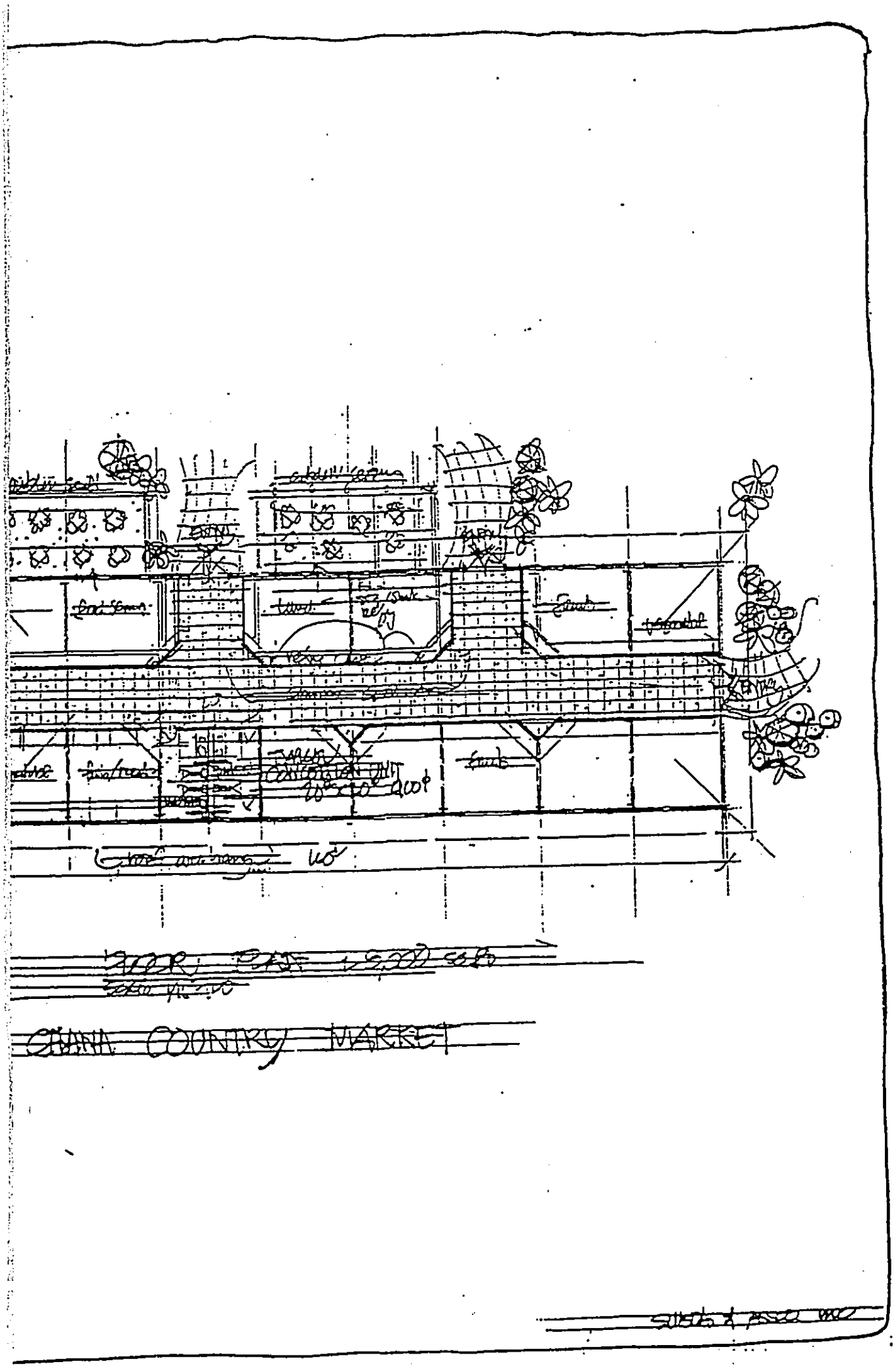
HONOLULU

SITE DEVELOPMENT PLAN
SCALE: 1"= 100'-0"

100 0 50 100
1"=100'-0"

10/9/02
JULY, 2002 SUEDA & ASSOC., INC





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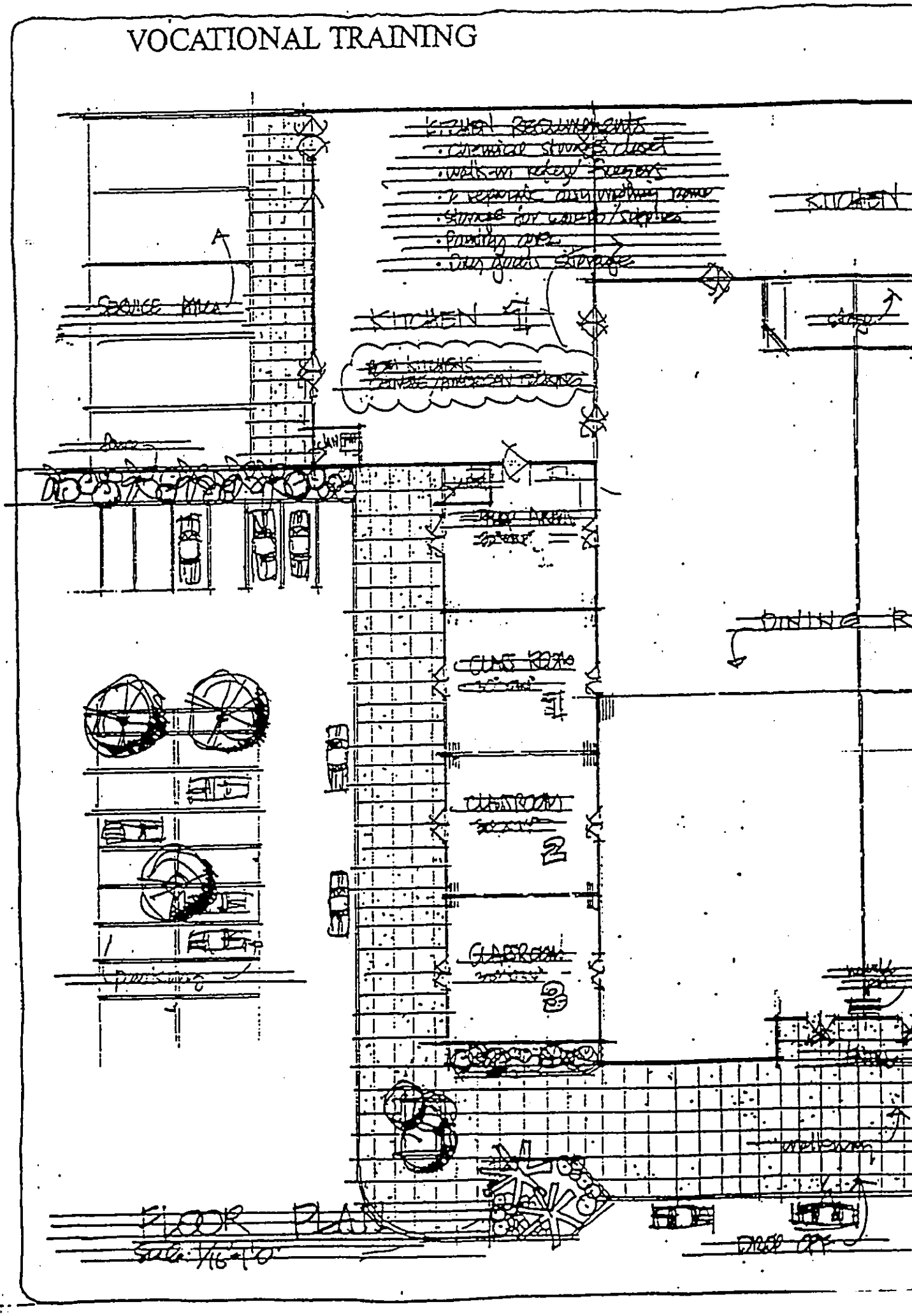

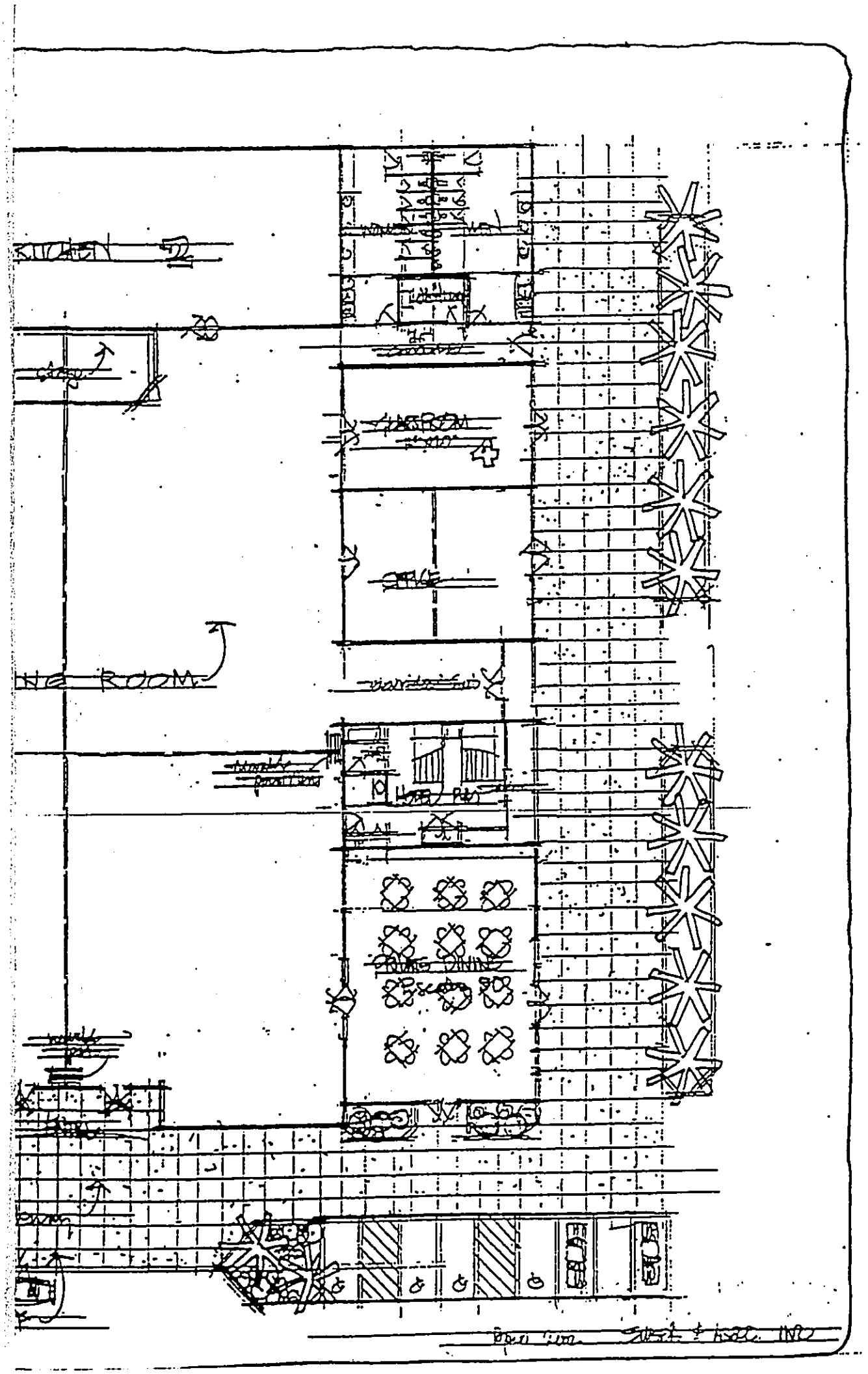

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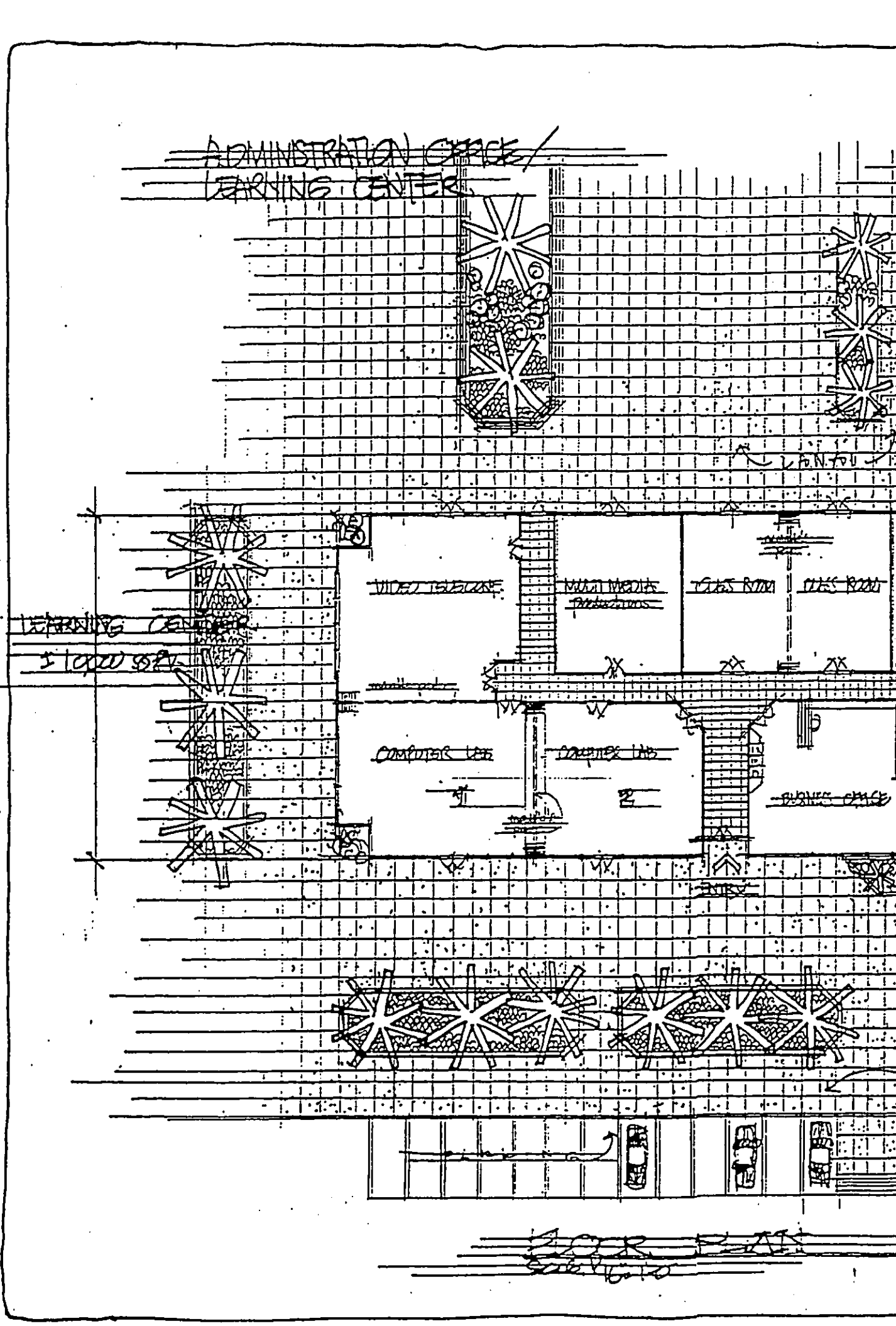

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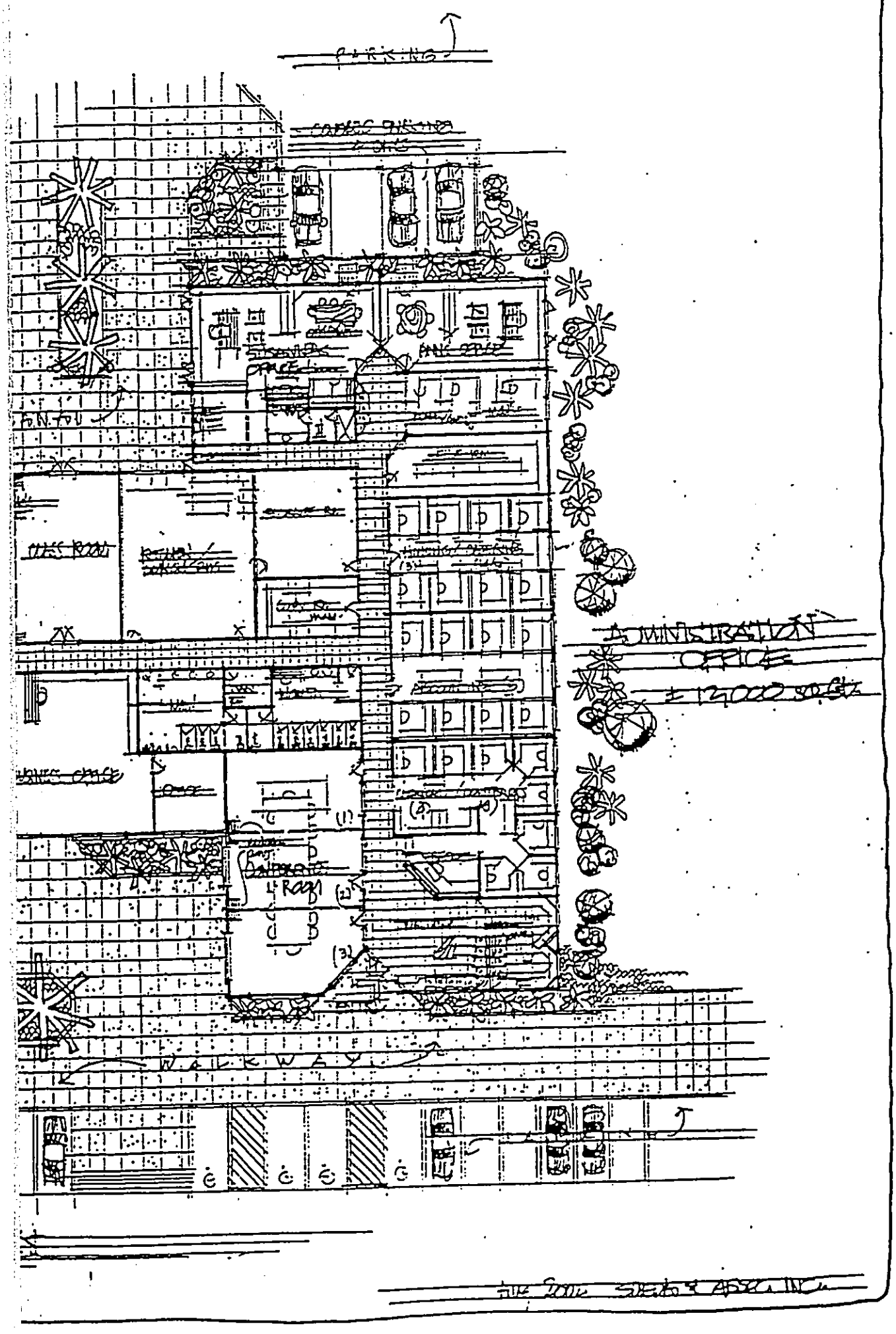

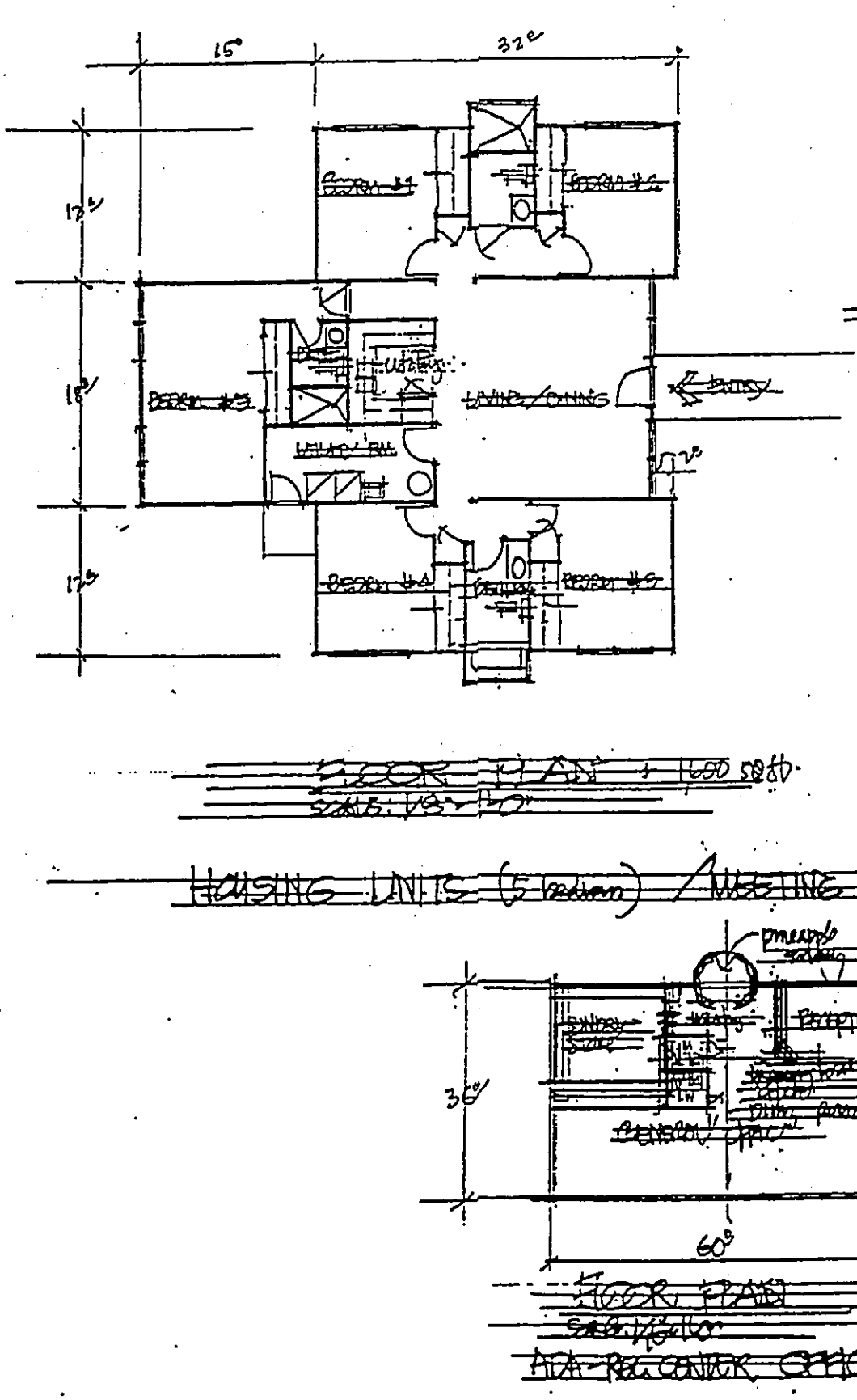

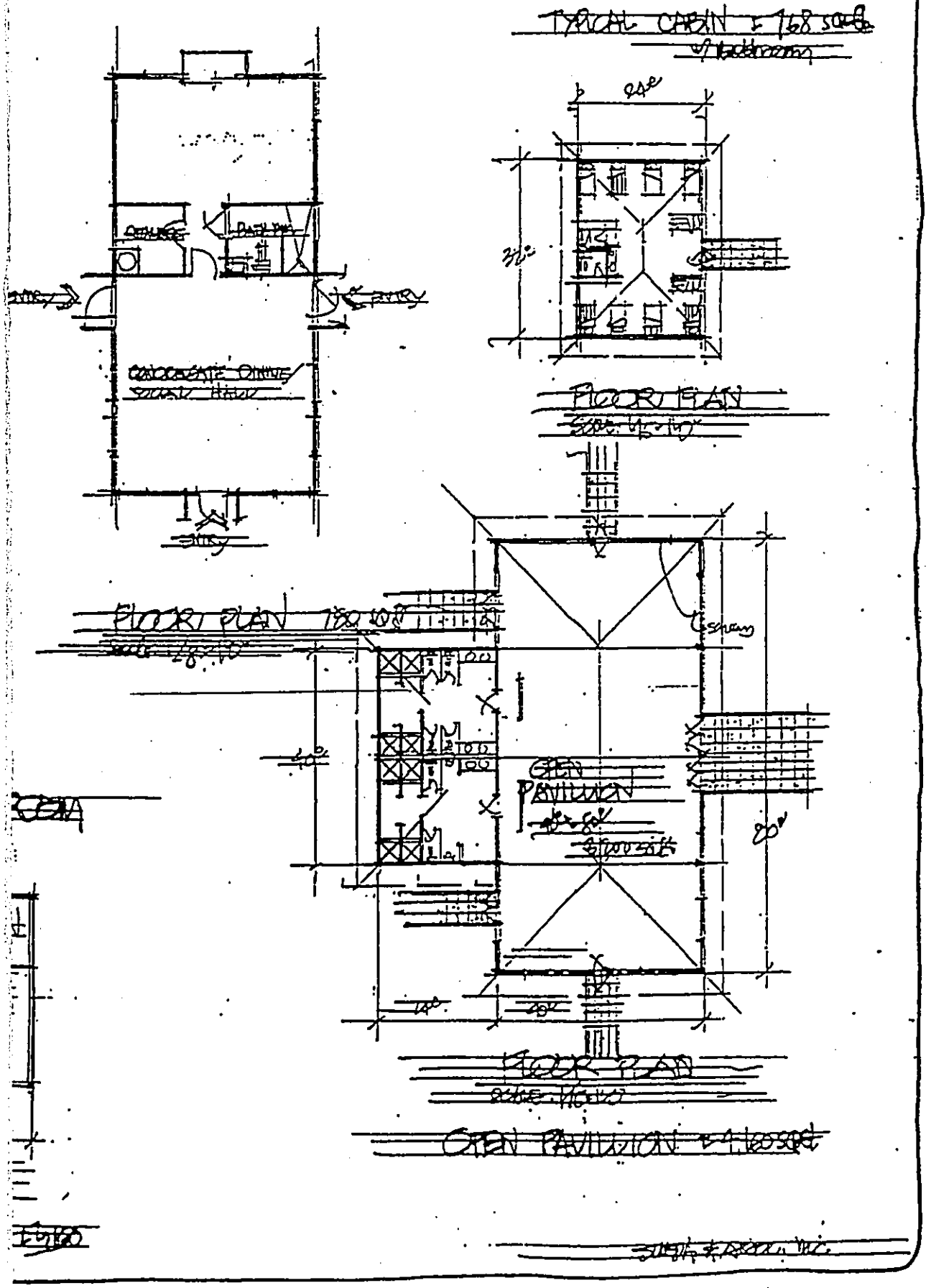

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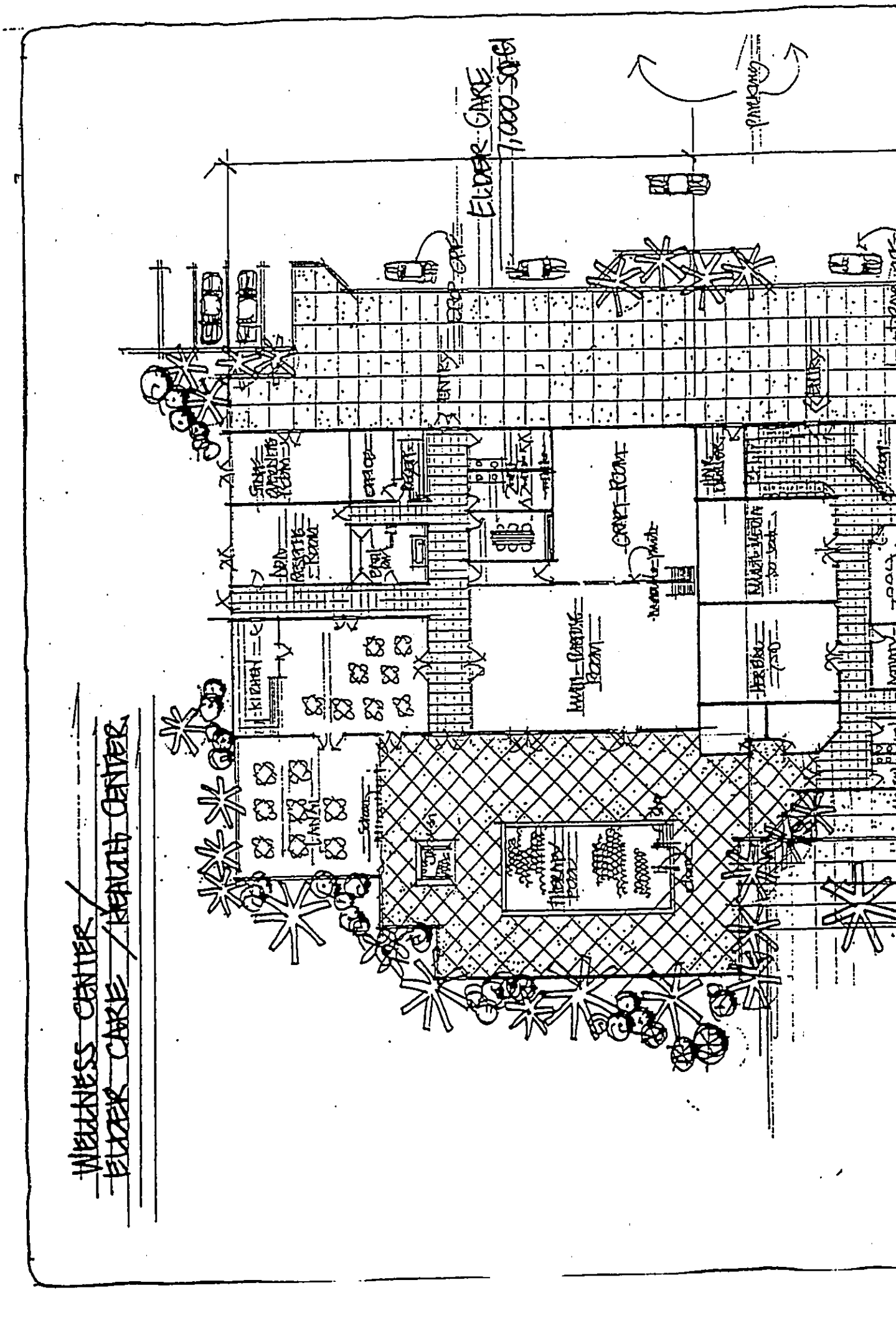

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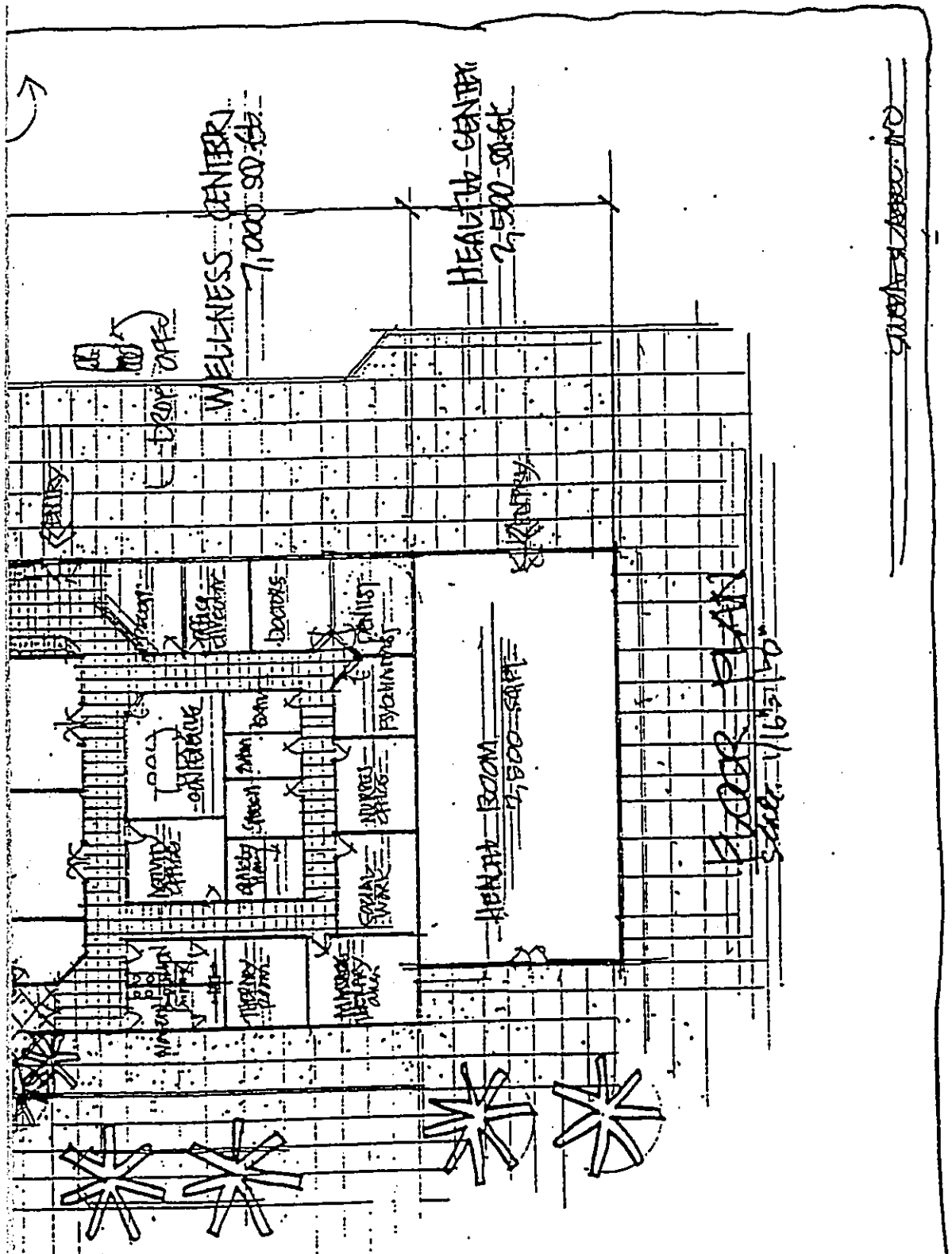


APPENDIX II

TRAFFIC IMPACT ASSESSMENT REPORT

SITE ACCESS STUDY REPORT

Aloha Gardens

February 2002

Prepared for:

ORI Anuenue Hale, Inc.

Prepared by:

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

Table of Contents

Site Access Study Report
Aloha Gardens
Wahiawa, Oahu, Hawaii
February, 2002

Introduction

ORI Anuenue Hale, Inc. (ORI) intends to develop a facility to assist a broad spectrum of the community, including, but not limited to the elderly, persons developmentally disabled, the economically disadvantaged, immigrants, displaced workers, and the unemployed. The facility is planned on a site adjacent to the Helemano Plantation. ORI plans to request a State Land Use Boundary amendment, a North Shore Sustainable Communities Plan amendment, and a zone change, and a conditional use permit. The zoning change would include about 7.49 acres of land from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District and approximately 35.75 acres of land from AG-1 Restricted Agricultural District to AG-2 General Agricultural District.

The project will be a one-stop location that will include a variety of community services. The site is envisioned to be an integrated setting with outdoor areas for the appreciation of nature and recreation, a learning center and vocational school, a daycare for the elderly, a group living community, administrative facilities, diversified agricultural activities, and a farmer's market.

A traffic assessment of the potential impact to traffic conditions was done and is reported herein. The proposed vehicular access to the project site is through two driveways from Kamehameha Highway; however, the State Highways Division has indicated that a single access would be preferred. Existing traffic volumes on Kamehameha Highway were based on the latest estimates from the State of Hawaii Department of Transportation Highways Division, as reported in the *Traffic Summary – Island of Oahu* report. Available counts taken by the Highways Division, as reported in the *Traffic Survey - Island of Oahu 2000* report were also used. Both reports were released in October 2001.

Future traffic volumes on Kamehameha Highway were projected for an increase of 10% over the 2000 volumes. This future volume would be applicable for a future year of 2010 at an average annual increase of 0.96%, which is about the average rate of growth in traffic volume on the highway during the 1990s. The project impact was evaluated by estimating project traffic volumes at full development and adding these volumes to the future highway volume. Analyses of the intersection formed by the project driveway and the highway and of traffic densities on the highway were done to provide a quantitative measure of the impacts.

Traffic analyses were based on the concepts described in the *Highway Capacity Manual*[1]. Traffic conditions are described by "Levels of Service" (LOS) which range from LOS A (good conditions) to LOS E (poor conditions). Level of Service F describes over capacity conditions or very long delays. Normally, LOS C is considered acceptable in rural areas and LOS D is considered acceptable for urban conditions.

The *Highway Capacity Manual* procedure for the analysis of unsignalized intersections was applied to the intersections formed by the site driveways and Kamehameha Highway. In this analysis, delays are computed for vehicles that must wait for appropriate gaps in the main (uncontrolled) flow of traffic to cross or enter the main roadway. These delays are based on a comparison of the demand to the available capacity, which in turn is based on the volume of the main flow. The analysis assumes random arrivals of traffic; the actual arrival pattern of highway traffic is grouped or in platoons, being controlled by the cycling of existing traffic signals to the north and to the south. The arrival of the platoons, however, is random because of the distance to the nearest traffic signals; nevertheless, the unsignalized intersection analysis provides an indication of the conditions at the intersection. The computed delays are related to a level of service.

The *Highway Capacity Manual* provides an analysis for two-lane highways in which the highway's level of service is related to the ability to pass a slow-moving vehicle, so that delays to the traveler can be minimized. This analysis, however, does not provide a good indicator of conditions on Kamehameha Highway near the proposed site. Alternatively, traffic density is used to provide a description of conditions on the highway. Criteria for levels of service at unsignalized intersections and on the highway are:

LOS	General Description of Estimated Delay	Average Delay at Unsignalized Intersection	Traffic Density (vehicles per mile per lane)
A	Little or no delay	≤ 10 seconds	≤ 11
B	Short traffic delays	> 10 and ≤ 15 seconds	>11 and ≤ 18
C	Average traffic delays	> 15 and ≤ 25 seconds	> 18 and ≤ 26
D	Long traffic delays	> 25 and ≤ 35 seconds	>26 and ≤ 35
E	Very long traffic delays	> 35 and ≤ 50 seconds	> 35 and ≤ 45
F	Very long traffic delays	> 50 seconds	> 45
F*	Demand exceeds capacity	can not compute	---

1 Transportation Research Board, *Highway Capacity Manual*. 2000.

Existing Conditions

Kamehameha Highway is the main highway around the island of Oahu, starting in Honolulu and continuing in a clockwise direction through Central Oahu, the North Shore, and the Windward side of Oahu, ending in Kaneohe. Between Wahiawa and Haleiwa, Kamehameha Highway is a two-lane highway that passes through agricultural fields planted in pineapple and coffee plants. At signalized intersections, additional width has been provided for left turn lanes. The nearest traffic signals are at Whitmore Avenue 1.8 miles to the south (toward Wahiawa) and at Paalaa Uka-Road 0.7 mile to the north (toward Haleiwa).

The project site is located east of the highway and north of the existing Helemano Plantation site. South of the Helemano Plantation site is the Dole Plantation. Three driveways served the parking lots for the existing Helemano Plantation and Dole Plantation. At these driveways, traffic leaving the site stops and waits for a gap in highway traffic; all turning movements are permitted at the driveways. Bus stops for the City's public bus system are located in front of the Dole Plantation. A marked crosswalk is provided at the southbound bus stop. Posted speed limit is 45 miles per hour; at the crosswalk, there are pedestrian crossing warning signs with an advisory speed of 35 miles per hour.

The *Traffic Summary - Island of Oahu 2000* report shows an average daily traffic (ADT) of 15,137 vehicles per day (vpd) for the segment of Route 99 (Kamehameha Highway) between the Dole Plantation to the south and Weed Junction to the north. Using the reported factors for peak hourly traffic and directional distribution, peak hour volumes are 985 vehicles per hour (vph) in the AM Peak Hour and 1,290 vph in the PM Peak Hour. Table 1 summarizes the traffic information (to nearest 5 vehicles).

Table 1
2000 Daily Traffic Volumes - Kamehameha Highway

	total	Southbound	northbound
2000 Average Daily Traffic	15,140	7,570	7,570
AM Peak Hour	985	540	445
PM Peak Hour	1,290	645	645

The State Highways Division has a traffic count station on Kamehameha Highway near the project site (Station C-20-F). This station has been counted every two years. In addition, the intersection of Kamehameha Highway and Kamananui Road (Station 20-F) was counted in 2000. Table 2 summarizes the data from the last four counts from Station C-20-F and the 2000 counts of the north leg of the intersection. The commuter period peak hours in the 2000 count were 7:15 AM to 8:15 AM and 4:00 PM to 5:00 PM.

Table 2
Traffic Volumes at Nearest Count Station

	24-hour	AM Peak Hour		PM Peak Hour	
	total (2-way)	southbound	northbound	southbound	northbound
August 11-12, 1993	17,389	498	327	585	731
November 29-20, 1995	17,808	646	490	579	767
March 5-6, 1997	16,282	634	369	535	752
June 28-29, 1999	18,340	637	400	636	823
July 31-August 1, 2000 *	19,286	672	647	722	761

Source: State Highways Division, *Traffic Survey Data, Island of Oahu 2000.* All counts from Station C-20-F, Kamehameha Highway at Brodie Camp No. 2 Bridge, except * from Station 20-F, Kamehameha Highway at Kamananui Road (North Junction), north leg.

The counts from July 31-August 1, 2000 were taken to be representative of existing traffic on the highway. Trucks and buses comprised 4.8% of the traffic in the AM Peak Hour and 3.8% of the PM Peak Hour traffic. Traffic densities on the highway north and south of the project site were determined for an average speed of 40 miles per hour. Peak hour conditions on the highway are described as Level of Service B or C. Table 3 shows the densities and levels of service on the highway.

Table 3
Existing Highway Conditions
Kamehameha Highway

	AM Peak Hour		PM Peak Hour	
	southbound	northbound	southbound	northbound
Typical Day, 2000				
Traffic Density (vehicles per mile)	17.6	17.0	18.7	19.7
Highway Level of Service	B	B	C	C

Future Conditions

Highway volumes are expected to increase 10% by the year 2010. The proposed project will develop facilities that will be used for a variety of activities, ranging from group living quarters to camping, offices to vocational training, agricultural activity to a farmer's market, and supporting uses. Vans and other high-occupancy vehicles are expected to provide the transport for many of the students and other users. Employee traffic, however, would occur at the same time as the highway peak hours and the greatest impacts are expected at these times. The project is expected to generate 600 vehicle trips per day. Table 4 shows the peak hour traffic estimate.

Table 4
Site Traffic Generation

	AM Peak Hour		PM Peak Hour	
	entering	exiting	entering	exiting
Farmer's Market (5,000 square feet)	8	2	9	1
Administration office (10,000 square feet)	11	1	3	12
Mini-golf (2 employees)	2	0	1	2
Learning Center (50 students)	10	2	2	8
Vocational Training (50 students)	10	2	2	8
Health & Wellness Center (10 employees)	4	0	1	4
Elderly Care (15 employees)	8	1	2	9
Laundry/Maintenance (2 employees)	1	0	0	2
Managers/Caretakers (3 dwellings)	1	2	2	1
Recreational Camp (15 family units)	1	1	1	1
Recreational Camp Office (5 employees)	3	0	1	3
Group Living Facility (10 duplexes)	3	7	7	3
Dining Room/social hall (3,200 square feet)	1	0	1	0
Total traffic at site driveway	63	18	32	54

Project traffic was distributed to the north or the south in proportion to the existing traffic volumes and assigned to the two driveways shown on the preliminary site plan, as shown in Exhibit 2. Although some of the project traffic may already be in the area, for the purpose of the analyses, project traffic has been assumed to be all new traffic in the area and driveway movements were added to the future non-project traffic volumes. As shown in Table 5, the future densities and levels of service on the highway are similar with or without the project.

Table 5
Future Highway Conditions

	AM Peak Hour		PM Peak Hour	
	southbound	northbound	southbound	northbound
Without project, 2010				
Traffic Density (vehicles per mile)	19.4	18.6	20.6	21.7
Highway Level of Service	C	C	C	C
With project, north of site				
Traffic Density (vehicles per mile)	20.3	18.9	21.0	22.4
Highway Level of Service	C	C	C	C
With project, south of site				
Traffic Density (vehicles per mile)	19.7	19.4	21.3	22.1
Highway Level of Service	C	C	C	C

The site driveways form unsignalized intersections with the highway. The results of the unsignalized intersection analysis for the two driveways shown in the proposed site plan are shown in Table 6.

Table 6
Future Conditions
Site Driveways to Kamehameha Highway (per Site Plan)

	Volume (vph)	Capacity (vph)	Average Queue	Average Delay	Level of Service
AM Peak Hour - North Driveway					
left turn in from southbound lane	30	875	0.11	9.3 sec.	A
exiting traffic (shared lane)	10	195	0.05	24.5 sec.	C
AM Peak Hour - South Driveway					
left turn in from southbound lane	5	875	0.02	9.1 sec.	A
exiting traffic (shared lane)	10	205	0.15	23.4 sec.	C
PM Peak Hour - North Driveway					
left turn in from southbound lane	10	795	0.04	9.6 sec.	A
exiting traffic (shared lane)	45	175	0.97	32.3 sec.	D
PM Peak Hour - South Driveway					
left turn in from southbound lane	5	795	0.02	9.5 sec.	A
exiting traffic (shared lane)	10	165	0.19	28.5 sec.	D

The State Highways Division has indicated that the access to the property should be consolidated at one driveway. A single driveway would have adequate capacity, but exiting traffic would have greater delays with all of the movements made at one location, as shown in Table 7.

Table 7
Future Conditions
Single Site Driveway to Kamehameha Highway

	Volume (vph)	Capacity (vph)	Average Queue	Average Delay	Level of Service
Typical Day, AM Peak Hour					
left turn in from southbound lane	35	875	0.12	9.3 sec.	A
exiting traffic (shared lane)	20	190	0.34	25.9 sec.	D*
exiting with median (shared lane)	20	320	0.20	16.9 sec.	C
Typical Day, PM Peak Hour					
left turn in from southbound lane	15	795	0.06	9.6 sec.	A
exiting traffic (shared lane)	55	170	1.30	35.5 sec.	E*
exiting with median (shared lane)	55	295	0.67	19.9 sec.	C

* poor LOS can be mitigated with median lane (see text below)

Southbound left turns in the AM Peak Hour are about 5% of the advancing (southbound) flow of 775 vehicles per hour, turning against an opposing volume of 740 vehicles per hour. Since these volumes exceed the guidelines for a separate left turn lane on a two-lane highway, intersection improvements should include highway widening to provide a separate lane for southbound left turns. If the widening is extended to the south so that exiting left turns can be made across northbound traffic into a median lane prior to merging with southbound traffic, there would be reduced delays and acceptable Level of Service C conditions.

Other Considerations

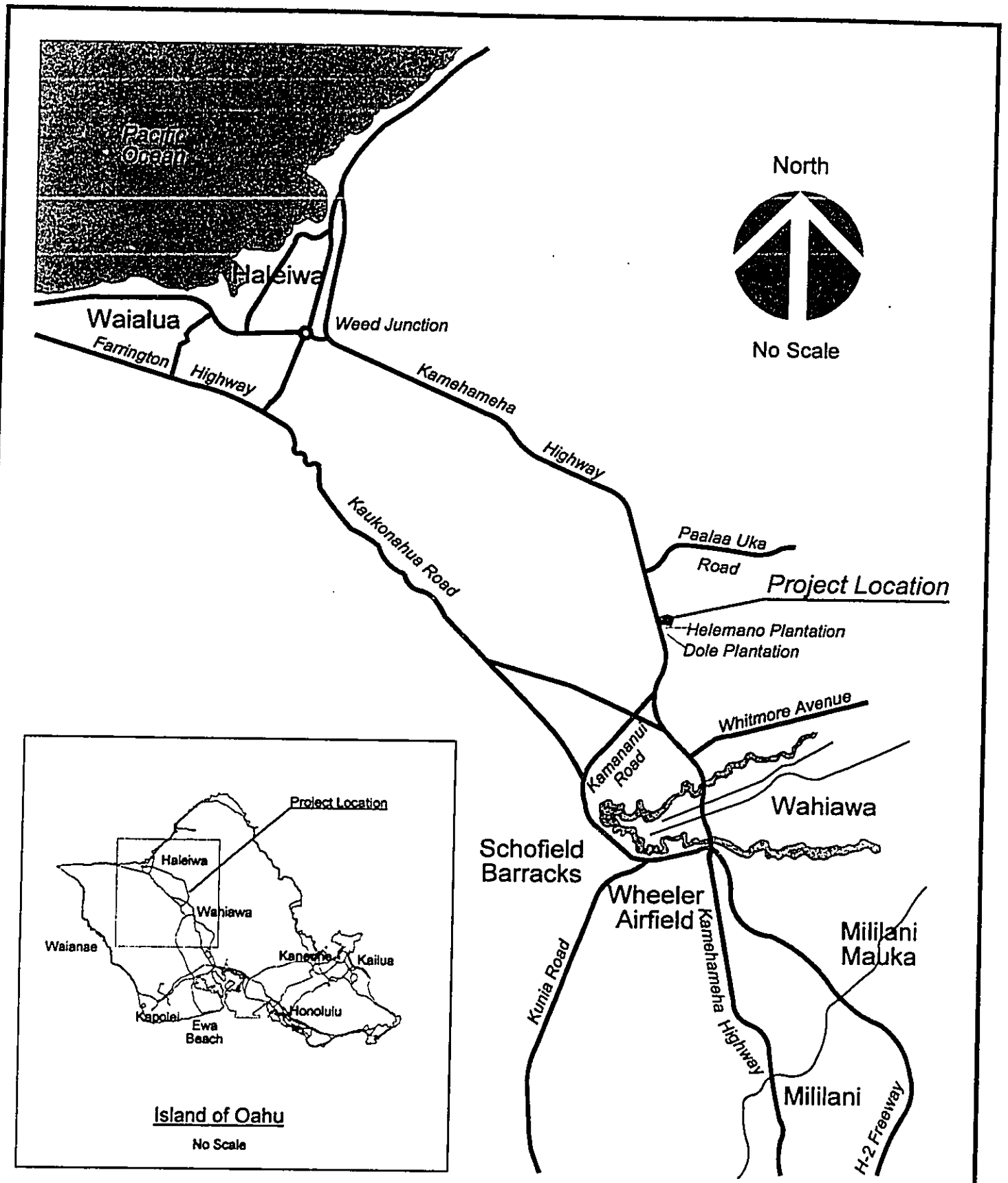
Several other mitigation measures were considered to address the poor future levels of service with a single driveway. Widening the driveway so that separate lanes can be provided for left turns and right turns onto the highway will improve levels of service for right turn traffic, since those vehicles will not be delayed by vehicles waiting to turn left. However, delay for left turning vehicles will be greater and the levels of service for left turn traffic will not be improved.

Another mitigation measure considered is the installation of a traffic signal. With traffic signals, the delays encountered by the driveway traffic would be lessened, but delays would be imposed on the highway traffic. However, the traffic volumes at the site driveway would not meet any of the signal warrants. Signalization would only be warranted if access to the southbound lanes of the highway (left turns) from the proposed project, the existing Helemano Plantation, and the existing and proposed expansion of Dole Plantation were directed to a single location.

Conclusions and Recommendations

The preliminary site plan for the project shows two driveways from the site. The State Highways Division has indicated that all movements from and onto the highway be consolidated into one location. The traffic analysis shows that there will be sufficient capacity at a single driveway for the expected traffic during the peak hours. The proposed project is not expected to significantly affect traffic volumes on Kamehameha Highway; increased traffic due to other growth, however, will have an effect on future conditions, by increasing delays to traffic leaving the site.

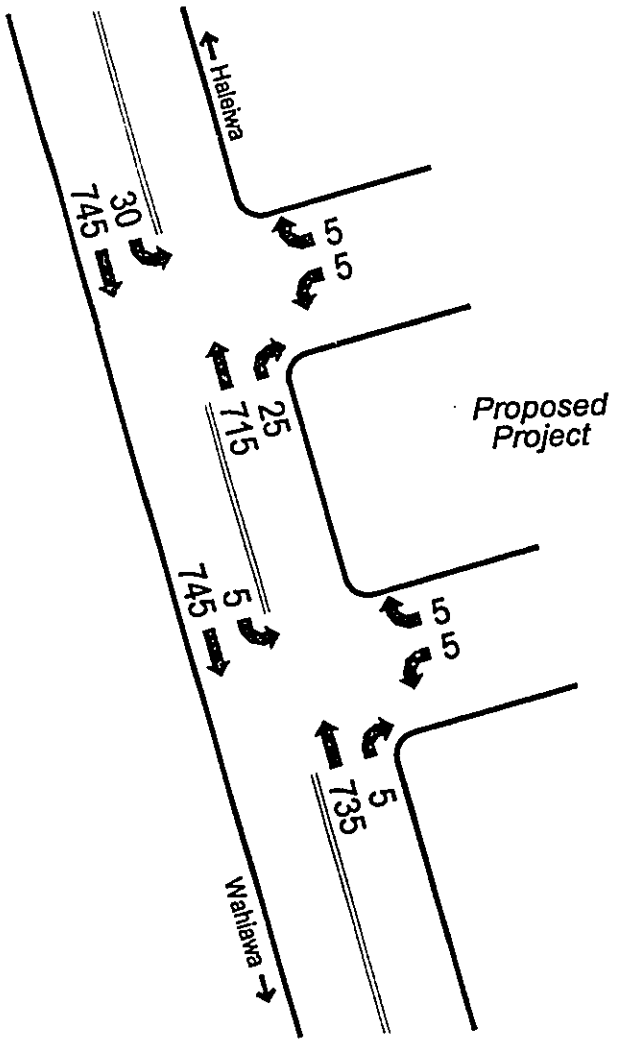
* * *



Site Access Study Report Aloha Gardens	Project Location prepared by : Julian Ng, Inc. February, 2002	Exhibit 1

North

No Scale



AM Peak Hour

North

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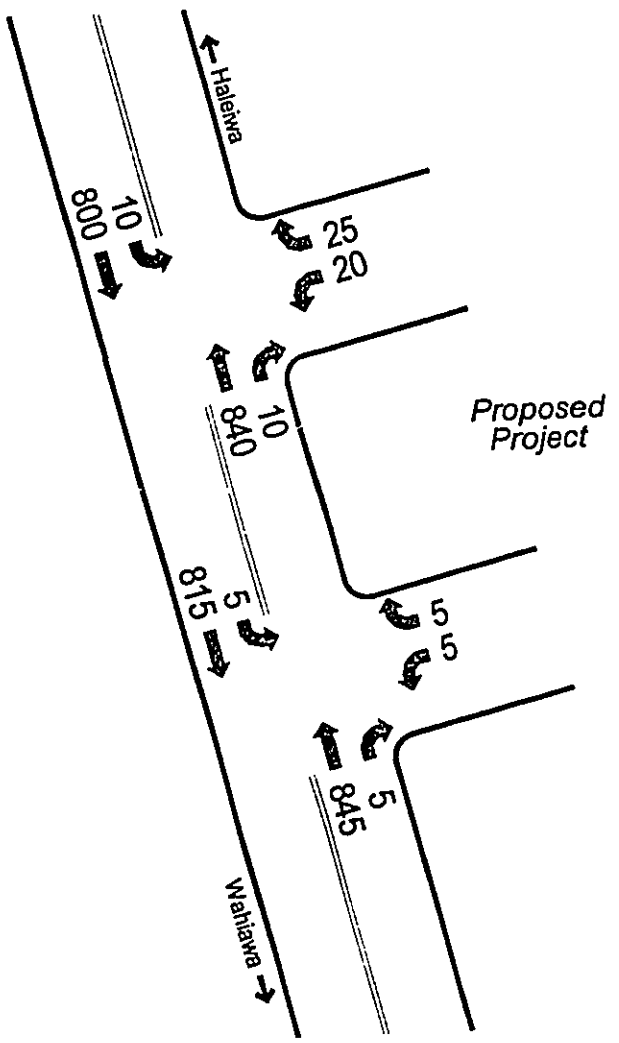
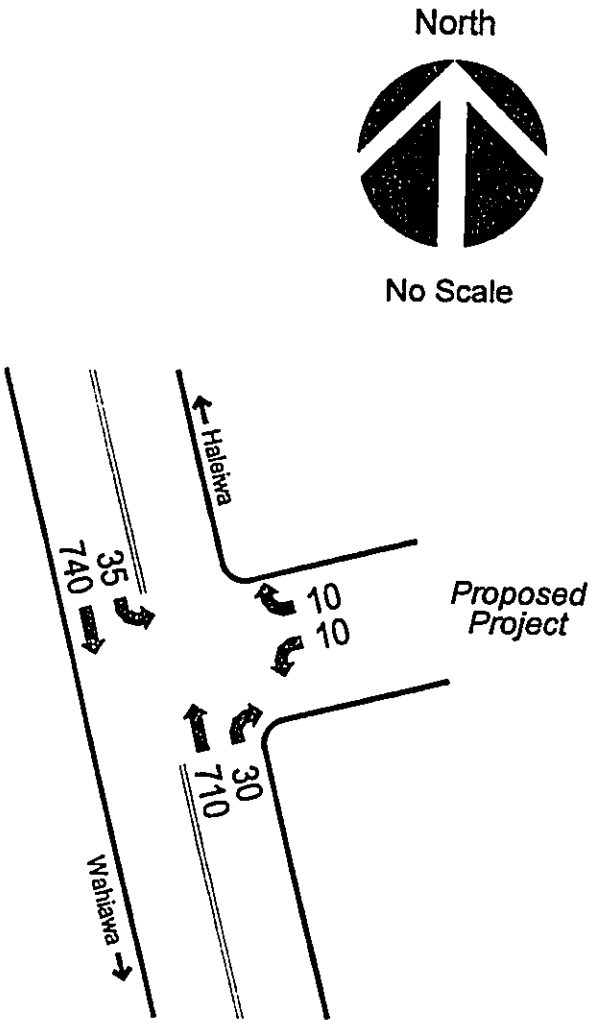
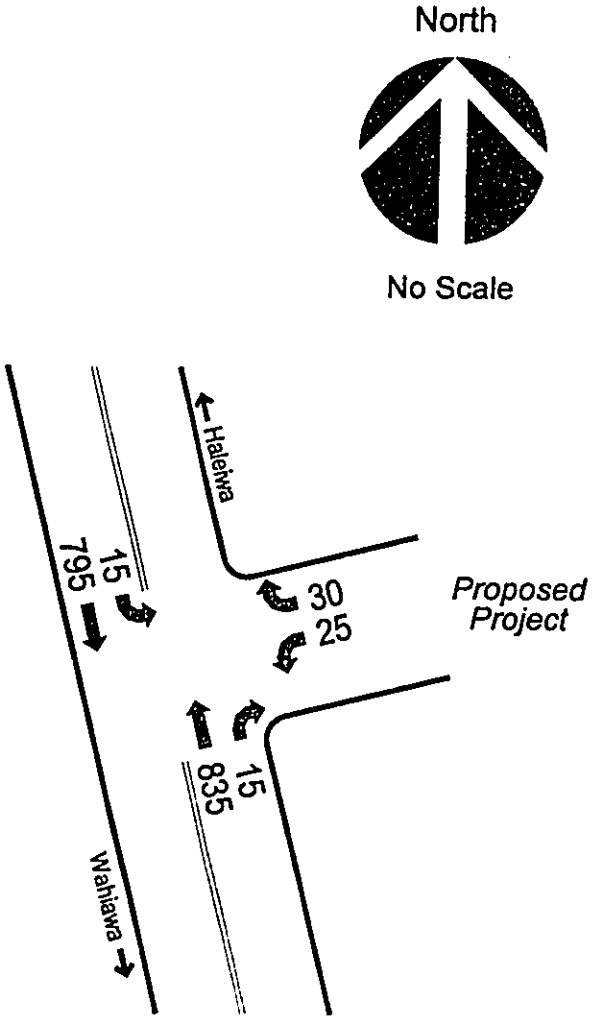


PM Peak Hour

Site Access Study Report Aloha Gardens	Future (2010) Peak Hour Traffic Assignments prepared by : Julian Ng, Inc. February, 2002	Exhibit 2



AM Peak Hour



PM Peak Hour

Site Access Study Report Aloha Gardens	Peak Hour Traffic Assignments Single Access prepared by : Julian Ng, Inc. February, 2002	Exhibit 3

APPENDIX III

AGENCY LETTERS

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

January 18, 2002

Ms. Ann Higa
Opportunities for the Retarded, Inc.
64-1510 Kamehameha Highway
Wahiawa, Hawaii 96786

Dear Ms. Higa:

Subject: Water Service to Facilities of the Opportunities for the Retarded, Inc. (ORI), TMK: 6-4-03: 2, 4, 5, & 6

Thank you for your inquiry.

In order to provide a more reliable source of water to the facilities of ORI, the Board of Water Supply (BWS) understands that you wish to transfer ORI's existing water service from Del Monte's 3-inch water meter (Premise Identification Number (PID): 1153924) to Dole's 4-inch water meter (PID: 1153929). We provide the following comments regarding this proposal:

1. Connecting ORI's facilities to Dole's existing 4-inch water meter will increase the demand on Dole's on-site water system. Because of this, we suggest that an on-site water system analysis be conducted to ensure that Dole's system can accommodate this added demand. A private engineer may be contacted to conduct this analysis.

2. The BWS sizes water meters based on the customer's peak flow required downstream of the meter. Dole should be made aware that their existing 4-inch meter and lateral would need to be upsized at the customer's expense when the peak flow rises above 500 gallons per minute. In addition, any future projects that require additional water supplies will be assessed the BWS's prevailing water system facilities charge.

3. In light of the impacts, the BWS will require a letter from Dole acknowledging the above, and, concurring to allow the facilities of ORI to be connected to their meter. This letter should also indicate that the BWS would not be held responsible for any decrease in the pressures and flows experienced by Dole.

4. As discussed between yourself and Steven Serikaku of our Customer Care, Service Engineering Section, some other possible alternatives ORI may investigate with a private engineer include the following:

   - Enlarging ORI's existing water storage system to provide additional capacity to handle service interruptions. (Possible water stagnation problems would need to be considered with this alternative.)

   - Interconnecting to Dole as a back up only, where Del Monte still remains the primary water source.

   - Replace or repair Del Monte's existing on-site piping to provide for more reliable service.

   - Any combination of the above.

If you have any questions or wish to discuss this further, please feel free to contact Dean Shimizu or Steven Serikaku at 527-6165.

Very truly yours,

for Donna Fay Kiyosaki
Deputy Manager & Chief Engineer

HIDA, OKAMOTO & ASSOCIATES, INC.
CONSULTING ENGINEERS
HARVEY K. HIDA, P.E.
ALAN T. OKAMOTO, P.E.

January 28, 2002

Sueda & Associates, Inc.
905 Makahiki Way, Mauka Suite
Honolulu, Hawaii 96826

cc. Ann Higa
11 pages

Attention: Mr. Lloyd Sueda, AIA

SUBJECT: Water System Study for
Facilities of the Opportunities for
The Retarded, Inc. (ORI)
Helemano Plantation
Tax Map Key: 6-4-03:2, 4, 5, & 6
HO&A Job No. 02-1579

Per our meeting at Helemano Plantation on January 23, 2002, it is our understanding that ORI is currently obtaining water from the Del Monte Company. An existing 2 ½-inch waterline crosses through the Dole Plantation's parcel to an existing 60,000 gallon storage tank. As-built plans indicated a booster pump pressurizes an existing 6-inch water line connected to an existing fire hydrant and Building Fire Sprinkler System. The storage tank also supplies domestic and irrigation water. ORI has an agreement with Del Monte to draw water during nighttime hours to fill the storage tank.

It was discussed that Dole Plantation also has plans for developing their parcel. A possibility is to extend a new watermain from the City's water system at Whitmore Village and share costs. It was pointed out that this would be very expensive and would require extensive design and agency permits, possibly taking several years to develop.

Another possibility is pursuing connections to the Army's Helemano Water System. ORI has initiated a letter to the Army regarding this option.

The Board of Water Supply's (BWS) letter dated January 18, 2002 outlines several additional alternatives. It is our recommendation to develop alternatives similar to those outlined in the BWS Letter's Item No. 4.

The following is a list of recommendations:

1. Maintain the existing 2-1/2 inch water service from Del Monte Company, which crosses through Dole Plantation.

Pacific Guardian Tower • 1440 Kapiolani Boulevard • Suite 1120 • Honolulu, Hawaii 96814
Phone: (808) 942-0068 • Fax: (808) 947-7546
e-mail address: hidaokamoto@hawaii.rr.com

CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

HIDA, OKAMOTO & ASSOCIATES, INC.
CONSULTING ENGINEERS
HARVEY K. HIDA, P.E.
ALAN T. OKAMOTO, P.E.

January 28, 2002

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905 Makahiki Way, Mauka Suite
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HIDA, OKAMOTO & ASSOCIATES, INC.

2. Construct an additional Storage Tank for the existing Helemano Plantation Complex. Estimate that a 50,000-gallon tank could provide a 3-day reserve storage capacity. The existing 60,000-gallon tank would be interconnected into this tank to maintain fire flow to the existing fire hydrant and building fire sprinklers.

3. For the proposed ORI's future development, our understanding is that ORI is seeking to obtain a "non-potable" water source for irrigation from Dole Plantation. This could also serve to provide a "non-potable" fire protection system using a storage pond or storage tank. A fire pump would be required. Estimated Fire Storage is 240,000 gallons. The existing fire hydrant at the ORI Helemano Plantation Complex could be reconnected to the "non-potable" water system. The Building Fire Sprinklers would remain on the domestic water system.

4. Domestic water for ORI's future Development would be provided from the Del Monte Company's water connection. An estimated usage is 30,000 gallon per day. A 90,000-gallon storage tank would allow a 3-day reserve capacity.

Please feel free to call us at 942-0066 should there be any questions.

Very truly yours,

HIDA, OKAMOTO & ASSOCIATES, INC.

Alan T. Okamoto, P.E.
Vice President

HIDA, OKAMOTO & ASSOCIATES, INC.
The Commerce Tower
1440 Kapiolani Boulevard Suite 1120
HONOLULU, HAWAII 96814
(808) 942-0066 Fax (808) 947-7545

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY ATP DATE 1/26/02

CHECKED BY _____ DATE _____

SCALE _____

FUTURE ORI FACILITY (ESTIMATED)

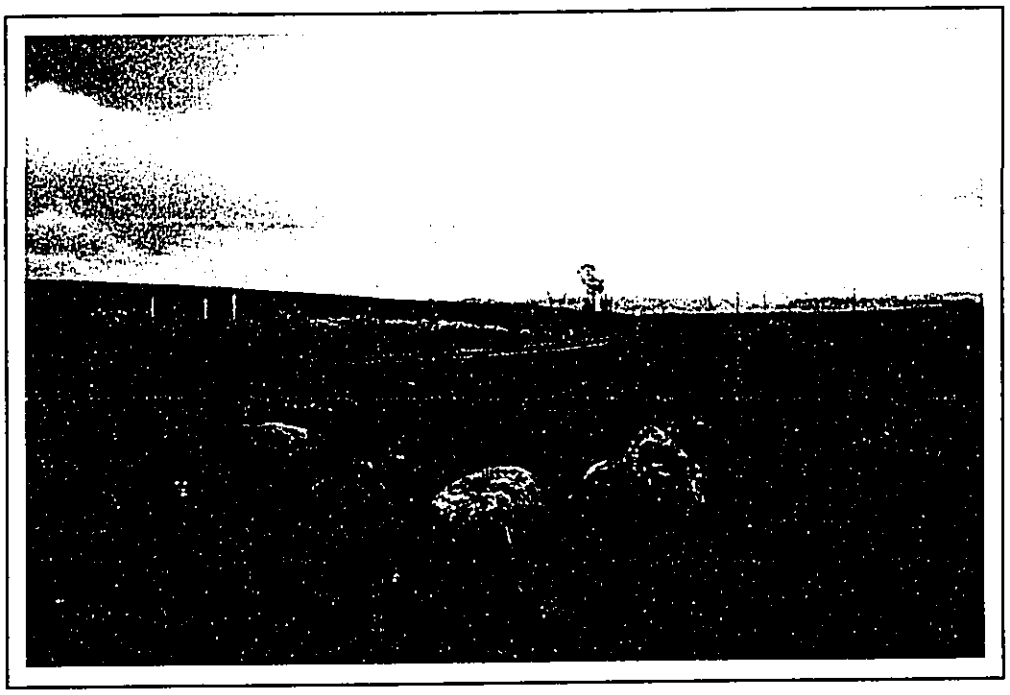
HOUSE	10 DUPLEX = 20 @ 500 gpd =	10,000 gpd
CABIN/COTTAGE	11 @ 500 gpd =	5,500 gpd
REC CNTR	900 SF x 120 gpd/1000 SF =	108 gpd
OFFICE	3600 SF x 120 gpd/1000 SF =	432 gpd
MAINT BLDG	4000 SF x 120 gpd/1000 =	480 gpd
MGR COTTAGE	3 @ 500 gpd =	1500 gpd
LAUNDRY	2000 SF @ 120 gpd/1000 =	240 gpd
ELDER CARE	7000 SF	
HEATH	2000 SF	
WELLNESS	7000 SF	
ADMIN	10,000 SF	
CLEARING	10,000	
KITCHEN/DINING	40,000	
	76,000 SF x 120 GPD/1000 =	9120 gpd
		27,380 gpd
		= 30,000 gpd
		x 3 day
	∴ USE	90,000 gal TANK

APPENDIX IV

CULTURAL IMPACT ASSESSMENT

Aloha Gardens – Helemano Cultural Impact Assessment

Pa`ala`a-uka Ahupua`a, `Ili of Helemano
District of Waialua, O`ahu, Hawai`i



Prepared for
ORI Anuenue Hale, Inc.

By Maria E. Ka`imipono Orr
March 7, 2002

Cover Page: Project Site looking north towards Eucalyptus trees in background.
[All photos were taken by the author; petroglyph graphics adapted from McAllister 1933]

EXECUTIVE SUMMARY

At the request of Mr. Keith Kurahashi and Ms. Ann Kusao of Kusao & Kurahashi, Inc. and Ms. Ann K. Higa of ORI Anuenue Hale, Inc., a cultural impact assessment was undertaken as part of a request for a State of Hawaii land-use boundary amendment, North Shore sustainable communities plan amendment, zone change, and conditional use permit to re-zone TMK 6-4-3: 3 (portion); approximately 14.8 acres of land from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District and approximately 28.44 acres of land from AG-1 Restricted Agricultural District to AG-2 General Agricultural District in the *ahupua`a* of Pa`ala`a-uka. The purpose of this cultural impact assessment is to gather information about cultural practices and features that may be affected by the re-zoning and proposed development.

This study is in compliance with Act 50 SLH 2000 (HB 2895 H.D.1) as it amends the State of Hawaii Office of Environmental Quality Control [OEQC] Guidelines for Environmental Impact Statement law [Chapter 343, HRS]. To this end, the targeted "audience" of this report are the people who will be reviewing it. Therefore, it was written with this in mind and includes an overview of the history of land use by entities such as the Waialua Agricultural Company [WACO], Hawaiian Pineapple Company, Dole Plantation Company, Castle and Cooke, Limited, Wahiawa Water Company, and Helemano Military Reservation. The literature review also includes *mo`olelo* or Hawaiian stories and legends of the vicinity [*ahupua`a* of Pa`ala`a-uka, *`ili* of Helemano, *moku* [district] of Waialua and Waianae-uka, and Wahiawa].

A cursory survey of the area of study indicates that the project area was previously under cultivation for a number of years. Previous to that it was the former site of the Holt Family estate and ranch, and a plantation camp called Brodie 2 Camp. There are no native flora visible today, but exotic grasses and ground cover are growing on portions of the cleared pineapple field and a shallow drainage which traverses the project area. A possible pre-contact structure is located in an area previously known as Korean Camp and later Filipino Camp [adjacent (northeast) to the Brodie 2 Camp area].

A low 'level of effort' [3-5] ethnographic survey was conducted, primarily because the area that will be impacted by the Aloha Gardens project has been under cultivation for over 50 years. However, people who have lived and worked on these lands are still alive and generously shared their stories.

Several recommendations were made and include a mitigation plan for the area known as the Korean or Filipino Camp located at the present grove of Eucalyptus and bamboo trees; cultural and archaeological monitoring during the grading and developing of the Aloha Gardens; the use of second generation native plants for the garden project; and an alliance with nearby communities such as Whitmore, Wahiawa and Waialua.

ACKNOWLEDGEMENTS

This project could not have been completed without the assistance of my ethnographic consultants. Mr. Thomas "Tom" Lenchanko is very knowledgeable of the region as a curator of the nearby Kukaniloko Birthing Site. He also knows the *mo`olelo* [history, stories and legends] of the region, is a resident of near-by Whitmore Village, a long-time mountain hiker in the area, and a member of the Wahiawa Hawaiian Civic Club. Mr. Mitsuo Nagaki not only worked for Dole Plantation in and near-by the project location for almost fifty years, he was born in one of the camps and also lived in Brodie 4 Camp [west of the project] and Brodie 2 Camp, formerly located in the project area. He still remembers exactly where the camps were once located. Mr. Francisco Pascua, his daughter Teresita Pascua Lumabao and her husband Candido Lumaboa worked in many of the surrounding areas including the project area. They currently live in houses that were once part of the Brodie 2 Camp.

And last but certainly not least, a big mahalo to Mr. Keith Kurahashi and Ms. Ann Kusao of Kusao & Kurahashi who offered me this project; and Ms. Ann Higa, Chief Operating Officer of ORI Anuenue Hale Inc. who approved.

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INTRODUCTION

At the request of Mr. Keith Kurahashi and Ms. Ann Kusao of Kusao & Kurahashi, Inc., and Ms. Ann K. Higa of ORI Anuenue Hale, Inc., a Cultural Impact Assessment was undertaken as part of an appendage to a request for a State of Hawaii land-use boundary amendment, North Shore sustainable communities plan amendment, zone change, and conditional use permit to re-zone TMK 6-4-003: 03 (portion); approximately 14.8 acres of land from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District and approximately 28.44 acres of land from AG-1 Restricted Agricultural District to AG-2 General Agricultural District in Pa`ala`a-uka Ahupua`a. The purpose of this cultural impact assessment is to gather information about, *wahi pana* (sacred places), cultural practices and features that may be affected by the re-zoning and proposed development.

A low level of effort [3-5] ethnographic survey was conducted, primarily because the area that will be impacted by the **Aloha Gardens** project has been modified in various ways by plantation activities for over 100 years. However, people who have previously lived and worked on these lands are still alive. Efforts were made to contact and interview some of them.

The purpose of this cultural impact assessment is to gather information about *wahi pana,* cultural practices and features that may be adversely affected or impacted by the implementation of the re-zoning and development. This study is in compliance with Act 50 SLH 2000 (HB 2895 H.D.1) [Appendix A] as it amends the State of Hawaii *Office of Environmental Quality Control* [OEQC] Guidelines for Environmental Impact Statement law [Chapter 343, HRS] to include:

> *effects on the cultural practices of the community and State. Also amends the definition of "significant effect" to include adverse effects on cultural practices.*

This study also recognizes the criteria guidelines of the *National Register of Historic Places* [Appendix B]. To this end, the targeted "audience" of this report is the people who will be reviewing it. Therefore, it was written with this in mind and includes an overview of the history of land use by entities such as the Waialua Agricultural Company [WACO], Hawaiian Pineapple Company, Dole Plantation Company, Castle and Cooke, Limited, Wahiawā Water Company, and Helemano Military Reservation. The literature review also includes *mo`olelo* or Hawaiian stories and legends of the vicinity [*ahupua`a* of Pa`ala`a-uka, *`ili* of Helemano, *moku* [district] of Waialua and Waianae-uka, and *ahupua`a* of Wahiawā].

This report is organized into five parts. Part I describes the project area in terms of location, in the context of ahupua`a, district and island, as well as a generalized description of the natural environment [geology, fauna, flora]. Part II explains the methods and constraints of this study. Part III summarizes the review of the cultural and historical literature in the context of the general history of O`ahu, and the local history as it pertains to cultural resources, land and water use. Part IV presents the analyses of the limited ethnographic survey. Part V summarizes the findings of this cultural impact assessment.

SCOPE OF WORK

The scope-of-work (SOW) [Appendix C] was based on the OEQC *Guidelines for Assessing Cultural Impacts* (1997) [Appendix D] and focuses on three cultural resource areas (traditional, historical, and archaeological), conducted on three levels (archival research, ethnographic survey, and a site visit). The research scope was conducted within the broader context of the *ahupua`a* (traditional land division) and *moku* (traditional district), as well as the agricultural history of the sugar, pineapple and fiber industries in the area. This cultural impact assessment is a *low level of effort* due to a preliminary assessment that the project area was heavily impacted and modified by plantation activities that span over one hundred years. The following describes the levels of research.

- Research on traditional resources entailed a review of the literature of Hawaiian *mo`olelo* or stories/legends, late nineteenth and early twentieth century ethnographic works (previous archival research), and interviews with knowledgeable consultants from the nearby Whitmore and Wahiawā communities.

- Historic research, which focused on the sugar and pineapple plantation era, and World War II influences, includes material from previous archival research ["Dole Plantation Cultural Impact Assessment", October 31, 2001 (Orr 2001)], additional archival material, and interviews with knowledgeable consultants from the nearby Whitmore and Wahiawā communities.

- Archaeological resource research entailed a limited site visit and previous studies of the area.

PART I: PROJECT AREA

I-A. Project Location

The project area is located on the island of O`ahu, Hawai`i in Pa`ala`a-uka Ahupua`a in the *moku* or district of Waialua, on TMK: 6-4-003:03 [Figures 1, 2, 3, 4, and 5] around 995' to 1000' above sea level. The project area covers 43.24 acres, of which 100% was previously modified by plantation activities. The area is bordered on the south by a dirt road [north] of the Helemano Plantation structures, which are adjacent to the Dole Plantation Visitor Center facilities. The Kamehameha Highway borders the project area on the west and the Helemano Military Reservation lies northeast of the project area. Some grading has already been done on these previously cultivated pineapple fields, which was once the location of the Brodie 2 Camp.

Current access to the project site is through dirt field roads north of Helemano Plantation. However, a cable line is strung across the dirt road between the project area and Helemano Plantation preventing access to the eastern section of the project site.

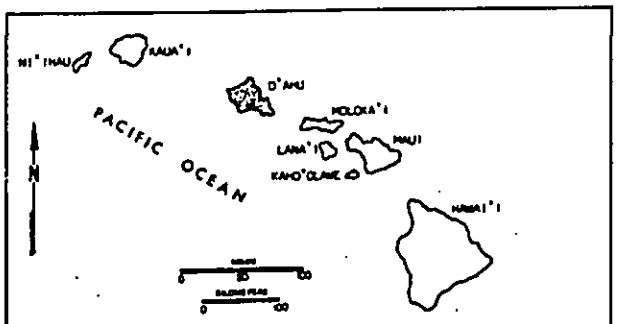

Figure 1. Hawaiian Islands.

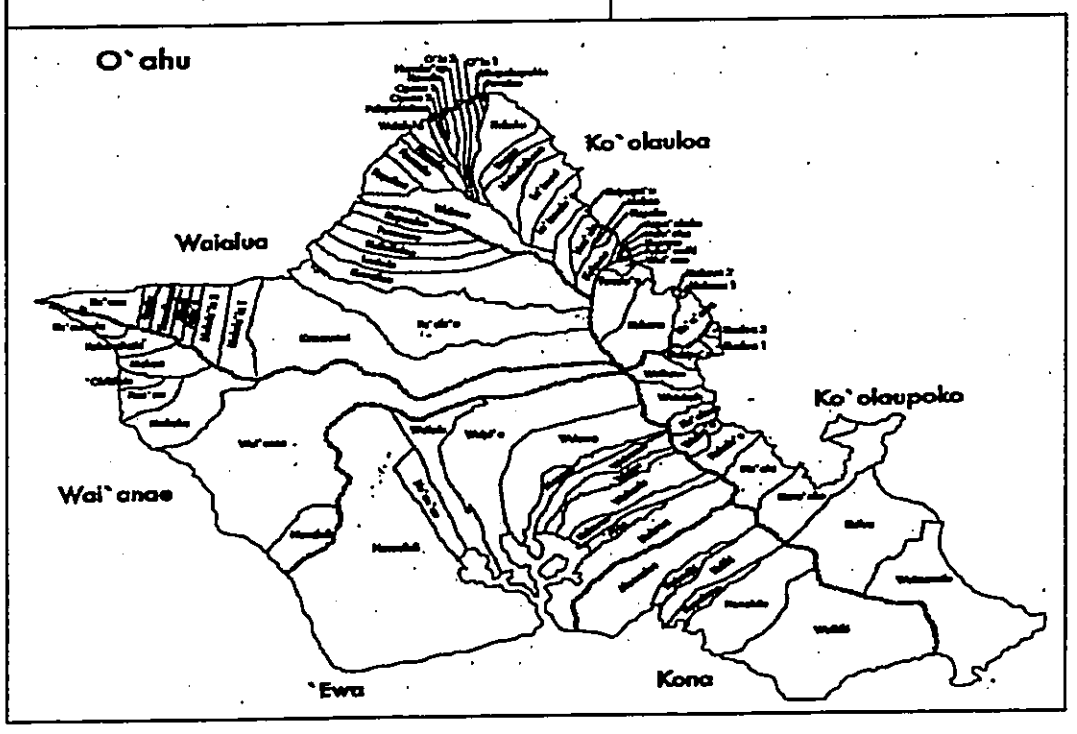

Figure 2. Island of O`ahu & Ahupua`a (Adapted from Nogelmeier 1987)

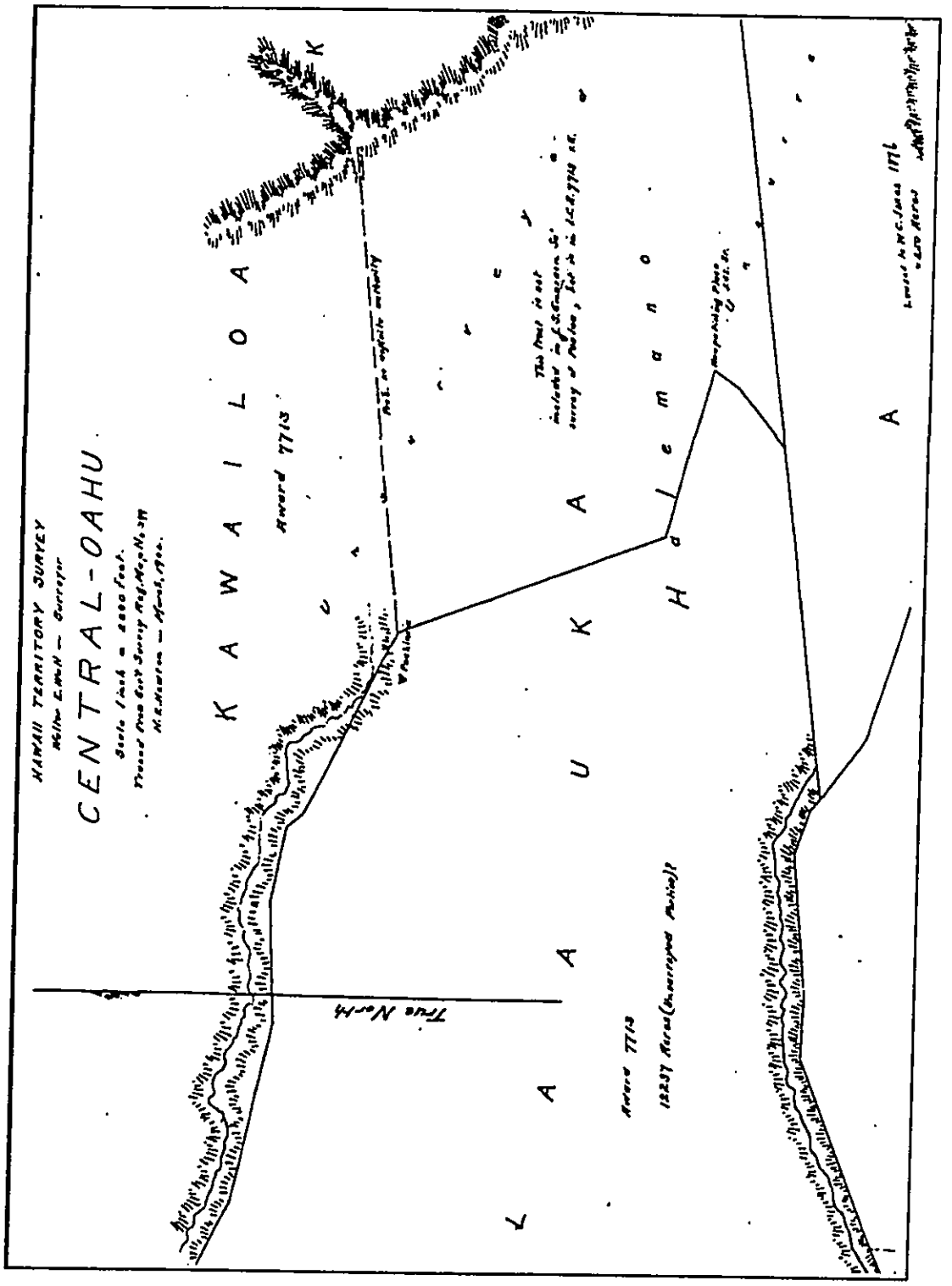

Figure 3. Pa`ala`a-uka Ahupua`a and `ili of Helemano (Wall and Newton 1904)

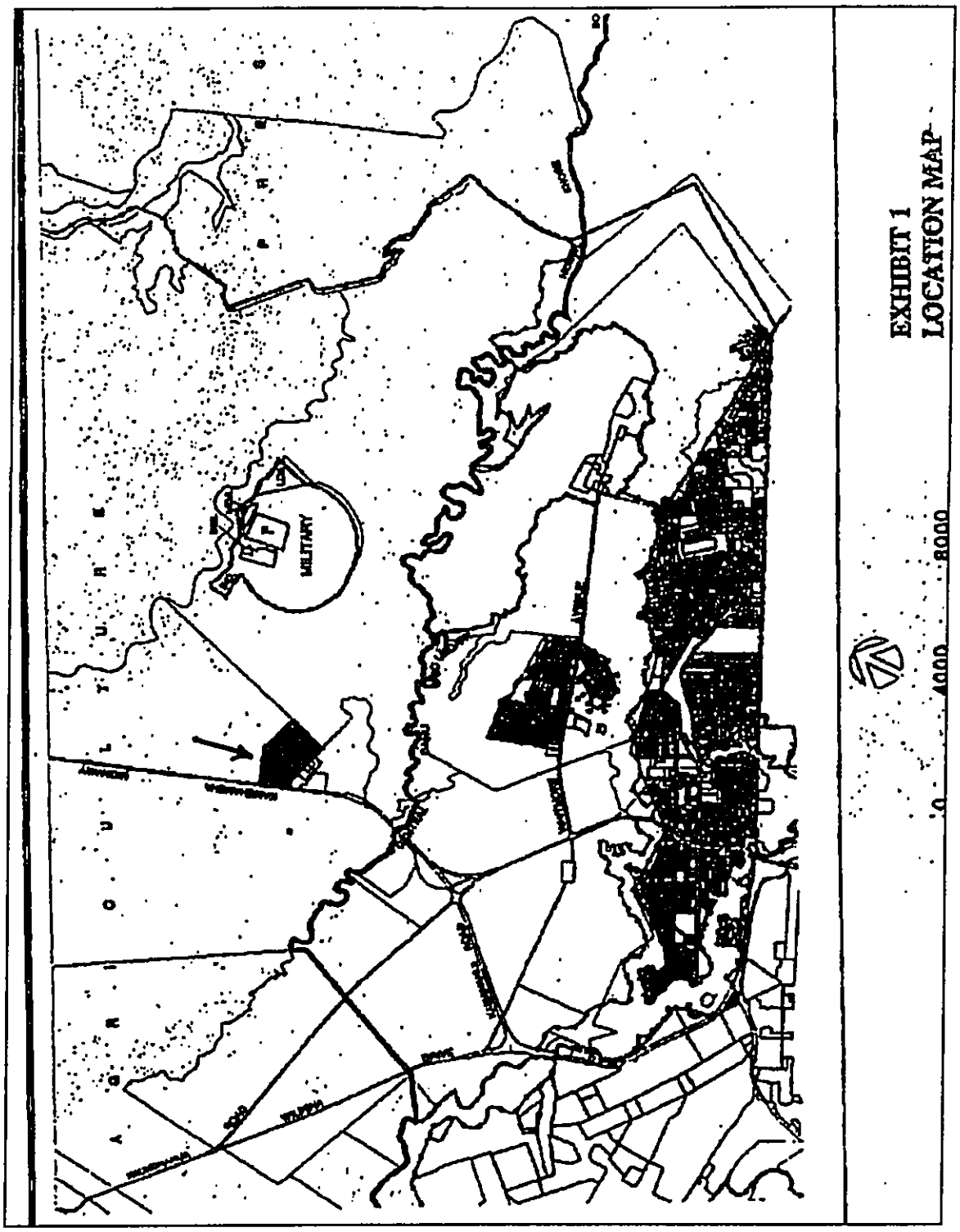

Figure 4. Project location in reference to Helemano Military Reservation
TMK: 6-4-003: 03 (From Kusao & Kurahashi, Inc. 2001)

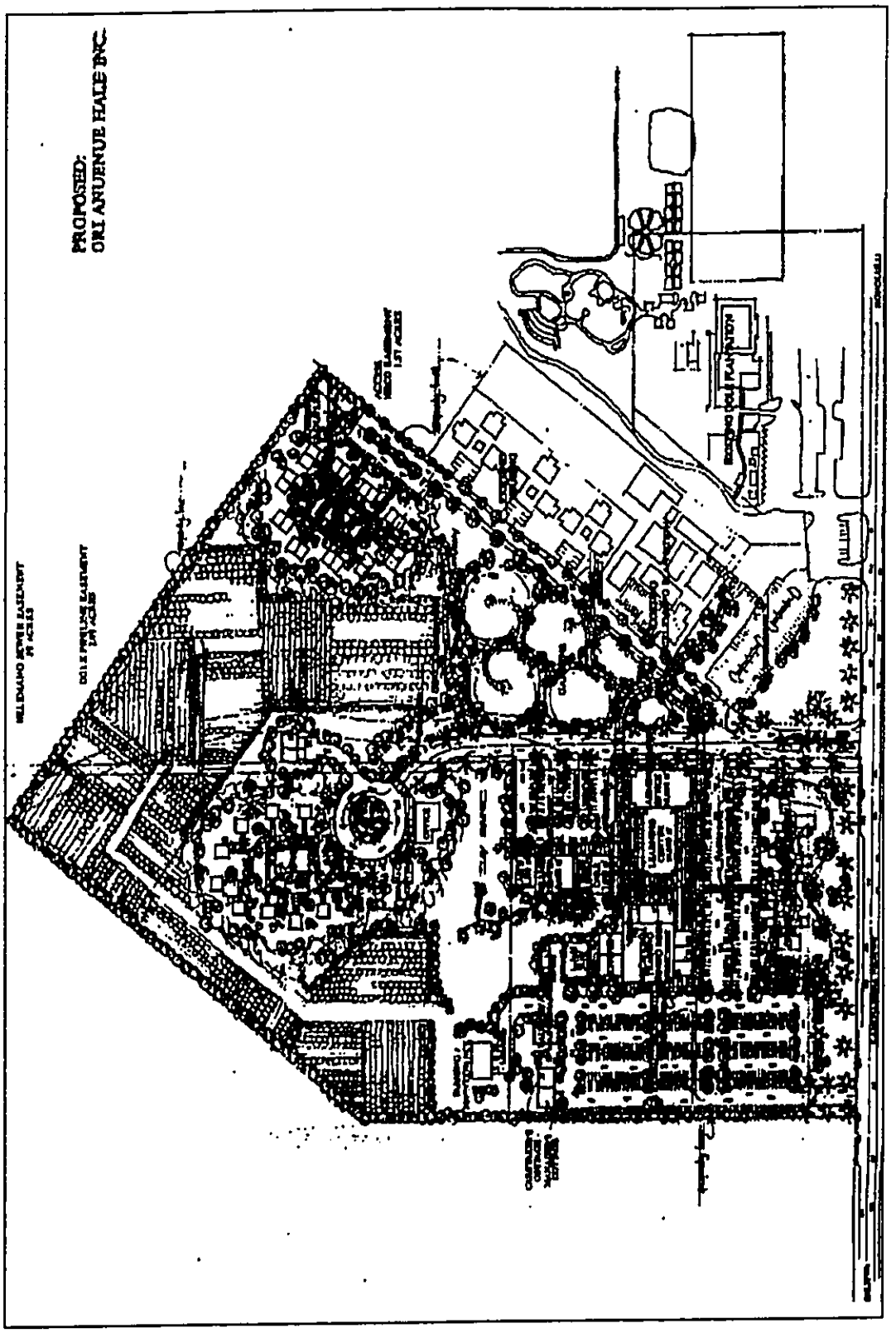

Figure 5. Aloha Gardens Master Plan (from Kusao & Kurahashi, Inc. 2001).

I-B. Environment

The project area consists of previously cultivated pineapple fields in what would traditionally be referred to as *kula* or *mauka* (upland) lands. The moderately sloping landscape has been radically modified in the last 100 years as various plantation activities have impacted the area. The project area was also once the location of the *Brodie 2 Camp*. Consultants described the camp as having almost one hundred camp houses in circles around a central area that included a clubhouse and store. Several community outhouses ["box toilets" – six per structure] were placed strategically between various houses, as were "bañyos" or community bathhouses. Each of the families had gardens where they grew their favorite vegetables. There were also a variety of fruit trees throughout the camp [i.e., mango, papaya, pine]. After Brodie 2 Camp was demolished in the 1950s, the area was modified again by plows, tillers, harrows and various fertilizers and pesticides for pineapple cultivation. Mills (1992) cites Foote's (1972) assessment of the soils in the general area.

> Foote's (1972) general soil map for O`ahu shows the project area within the Helemano-Wahiawā soil association which is present on deep, nearly level to moderately sloping, terrain. It is well drained and "the most important agricultural soils in the State" Mills (1993).

Photo 2. Exposed soil and weeds in portion of project area.

In *Hawaii a Natural History*, Carlquist divides each island into six regions: Coast, Dry Forest, Wet Forest, Epiphytic Vegetation, Bog and Alpine. The project area would be considered Dry to Wet Forest. Some of the Dry Forest native vegetation are *naio* (*Myoporum sandwincense*), *wiliwili* (*Erythrina sandwincensis*), *ohe* (*Reynoldsia sandwincensis*), *'iliahi* (*Santalum sp*), *'ohia lehua* (*Metrosideros sp*), *koa* (*Acacia koa*), *lama* (*Diospyros hillebrandii* and *Diospyros sandwicensis*), as well as several species of shrubs, vines and ground cover (Carlquist 1980: 275-300). The *`iliahi* or sandalwood was nearly exterminated during the era of the sandalwood trade in the late 1700s and early 1800s. A survey of the adjacent lands [southeast of project area] reveals that the *`iliahi* [endemic] is slowly making a comeback. The *koa* [endemic] was also doing very well, as were the *`ohia lehua* [endemic]. Stands of *lama* [endemic] were observed in a near-by area, just north of the Helemano Military Reservation.

The Dry Forest Region suffered the most impact by man. This is the area the early Polynesians modified extensively in slash and burn cultivation to expand their subsistence level, and intensify food production with complex irrigated agricultural systems of various crops (Kirch 1985:217). In a traditional *ahupua`a* (land division) model, the dry forest area (*kula* or *mauka*) would have been utilized as a temporary habitation, agricultural and ritual zone [Figure 6. Minerbi 1999].

Many of the endemic and indigenous plants would have been used, but typical Polynesian introduced crops would have included *`ulu* (*Artocarpus altilis*) [breadfruit], *mai`a* (*Musa sps*) [banana], *uhi* (*Dioscorea alata*) [yam], *kō* (*Saccharum officinarum*) [sugar cane], dryland *kalo* (*Colocasia esculenta*) [taro], *`uala* (*Ipomoea batatas*) [sweet potato], and *ipu* (*Lagenaria siceraria*) [gourd]; as well as other traditional plants such as *noni* (*Morinda citrifolia*), *pia* (*Tacca leontopetaloides*) [arrowroot], *kukui* (*Aleurites moluccana*), *`awa* (*Piper methysticum*) [kawa], *kou* (*Cordia subcordata*), *wauke* (*Broussoneta papyrifera*), and *ti* (*Cordyline fruticosa* or *C. terminalis*).

Aside from typical Polynesian crops and agricultural irrigation systems, this area would also have had *mauka-makai* [mountain to sea] trails, burial places and *ko`a* (shrines), *heiau* (place of worship, ritual and ceremony) to assure good crops or request rain and possibly *pu`uhonua* (sanctuary or place of refuge during times of war) (Minerbi 1999).

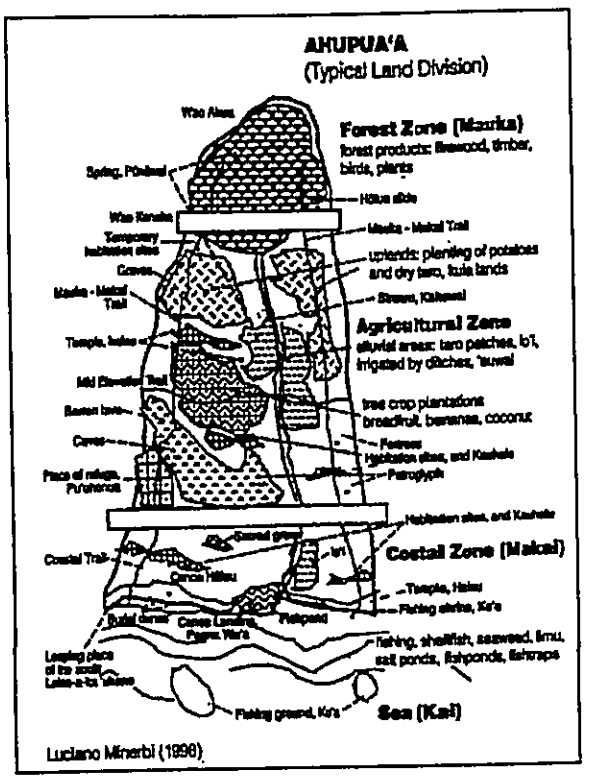

Figure 6. Model of Ahupua`a (Minerbi 1999).

I-B-1. Flora/Fauna

The following observations were made during a recent site visit [February 26, 2002]. The project area was completely cleared of any trace of pineapple fields. A spattering of exotic grasses and weeds has taken over certain areas, especially the area that looks like a shallow drainage or run-off. The area adjacent to the dirt road bordering Helemano Plantation is being piled with a dirt and gravel mix by heavy equipment, and it appears that some of the area is being graded. No fauna were observed in the area.

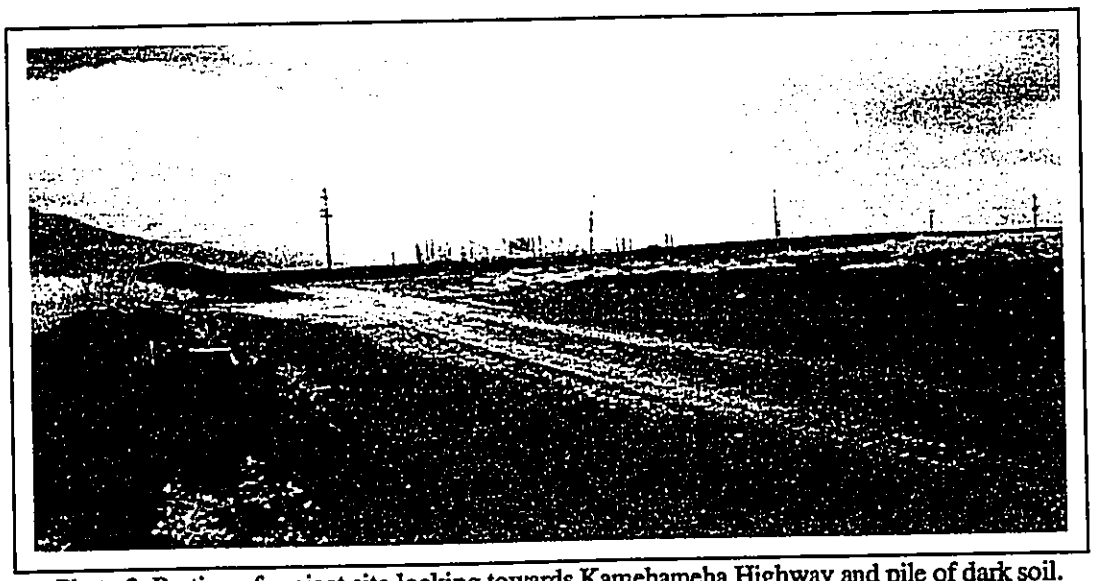

Photo 3. Portion of project site looking towards Kamehameha Highway and pile of dark soil.

PART II: METHODS

The Cultural Impact Assessment for the **Aloha Gardens – ORI Anuenue Hale, Inc.** project was conducted in February and March 2002. The study consisted of three phases: (1) cultural and historical archival research; (2) limited ethnographic survey, transcribing and analysis; and (3) report writing.

Personnel. The personnel consisted of the principal investigator who has a masters degree in Anthropology, with a graduate curriculum background in the archaeology track as well as anthropology theory, cultural resource management, ethnographic research methods, and public archaeology; an undergraduate curriculum background that included Hawaiian History, Hawaiian Language, Hawaiian Archaeology, Pacific Islands Religion, Pacific Islands Archaeology, Cultural Anthropology, as well as a core archaeology track, Geology, and Tropical Plant Botany; and ethnographic field experience that includes over 100 interviews to date.

Level of Effort. The *level of effort* for the ethnographic survey was low [3-5] because the project area has been impacted by plantation activities for over 100 years. More effort was put into locating and interviewing former residents of Brodie 2 Camp and employees of Hawaiian Pineapple Company, Limited or Dole Plantation Company; as well as archival research.

Archival Research. The majority of the archival research material for this report came from a related report (Orr 2001). The material initially came from primary and secondary resources located in the Hawaiian Collections and the Hawaiian Pineapple/Dole Corp. archives in the University of Hawaii Hamilton Library (Manoa Campus), the Bishop Museum Archives, Bureau of Conveyance, State Historic Preservation Division library, State Survey Division, the Wahiawā Public Library and the researcher's private library. Primary source material included annual reports and other records of companies such as Wai`alua Agricultural Company, Limited [WACO] and Hawaiian Pineapple Company; as well as Land Court records, maps, newspaper articles, visitor journals, genealogies, oral histories and other studies. Secondary source material included translations of 19th century ethnographic works, historical texts, indexes, archaeological reports, Hawaiian language resources [i.e., dictionary, place names, and proverbs] and military survey reports.

Site Visit. Limited site visits took place on two occasions: October 2001 and February 2002. Photographs were taken on both visits.

Identification Process. One of the curators of Kūkaniloko referred two people who were knowledgeable about certain aspects of the project area [no interview]. A resident of Whitmore referred three former plantation employees; all three were interviewed. Two consultants from the Dole Plantation Visitor Center Expansion Project were re-contacted because they had information specific to Brodie 2 Camp or areas associated with the project area.

Interview Selection. As stated above, the selection of the consultants was based on their knowledge of the project area--having lived and/or worked on the project lands, or having knowledge passed on by a former employee of the Hawaiian Pineapple Company, Limited, as well as the continuous study of the *mo`olelo*, ethnohistorical works, and other archival documents pertaining to the project area.

Interview Process. The interview process included following a semi-structured and open-ended method of questioning based on the person's answers to questions; an informed consent or agreement to participate form was drafted for the edification and protection of each consultant (Appendix E); and an ethnographic research instrument was designed (Appendix F) to facilitate the interview process. Each interview was conducted at the convenience (date, place and time) of each consultant.

Ethnographic Interview Procedures." Three interviews were conducted at the home [Whitmore] of two of the home consultants. The forth interview was done at the home of the consultant in Wahiawā. A fifth interview was done on email. The interviews [except for the email interview] were electronically tape-recorded, and later transcribed. Supplemental notes were taken when possible. None of the consultants were taken on fieldtrips to the project area, however, two consultants were taken to the project area during a previous study (Orr 2001).

Transcribing Process. The taped interviews were transcribed verbatim by the principal investigator using a Sony Dictator/Transcriber (BM-87DST). Each interviewee was given a hard copy of the interview transcripts along with a *mahalo* letter with an explanation of the transcribing review process, and a self-addressed, stamped envelope for return of the edited transcripts. This allowed for corrections (i.e., spelling of names, places), as well as a chance to delete any part of the information if so desired.

Analysis Process. This analysis process followed a more traditional method, as a qualitative analysis software program (i.e., TALLY) was not necessary. The interview was coded for thematic indicators (i.e., background information and land and water use). For the purpose of this study, it was also not necessary to go beyond the first level of content and thematic analysis, as this was a more focussed study.

Research Problems. The main constraint was not being able to confirm interviews in a timely manner. The contact people were very busy and not able to facilitate appointments expediently. Another consultant was much too busy to do a face-to-face interview. One potential consultant never returned any calls even though messages were left. Regrettably, no time was allotted for a meeting with the Waihiawa Hawaiian Civic Club, although one of the consultants is a member of the club.

Photo 4. Cable across old Helemano Road prevents access to eastern boundary.

PART III: CULTURAL AND HISTORICAL BACKGROUND REVIEW

This section presents background information regarding the history and land use of the project area, *ahupua`a* and *moku* within the context of the general history of Hawai`i. Section III-A [1 -6] presents an encapsulated view of the general history of Hawai`i based on a chronological model with applicable interjections of local history. The primary sources for this section are 19th century ethnographic works, historical and anthropological texts and various reports. Section III-B [1-4] presents a review of the traditional literature [*mo`olelo* (stories/legends), *mele* (songs/poetry), *oli* (chants), *`olelo noeau* (proverbs), and place name meanings], as well as 19th century translations of Hawaiian language newspaper articles and genealogical studies. Section III-C [1-5] presents historic references to land-use of the project area based on primary source information such as documents from the Bureau of Conveyance, Mahele records, company annual reports, mergers, and various studies; as well as secondary source material such as historical texts. Section III-D [1-6] are overviews of studies or surveys that have been conducted in the project area or vicinity, and include aquatic biota studies, stream studies, environmental surveys, and previous oral histories. And Section III-E [1-5] are overviews of previous archaeological studies in the project are or vicinity.

III-A. Human Impact, Settlement and Socio-economic Development in Hawaii

Models of Hawaiian Chronology developed by Cordy (1974/1996); Hommon (1976/1986) and Kirch (1985) provide a temporal view of settlement patterns as well as cultural changes through time, from initial settlement through contact with the western world. Kirch believed that initial settlement occurred earlier than AD 600. Kirch's culture-historical sequence model has four phases: Phase I Colonization Period (AD 300-600); Phase II Developmental Period (AD 600-1100); Phase III Expansion Period (AD 1100-1650); and Phase IV Proto-Historic Period (AD 1650-1795) (Kirch, 1985:296-308; Kolb, 1991:205). For this study, Kirch's (1985) model will be used with the following additions: Early Historic Period (AD 1795-1950) and Modern Historic Period (post AD 1950). It should be noted that the early colonization dates (AD 300-600) are currently being re-evaluated and the current thinking is that Hawai`i most likely was colonized by Polynesian voyagers circa AD 700-1100 (Tuggle and Spriggs, 2001; Tuggle 1997; Rollet 1989).

III-A-1. Colonization Period. First voyager dating is scanty at best, however, based on site dates from Bellows, Oahu and South Point, Hawaii, Kirch (1985) estimated that the Colonization Period of the Hawaiian Islands was somewhere between AD 300-600. These first Polynesian voyagers to Hawaii "followed the tracks of migratory birds...[and] traveled by the stars.... On a voyage of migration, from sixty to a hundred persons could exist for weeks on a large canoe, which might be a hundred feet in length" (Day 1992:3). This feat was "remarkable in that it was done in canoes carved with tools of stone, bone, and coral; lashed with handmade fibers; and navigated without instruments" (Henry 1995:vii).

Reconstructing the cultural sequence for central O`ahu and other places in Hawai`i during the colonization period would have to take into consideration the time necessary to adjust and adapt to a new environment and the 'founder effect' (Kirch 1985:285-6). The colonizers were not able to bring all of the gene pool or cultigens from their homeland, so their new culture consisted of what survived the journey, what was remembered and what could be applied to the new environment. Although early Hawaiians were farmers and felt spiritually tied to the *`āina* (land) in many ways, when they first arrived they had to modify both their subsistence practices and the land. During the exploration period [i.e., Cook, Vancouver, La Perouse, de Freycinet] horses and cows were given to Kamehameha I who immediately placed a *kapu* or restriction on the animals. It is therefore highly likely that the colonizing Polynesians did the same with the animals and cultigens they brought with them.

Faunal remains analyses indicate that early Hawaiian subsistence depended on fishing, gathering, bird hunting [extinct bird fossil remains, see Olson and James, 1982], as it took time to find places to live,

clear the *kula* lands, plant their crop cultigens, and breed their animals. Creation chants such as the *Kumulipo* depict a very deep philosophical bond with the land and nature; "the respectable person was bound affectionately to the land by which he was sustained" (Charlot 1983: 45,55). Ancient sites of various *ko`a* (fishing and bird shrines) are physical remains of this spiritual respect for their sustenance.

As the founding groups grew, they fissioned into subgroups anthropologists refer to as ramages, with the senior male of the original ramage as chief of the conical clan; although hierarchical ranking was not just relegated through the patrilineal line of descent (Kirch 1985:31). Bellwood refers to these groups as tribal and related by blood (Bellwood 1978:31). In *Ka Po`e Kahiko* Kamakau refers to Hawaiian ranking in the following passage:

> For 28 generations from Hulihonua to Wakea, no man was made chief over another, and during the 25 generations from Wakea to Kapawa, various noted deeds are mentioned.... Kapawa was the first chief to be set up as a ruling chief...from then on the group of Hawaiian Islands became established as chief-ruled kingdoms - Maui from the time of Heleipawa, son of Kapawa...this was the time that [oral] records began to be kept of the chiefs (Kamakau 1964:3)

It should be noted that Kapawa was the first known person to have been born at the nearby Kūkaniloko Birthing site. This is also discussed in the 'Expansion Period' below. Kamakau (1991) also explains the various types of ranks which are just list here and not defined: *ali`i nī`aupi`o, ali`i pi`o, ali`i naha, ali`i wohi, lō ali`i, ali`i papa, lōkea ali`i, la`auli ali`i, kaukau ali`i,* and *kūkae pōpolo.*

III-A-2. Developmental Period. During the Developmental Period, AD 600-1100, changes occurred bringing about a uniquely Hawaiian culture, documented by the material cultural remains found in archaeological sites. These include quadrangular adze, bone fishhook variations, *`ulu maika* (a game piece) stones, *lei niho palaoa* (necklace of bone or ivory and human hair worn by chief rank) and evidence of shifting cultivation. The evidence also indicates that the "ancestral pattern of corporate descent groups" were still in place (Kirch 1985:302-3). The early culture evolved as the population grew, and many of the changes were related to significant socio-economic changes.

III-A-3. Expansion Period. The Expansion Period, AD1100-1650, is significant in that most of the "ecologically favorable zones," the windward and coastal areas of all major islands, were now settled, and the more marginal leeward areas were being developed. The uniquely Hawaiian invention, the *loko* or fishpond aquaculture, was developed in the fifteenth century or the later half of this period (Kirch 1985: 303).

Around the 12th century another migration to Hawaii brought the "priest" Pa`ao and a ruling chief, Pilika`aiea, from central Polynesia (some say Tahiti, others Samoa). This created a major shift in "religion" and socio-economic patterns. Pa`ao brought with him the Kū practice of human sacrifice, used in monumental *luakini heiau* or war temples. Pili started a line of *ali`inui* that would continue to the Kamehameha "dynasty." The evolution of the *luakini heiau* is difficult to place archaeologically, and although the arrival of Pa`ao may have been a real event, the uniqueness and complexity of *heiau* were most likely a local [Hawaiian] development (Kolb 1989:3). Monumental *heiau* building flourished in this Period, as "religion" became more complex. During the last 200 years of the Expansion Period, the concept of *ahupua`a* was established, as well as class stratification, territorial groupings, powerful chiefs and *"mō`ī"* or king (Kirch 1985:303-6).

About the 12th century, Kapawa, the son of *ali`i nui* Nanakaoko and his wife Kahihiokalani, was the first high *ali`i* to be born at Kūkaniloko, located on the Wai`alua side of Kaukonahua Gulch in central O`ahu. It was one of two sacred places in Hawai`i where *kapu* chiefesses went to give birth (McAllister 1933:134-135; Handy & Handy 1978:465; see also Fornander 1969 (1880): 20; Kamakau 1991 (1869): 136; Cordy 1996:596).

Cordy (1998) explains the "rise of complex societies and settlement inland" that occurs in the 1300s with special reference to central O`ahu:

> By the 1300s, the oral histories tell of the formation of district (*moku*) sized countries [Cordy 1996:597-598]. The accounts are brief, but they suggest these were much larger countries. Around A. D. 1320-1340, the sons of the chief Maweke were in charge over three noted countries on O`ahu. These were `Ewa, Kona and Ko`olaupoko. Importantly for the history of Wai`anae, the `Ewa country included not only `Ewa, but also Wai`anae and Wai`alua [Fornander 1960 (1880): 48-49, 68, 88 56 In Cordy 1998]. The senior line of Maweke, the Maweke-Kumuhonua line, controlled `Ewa in these times. Some accounts suggested that Kumuhonua (Maweke's grandson) was the nominal ruler of all O`ahu about 1340-1360. This `Ewa country included Kūkaniloko (the sacred birthing area), and Līhu`e became the country's important ruling center. Līhu`e was located on the central plateau, roughly in the Schofield Barracks area. It is vital to realize that the `Ewa country may not have been divided into districts at that time. This might account for the fact that Kūkaniloko is in Wai`alua today and that Līhu`e was mostly in today's Wai`anae-uka and perhaps once lapped over into parts of Wai`alua and `Ewa. The borders may have come later.
>
> Another important point related to the rise of these larger countries is that more administrative levels of chiefs probably formed -- with a ruler and with local chiefs over the many communities of these district-based countries. More chiefs were present. In the Līhu`e area, the early famed ruling line belonged to the **Lō Ali`i** chiefs. Anthropologists also believe that the political structure was still kin-based. The ruler would be the senior man in the dominant kin group of the country, and the local chiefs would be his kinsmen or the senior men in the dominant kin groups of their communities. The land-holding system is also still likely to have remained kin-based, with local groups controlling land. Countries may have had populations of 1,000-3,000 based on similar types of countries in Polynesia at European contact and other estimates.
>
> The oral histories also show that the chiefs began to be behaviorally isolated from commoners to a greater degree in the 1300s [Cordy 1996:597-598 56 In Cordy 1998]. The Aha Ali`i council was established and restricted access to chiefly status. Certain types of temple worship supposedly became more restricted, with rulers and chiefs becoming the main participants. One would expect different levels of temples to develop in these years -- with local community temples and larger temples at the ruling centers (national temples).... However, temple sizes were certainly still much smaller that the sizes seen at European contact. No temples dated to this period have yet been documented for O`ahu.... Construction of large national temples may have begun in the 1300s. (Cordy 1998: 9-10).

Cordy's next period [AD 1400s-1500s] also falls under Kirch's "Expansion Period" as Cordy summarizes his "Rise of the Oahu Kingdom" in the following:

> The oral histories indicate that O`ahu was unified into one kingdom during the 1400s -- the O`ahu Kingdom. La`akona, who was the ruler of `Ewa, Wai`anae, and Wai`alua about 1420-1440, was apparently recognized as the overall ruler of O`ahu by the other district based countries. In his line "descended the dignity of *Mō`ī* of O`ahu" [Fornander 1969:89(1880); Cordy 1996:598 56 In Cordy 1998]. La`akona was the senior Maweke-Kumuhonua line. This line held power until the reign of Haka, 1520-1540. Haka portrayed as an evil ruler in the accounts -- "a stingy, rapacious, and ill-natured chief, who paid no regard to either his chiefs or his commoners" [Fornander 1969:88(1880); Kamakau 1991:53-54 (1865) 56 In Cordy 1998] -- was deposed by the O`ahu chiefs. He retreated to the fortress of Waewae on the Kawiwi ridge between Wahiawā and Wai`anae valleys, where he was captured and slain. Mā`ilikūkahi of the junior Maweke-Mo`ikeha line was made ruler in 1520-1540, and this line held power until the late 1700s.
> Up to the time of Haka, rulers of O`ahu seem to have retained Līhu`e as their royal center, and Kūkaniloko remained an important birthing site throughout O`ahu's history. When Haka was removed, the ruling center was moved to Waikīkī in Kona district as this was the district long controlled by the Maweke-Mo`ikeha line [Fornander 1969(1880): 89; Kamakau 1991(1865): 54, 56; In Cordy 1998]. But, Mā`ilikūkahi still seems to have traveled to the Līhu`e area and perhaps periodically resided there, for he was there when raiders from Hawai`i Island arrived [Kamakau

1991(1865): 55-56 In Cordy 1998]. Mā`ilikūkhi had been raised partly at Wahiawā [Kamakau 1991(1865): 53 56 In Cordy 1998]. These raiders proceeded up from Pearl Harbor and were met by Mā`ilikūkahi and defeated in battles running from the gulches to Waikakalaua to Kīpapa, just below Wai`anae uka.

With island unification, at least three administrative levels of chiefs should have been formed -- the ruler, high chiefs over one or more districts (or over multiple communities), and local chiefs over one or two communities. Social stratification, thus, became more complex. Each strata of chiefs would have been set off from the commoners and amongst themselves (Cordy 1998:10-11).

III-A-4. Proto-Historic Period. The Proto-Historic Period, A. D. 1650-1795, appears to be marked with both intensification and stress. Many wars and intermittent periods of peace took place during this period between intra-island chiefdoms and inter-island kingdoms; cousins challenged cousins, nephews rebelled against uncles, fathers battled sons--all living on various islands and some losing track that they were related [see Kamakau 1992a; 66-174].

In Cordy's reconstruction of O`ahu Kingdoms, this was also a time of continued population growth:

These are the years when the O`ahu Kingdom grew to the pinnacle of its power [Cordy 1996:600-603 In Cordy 1998]. Population grew, fields expanded, and more houses were built. These were the times of famed O`ahu rulers: Kalai`manuia (1600-1620), Kākūhihewa (1640-1660), Kūali`i (1720-1740), and Pele-i`ō-hōlani (1740-1779).... The three generations of rulers following Kākūhihewa slowly lost power to the high chiefs of the kingdom's districts [Fornander 1969(1880): 275-278 In Cordy 1998]. The ruler resided mostly in Ko`olaupoko, and the high chiefs of Kona, of `Ewa-Wai`anae, and of Wai`alua and Ko`olauloa apparently were virtually independent within their own lands.

About 1720 Kū-ali`i became ruler. He re-established the ruler's power over the kingdom in a series of battles, first with the Kona chiefs and then with the `Ewa, Wai`anae and Ko`olauloa chiefs. His first battle with the `Ewa, Wai`anae and Ko`olauloa chiefs was at Kalena in today's Schofield Barracks area of Wai`anae uka [Fornander 1969(1880): 270-272; Fornander Collection 1917, 4(2): 412-416 In Cordy 1998]. Then while off raiding Hawai`i Island, the `Ewa, Wai`anae and Ko`olauloa chiefs rose again. Kūali`i returned, and another battle was fought at Kalapo Stream [Kālepa? (sic)] in the Wai`anae uka area near the ridgeline of the Wai`anae mountains [Fornander Collection 1917, 4(2): 414 In Cordy 1998]. This ended the last resistance on O`ahu. The remainder of the long reign of Kūali`i was marked by periods of stability.... Kūali`i also gained power over parts of Kauai, evidently through inheritance. He put his junior son, Pele-i`ō-hōlani over those Kauai lands -- occasionally visiting them himself [Kamakau 1991(1867): 70-75; Fornander 1969(1880): 277-282 In Cordy 1998]....

Upon Kūali`i 's death about 1740, his eldest son -- Kapiho`okalani -- came to power. He carried on the conquest of Molokai, but was slain there by the army of the Kingdom of Hawai`i under Alapa`inui. Alapa`inui led his army on to O`ahu.... The O`ahu chiefs meanwhile sent to Kaua`i for Pelei`ōhōlani to come and serve as regent for his brother's young son. Pelei`ōhōlani arrived and assumed control of the O`ahu army. A truce was reached with the high chief of Wai`anae, Na`ili (brother of Alapa`inui's wife), negotiating the truce, and the Kingdom of Hawai`i's army returned home. Pelei`ōhōlani soon became the sole ruler of O`ahu, and in later years he conquered Molokai, and brought the O`ahu Kingdom to the height of it power [Kamakau 1961:7-0-75; Fornander 1969(1880): 134-140 In Cordy 1998]...(Cordy 1998: 13-16).

The end of this period marked the end of an era for the unique Hawaiian cultural as a flurry of western contact began and has not abated since. In January 1778 Cook landed in Waimea, Kauai and the culture of old Hawaii began its spiraling change (see Day 1992). Cook left Hawaii for several months, but returned later in the year. At this time Ka`eo-ku-lani was ruling chief of Kauai; Ka-hahana of Oahu and Molokai; Kahekili of western Maui, Lanai and Kaho`olawe; and Kalani`ōpu`u of Hawaii and Hana (Kamakau, 1992:84-86, 92, 97-98).

Kalani`ōpu`u died in 1780. He is said to have been the biological son of Ka-maka`i-moku and Pele-i`ō-hōlani, ruling chief of Kauai and later, Oahu. He was given the name Ka-lei-`ōpu`u by Pele-i`ō-hōlani, "but the Hawaiians called him Ka-lani-ku-mai-eiwa-ka-moku" (Kamakau 1992:110). However, before he died he made it known that his son Kiwala`ō was to succeed him and gave to his nephew Kamehameha, the guardianship of his war god Kū-kā`ilimoku (Kamakau 1992:107-109). After Kalani`ōpu`u's death, a number of conspiracies transpired, formulated by several *kahuna* and chiefs. These lead to more skirmishes, intra-island battles, the deaths of various chiefs and eventually the death of Hawaii island's ruling chief, Kiwala`o.

Cordy (1998) explains what happened after Pelei`ōhōlani died on O`ahu.

> Pelei`ōhōlani's son, Kumuhana, was not a capable ruler, and he was soon removed by the O`ahu chiefs [Fornander Collection 1919, 6(2): 282-291; Kamakau 1961(1867): 128-141 In Cordy 1998]. (Kuhana returned to his family's lands on Kauai.) Kahahana was chosen to be ruler. The son of a sister of Pelei`ōhōlani (Kaionuilalahai) and of a powerful `Ewa high chief (`Elani), Kahahana had been raised on Maui in the court of the Maui ruler, Kahekili.... [Kahekili] tricked Kahahana into slaying his high priest, Ka`opulupulu... [who] had control of the Waimea-Pūpūkea area and the huge *heiau* of Pu`u Mahuka. He also had control over Kunaiwa Heiau at Pu`u Kahea in Wai`anae....
>
> Kahahana, while in Wai`anae and refurbishing Kamohoali`i Heiau, called Ka`opulupulu to him. He was captured, slain at Pu`uloa, taken to Waikīkī, and offered up on the *heiau* there. With this advisor out of the way, the Maui army invaded in 1783. The O`ahu army was defeated at Kahe-iki in Nu`uanu, and Kahahana fled into the Ko`olaus with his wife and an aide.
>
> *He went astray in the wilderness of Halemano,*
> *In the uplands of Wahiawā, far inland.*
> *Hele hewa i ka nalele o Halemano,*
> *I ka uka o Wahiawā, i ka uka lilo e.*
> (Fornander Collection 1919, 6(2): 295)
>
> Kahahana was caught in 1785 and slain. This led to a revolt by the O`ahu chiefs with his father, `Elani, one of the leaders. The rebels were harshly subdued in battles in `Ewa. The remainder pulled back into the Wai`anae mountains, but some were lured out and crushed again by Kahekili's forces. In subduing this revolt, Kahekili was said to have slain many of the remaining nobles of the O`ahu Kingdom.... For 10 more years, the Maui Kingdom ruled O`ahu. It is likely that a Maui high chief was given Wai`anae district and lesser Maui chiefs were placed over the *ahupua`a* of Wai`anae.... Kamakau in 1865 said only one chief of Maui ever entered Kūkaniloko's birthing area [Kamakau 1991(1865): 38 In Cordy 1998] (Cordy 1998:15-16).

The Hawaiian newspaper *Ke Au Hou* printed an article on November 29, 1911:3 about Kahahana's battle with Kahekili and mentioned the various places on Oahu that Kahahana hid. Oahunui and Halemano were some of his places of refuge.

> When Kahekili defeated Oahu, Kahahana, his wife and friend fled to Moanalua where he lived with his servant. From there he moved to Kinimakalehua at Aliomanu below Kapukaki, a place facing Leilono. There was a lehua and a hau tree where they stayed for a few days. From there they went to Ke-ana-a puaa and from thence to Kepaakaea, then to Waipio and on to Kahaone. They remained there until they thought it better to go up to Oahunui at Wahiawā and so they went to the forest of Halemano. They were there a short time and moved to Leilehua. After living there for a time they went to stay at Poohilo in Honouliuli and there they hid until, weary with life in the forest, they showed themselves to the commoners (*Ke Au Hou* 1911).

Kamakau explains the plot of the O`ahu chiefs to revenge the death of Kahahana, and their subsequent devastation in *Ruling Chiefs* (1992/1961), which was based on newspaper articles Kamakau wrote between 1842 and 1876.

> After Ka-hahana's death [1785] a plot was laid to murder the chiefs of Maui. Kahekili was living at Kailua with most of his chiefs; Manono, Ka-ua-kapeku-lani, Ka`i-ana, Na-maakeha`, Nahi-olea, Ka-lani-ulu-moku, and others were at Kane`ohe and He`eial **Hu`eu alone was at Waialua.** Those in the plot were the chiefs Elani, Pupuka, Maka`i-oulu, Kona-manu, Ka-laki-o`o-nui, and a great many others. Waipi`o in `Ewa as the center of the plot got the name of 'Waipi`o of secret rebellion' (Waipi`o *kimopo*).
>
> The plotters were divided, Elani and his party to kill the chiefs in `Ewa; Maka`i-oulu, Pukuka, and their accomplices to attack Ka-hekili; Kona-manu and Ka-laki-o`o-nui and their party to kill **Hu`eu;** and all to attack on the same night. But someone warned the [chiefs in] `Ewa...of the plot and they fled to Waikiki, and Kahekili and his chiefs escaped in the same way. **But Hu`eu, who was living at Ka`owakwaka, Kawalloa, in Wailua, was killed on one of the Kaloa nights while his guards were asleep....** When Kahekili learned that Elani of `Ewa was one of the plotters, the districts of Kona and `Ewa were attached, and men, women, and children were massacred, until the streams of Makaho and Niuhelewai in Kona and Kahoa`ai`ai in `Ewa were choked with the bodies of the dead, , and their waters became bitter to the taste.... All the Oahu chiefs were killed and the chiefesses tortured (Kamakau 1992/1961:138).

In spite of all the warring in the 1700s, the sandalwood trade got its start in 1784 and would continue until 1836 (Smith 1942: 7). By 1790 Kamehameha had gained enough control of the island of Hawaii, that he could leave to join the war parties on Maui. Their canoe fleet "beached at Hana and extended from Hāmoa to Kawaipapa" to battle Kalani-kū-pule, son of Kahekili, and ruling chief of Maui while his father now ruled Oahu. After several battles along the East Maui coast, Kamehameha's force reached Wailuku where the "great battle" took place. This would be the beginning of the end of independent ruling chiefs because of the inequity of Kamehameha's battle strategy. Kamehameha had brought a cannon from the *Elenaora* along with her captain, Isaac Davis, and crewmember John Young, now his *aikāne punahele* (favorites) and advisors (Kamakau 1992:147-148)

Demographic trends during the Proto-Historic Period indicate a population reduction in some areas, yet show increases in others, with relatively little change in material culture. However, there was a continued trend in craft and status material, intensification of agriculture, *ali'i* (chief) controlled aquaculture, upland residential sites, and oral records which were rich in information. The Kū cult, *luakini heiau,* and the *kapu* (restriction or regulation) system were at their peak, although western influence was already altering the cultural fabric of the islands (Kirch 1985:308, Kent 1983:13). Kahekili, ruling chief of Maui, Molokai and Lanai died in 1793, and his brother, Ka`eokulani, became ruling chief of those islands (Kamakau 1992/1961:168). By 1794 at least eleven foreigners were living on the island of Hawaii, including American, English, Irish, Portuguese, Genoese, and Chinese (Day 1992:23-25).

III-A-5. Early Historic Period. The Early Historic Period (AD 1795-1950) is marked by very significant events. When Kamehameha conquered Oahu and Maui 'territories' in 1795 (with western advice and technology), subsequently unifying the islands (Kent 1983:16), it marked the end of the Proto-Historic Period. Control of each island's polity was relegated to Kamehameha's loyal chiefs and warriors. Less than one hundred years later the government in Hawaii would change forever. And Hawaii's culture and economy continued to change radically as capitalism and industry established a firm foothold.

> Before the battle of Nu`uanu there were living on O`ahu with Ka-lani-ku-pule Mr. Oliver Holmes, Shomisona, Mr. Lele, Mr. Mela (Miller), Mr. Keakea-`ele`ele (Black Jack), and some other foreigners. When Kamehameha conquered the island, they all came over to his side [Kamakau 1992/1962:174].
>
> Maui's rule [of O`ahu] came to an end in 1795 with the final conquest of Kalanikūpule [son of Kehekili] and the Maui Kingdom at Nu`uanu at the hands of Kamehameha's Hawaii Kingdom army [Kamakau 1961 (1867): 168-169; Fornander 1969(1880): 262-266 In Cordy (1998)]. Kalani-kū-pule hid in the underbrush for a little over a year and then was captured mauka of Waipi`o in `Ewa and killed. His body was brought to Kamehameha and offered in sacrifice to his god, Kū-ka`ili-moku. [Kamakau 1961 (1867):173 In Cordy (1998)] (Cordy 1998:17).

In 1798 Kamehameha returned to Lanai and made Kaunolu his summer residence, commuting from the island of Hawaii. In 1802 Kamehameha moved his chiefs, fleet, army, court, wives, sons, daughters, brothers, sisters, and other dependants to Lāhainā, Maui. But after two years of "eating the land" at Lāhainā, Kamehameha moved on to Oahu. Kamehameha began to develop the arts of peace, although this sometimes came about by tragic methods according to an incident involving Don Francisco de Paula Marin as told to Theodore-Adolphe Barrot, a visiting French diplomat who visited in 1836.

> [Marini] met with another adventure much more tragic. Kamehameha commanded him one day to cut off a prisoner's head and Marini was obliged to obey, using for this purpose a carpenter's saw. Someone wished to know if this anecdote was true and asked him about it; a shudder seemed to pervade the body of the Spaniard. "Alas! said he "What could I do? If I had not cut off the prisoner's head he [Kamehameha I] would have cut off mine. It is better to eat the head of a wolf than to be eaten by him" (Barrot 1978:58-59).

In 1803 Kamehameha settled in on O`ahu where he placed his Hawaii chiefs over all the lands (Cordy 1998:17). He put the chiefs and their men from Hawaii to work farming the lands of Oahu. They first lived in Waikīkī, then when the voyaging ships started coming they moved to Honolulu (Silverman 1987:41-47). By 1810 the sandalwood trade was still flourishing under the control of Kamehameha I, to the point where the subsistence level of the populous fell apart, as farmers and fishermen spent most of their time logging, causing famine to set in. Kamehameha I had become "a fervent consumer of high-priced western goods" (Kent 1983:17-20).

In 1819 Peter Corney was on a trading voyage in the north Pacific and the vessel he was on made a stop in the Sandwich Isle [Hawaii]; he wrote this in his journal:

> In the company of this man (Marin), I went round the island, and found all the plains and valleys in the highest state of cultivation. Tarrow, which is the principal vegetable, grows in abundance; there are two sorts; the first and best is planted in large square patches, banked up about six feet, and beat down very hard at the bottom and sides, so as to hold water...and the water forms a fish pond as well as tarrow patch.... They turn the water from the mountains, bring it down in streams to the tarrow ground....
>
> The other sort of tarrow is planted in dry ground, and takes a year to come to perfection. The sweet potato is planted in the same manner, and is hilled up with earth. They have plenty of what are commonly called Irish potatoes, yams, bread-fruit, melons...cabbages, onions, celery, garlick; also very good wheat, rice, Indian corn, and every description of fruit that grows in the West Indies; turnips, cucumbers, radishes, salad, in fact all that is produced in England will grow there (Corney 1896: 108-109).

However, more portents of change, were in the offing after the death of Kamehameha in 1819.

> On October 1819, seventeen Protestant missionaries set sail from Boston to Hawai'i. Earlier that year, on May 8, 1819, Kamehameha I died. Following his death, his son and heir Liholiho banished the *kapu* system at the advice of his queen mother Keōpūolani and Ka'ahumanu (Kamakau, 1992:210, 222).
>
> The missionaries arrived in Kailua-Kona on March 30, 1820, to a markedly changed culture; one with a "religious" void, and a growing appetite for western products. They quickly started missions on all of the islands. During this period "between one hundred and two hundred foreigners lived among the Islands.... Hardly a ship touched without leaving a deserter or two behind...a white man automatically ranked as a chief, although he could not own land in fee simple or build a permanent house...[and] they took Hawaiian wives" (Day 1992:25).

The whaling [oil] industry gave a needed boost to the waning sandalwood trade between 1820s to 1872 (Smith 1942:7). But another industry was also on the horizon. According to Gast (1973), Captain F. W. Beechey of HMS *Blossom* spent ten days in Honolulu making astronomical observations between May 21-31, 1826. He returned on January 25, 1827 and spent a month. In his journal he mentions Don

Francisco de Paula Marin a former confidant and advisor of Kamehameha, and one who was greatly responsible for introducing a variety of fruits, vegetables, agricultural plants and animal husbandry; and the growing influence of America.

> Attempts have been made to manufacture sugar from the canes which grow very abundantly and in great luxuriance in the Islands; and I sincerely hope that Mr. Marini who has hitherto been of greatest benefit to the government of Wahoo [Oahu] may succeed in the mill which he was...constructing...during our visit....
>
> At that time, the value of a picul (133 1/3 pounds) of sandalwood was approximately 10 American dollars; during the early years of Liholiho's reign he [Marin] was not consulted on matters of business, and it was at this time that the Americans took most advantage of the childlike greediness and gullibility of the young king and the chiefs (Gast 1973: 111-113)

In the 1830's other industries such as whaling, and merchandising were established in Hawaii. In 1836 the first sugar plantation was established on Kauai (Kent 1983:23, 29). "The island forests had been stripped of sandalwood, up to [this] time the most valuable export article, medium of exchange and source of great wealth. Agriculture such as existed, found its outlet in the sale of sweet potatoes, taro, bananas and sugar cane to whalers and merchantmen..." (Smith 1942: 6). When French Diplomat Barrot visited Oahu in 1836, he made the following observations.

> Oahu, justly called the garden of the Sandwich Islands, on account of the numerous streams which water it, is capable of recompensing the labors of agriculture with all the products of those of our colonies which are the most favored by nature. The plains of the interior and those near the shore, are exceedingly well adapted to the cultivation of sugar cane, which grows here to an astonishing size. The hills produce cotton and coffee in abundance, which can safely challenge a comparison with the most commended of similar articles...indigo grows spontaneously, and the high mountains offer the precious sandalwood for exportation.... Water at the Sandwich Islands, however, as in all other countries which produce by irrigation, is the occasion of many quarrels and sometimes of fatal accidents. It is not necessary to state that the lands of the King and of the Chiefs share the streams the most abundantly, but as there is generally a full supply of water, there is enough for each one (Barrot 1978:69-70, 72)
>
> Sandalwood has become exceedingly scarce, so that in order to find any it is necessary to go where the country is almost impassable. During the first years of cutting sandalwood, the forests were cut down without any precaution. It was a treasure the value of which was unknown to the chiefs and abused by them when discovered. It is now impossible to procure a full cargo of this precious wood...the poverty of the chiefs, joined to the passions which have been awakened in them, will prevent this [sandalwood] becoming a valuable article of export in a few years... moreover they are aware that the resource is about to fail them, and they make haste to exhaust it in every possible manner (Barrot 1978:107).

Disease also had a devastating affect, killing *ali'i* and *maka'āinana* alike; measles epidemics in 1848 and 1849, followed by the horrendous smallpox epidemic in 1853..."ten thousand [all toll] of the population are said to have died of this disease in Hawaii" (Kamakau, 1992:411, 418). By 1858 at least 2,119 foreigners lived in Hawaii. Many were merchants who traded with whalers, while the missionaries lived in various locations throughout the islands. "Foreigners engaged in agricultural pursuits with the idea of reaping a profit from the land, in contrast with the Hawaiians, who carried on...subsistence agriculture" (Coulter 1931/1971:11). By this period, the sugar industry had a firm foothold in Hawaii, and would forever change the landscape as well as its cultural fabric.

By the 1890s tourism in Hawaii as a fledgling industry was already evident; first as a result of the needs of whalers, then because of the guests of the sugar industry (Joesting 1987:249-250). This would accelerate after annexation when people flocked to see and read about their "new acquisition" (Leib and Day 1979:14). Various studies were conducted on all the major islands from the late 1800s to the early to mid-1900s.

III-A-6. Modern History (AD 1950). 1950 marked the introduction of radiocarbon analysis which shifted the focus of study in archaeology to "excavation as the primary means of data recovery," followed by a focus on settlement patterns, subsistence, land and marine use. However, the recent Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) and its implementing regulations (43 CFR Part 10) has shifted the focus of study to include a greater interaction with indigenous people, and a lesser focus on invasive methods of study.

III-B. Central Oahu in Traditional Literature

The ethnohistoric works of the late 19th and early 20th century contributed a wealth of information that comprises the traditional literature--the *mo'olelo, oli, mele, `olelo no`eau* and place name meanings--as well as glimpses into snippets of time, and a part of the Hawaiian culture relatively forgotten. The genealogies handed down by oral tradition and later recorded for posterity, not only give a glimpse into the depth of the Hawaiian culture of old, they provide a permanent record of the links of notable Hawaiian family lines. The *mo'olelo* or legends allow *ka po'e kahiko*, the people of old, the *kūpuna* or ancestor, to come alive, as their personalities, loves, and struggles are revealed. The *mele* (songs) and the *oli* (chants) not only give clues about the past, special people, *wahi pana* or legendary places, and genealogies, they substantiate the magnitude of the language and memory skills of *na kupuna kahiko* (the people of old).

III-B-1. Genealogies. *Po'e ku'auhau* or genealogy *kahuna* were very important people in the days of old. They not only kept the genealogical histories of chiefs "but of *kahunas* [sic], seers, land experts, diviners, and the ancestry of commoners and slaves.... An expert genealogists was a favorite with a chief." During the time of 'Umi genealogies became *kapu* to commoners, which is why there "were few who understood the art; but some genealogists survived to the time of Kamehameha and even down to the arrival of the missionaries" (Kamakau 1992:242).

Surviving genealogies in the form of *`oli* or chants illustrate that the ruling families of each island were interrelated quite extensively. The chiefs of Oahu, Kauai, Hawaii, and Greater Maui had one common ancestry. Families branched out, but conjoined several times in succeeding generations. Oahu and Hawaii's chiefs were linked by 'Umi as are Hawaii and Maui chiefs, and Hawaii's chiefs were linked to Kauai chiefs (Kamakau, 1991:101; McKenzie, 1983:xxv). Not only were the chiefs or *ali'i* related to each other, they were also related to the *maka'āinana* or 'people who looked after the land'--often referred to as 'commoners.' In *Ruling Chiefs,* Kamakau states that "there is no country person who did not have a chiefly ancestor" Kamakau (1992:4).

Malo (1951) also wrote about the connection between the *maka'āinana* and the chiefs. "Commoners and *ali`i* were all descended from the same ancestor, Wakea and Papa" (Malo, 1951:52). "To the Hawaiians, genealogies were the indispensable proof of personal status. Chiefs traced their genealogies through the main lines of 'Ulu, Nana'ulu, and Pili, which all converged at Wakea and Papa (Barrère, 1969:24). Two well-known genealogy chants are the *Kumuhonua* and the *Kumulipo.*

III-B-1-1. Hawaiian Genealogies. In 1983 Edith McKenzie completed the first volume of *Hawaiian Genealogies,* translated from genealogy articles in 19th Century Hawaiian newspapers; these articles were in response to a call to preserve the Hawaiian heritage. Some of McKenzie's genealogies were from feature articles published in Hawaiian newspapers such as *Ka Nonanona* and *Ka Nupepe Kuokoa* in the late 19th century and early 20th century. Some of the information was also in Malo's (1838) *Hawaiian History*, and in Fornander's (1880), *The Polynesian Race* (Book I) (McKenzie, 1983:1).

Youngblood (1992) found that he could draw on both Fornander and Beckwith's translations of *The Kumulipo* to sketch a socio-political history of Hawaii (Youngblood, 1992:34). In his re-creation he found that stemming from Wakea and Papa are two major Hawaiian genealogies: the *Nana'ulu* and the *'Ulu.* The *Nana'ulu* was the wellspring for the *ali'i* of Oahu and Kauai, while the *'Ulu* line supplied the

chiefs of Maui [Molokai and Lanai] and the Big Island. The ruling chiefs of the various islands came from combinations of genealogies or branches. Most of the main figures in the table below are in a loose chronological order, however, the multiple unions of a particular person is not necessarily in a chronological order, as much of that information was not provided in most cases.

III-B-1-2. Oahu Line: "In the genealogical line of *Nana`ulu*, it is believed that he is an ancestor of Tahiti and Borabora because in this genealogy down to Mo`ikeha [it is said he is from Tahiti] and married Hooipo (Hinauulua) in Kauai who bore their three children: Hookamalii, Haulanuiaiakea, and Kila. And Hookamalii became the chiefly ancestor for Oahu: Haulanuiaiakea for Kauai; and Kila for Hawaii" (Kamakau in McKinzie 1983:*xxv*). The following consists of the genealogical line called *Nanaulu*; these are the ancestral chiefs of Oahu and Kauai, from Nanaulu down to Lā`ielohelohe (McKinzie 1983:13). Kamakau (1991) says that Nanaulu to `Olopana are the ancestors of Kahiki [Tahiti] and Nu`uhiwa [Marquesas] (Kamakau 1991:79). [Note: no macrons are used because McKinzie did not use them.]

Table 1. Nanaulu Genealogy of Chiefs (McKinzie 1983:13; 1986:14, 15; also Kamakau 1991:76-77).

Kane (male)	Wahine (Female)	Keiki (offspring)
Nanaulu	Ulukou	Nanamea
Nanamea	Puia	Pehekeula
Pehekeula	Uluae	Pehekenana
Pehekenana	Nanahapa	Nanamua
Nanamua	Nanahope	Nanakeauhaku
Nanakeauhaku	Elehu	Keaoa
Keaoa	Waohala	Hekumu
Hekumu	Kumukoa	Umalei
Umalei	Umaumanana	Kalai
Kalai	Laikapa	Malelewaa
Malelewaa	Pililohai	Hopoe
Hopoe	Hauananaia	Makalawena
Makalaawena	Koihouhoua	Lelehooma
Lelehooma	Hapuu	Kekupahaikala
Kekupahaikala	Maihikea	Maweke
Maweke	Naiolaukea	Mulielealii
Mulielealii	Wehelani	Kumuhonua
"	"	Olopana
"	"	Moikeha
Moikeha	Hanauulua	Hookamalii
Hookamalii	Keaaiula	Kahai
Kahai	Kehenu	Kuolono
Kuolono	Kaneakaleleoi	Maelo
Lauli-a-Laa	Maelo	Laulihewa
Laulihewa	Akepamaikalani	Kahuoi
Kahuoi	Pelea	Puaakahuoi
Puaakahuoi	Nononui	Kukahiaililani
Kukahiaililani	Kokaloa	Mā`ilikūkahi
Mā`ilikūkahi	Kanepukoa	Kalona-nui
"	"	Kalona-iki
Kalonanui	Kaipuholua	Kalamakua
Lolae-o-Halona	Keleanuinohoanaapiapi (Maui)	Kaholialale-o-Halona
"	"	Luliwahiaalale-o-Halona
Kalamakua (Halawa)	Keleanuinohoanaapiapi (niaupio)	Laielohelohe
Kalona-iki	Kikenuiaewa	Kamaleamaka
"	"	Piliwale
"	"	Lali

Table 2. O`ahu Ruling Chiefs descendants of Piliwale (McKinzie 1986:16, 22, 23, 79, 114, 116).

Kane (male)	Wahine (female)	Keiki (offspring)
Piliwale	Paakanilea	Kūkaniloko (w)
"	"	Kohepalaoa
Luaia	Kūkaniloko	Kalaimanuia
"	"	Kauwahimakaweo
Lupekapukeahomalii	Kalaimanuia	Kuamanuia
"	"	Kahikapuamanuia
"	"	Hao
"	"	Kekela
Kaihikapuamanuia	Kaunuiakamehoalani	Kakuihewa
Kakuihewa*	Kahaiaonuiakahuailana	Kahihikapuakakuihewa
Kakuihewa	Kae`akaloa	Kaihikapu-a-Kakuihewa
"	"	Kanekapu-a-Kakuihewa (k)
"	"	Makakaualii (w)
Kahihikapuakakuihewa	Kanakeawe	Kahoowahaokalani
Kahoowahaokalani	Kaweolauhuki	Kauakahiakahoowaha
Kauakahiakahoowaha	Mahulua	Kualii
Kualii (Oahu)	Kalanikahemakoalii (Maui)	Kapiioho (k)
"	"	Pelei`ōhōlani (k)
"	"	Kukuiaimakalani (w)
Pelei`ōhōlani (Oahu)	Lonokahikini	Kuwalu (w)
"	"	Keeaumoku
"	"	Kapueo (w)

*At the time Kākuihewa was ruling chief of Oahu, Kihapi`i and his son, Kamalalawalu were chiefs of Maui; Keli`iokaloa [later killed by Kona's people], Keawenuiaumi, Kanaloakuaana [Kona, Kohala and Hamakua and older brother of Lonoikamakahiki], and Umiokalani were ruling chiefs of Hawaii Island (Kamakau in McKinzie 1986:13, 14). However the families from each main island were all related as the genealogy of Kawaookekahuli illustrates, as written by her husband Samuel R. Keli`ihahaimoku. "The birth of the ancestors occurred through those of Molokai, Hawaii, and of Maui. The great-great-grandparents join together with those of Oahunui; and the great-great-grandparents were related to Kūhihewa" (McKinzie 1986:75).

Keli`ihahaimoku continues:

> We have partially withdrawn through a straight line in the history of the genealogical line, unbranched; and because the history of Kawaookekahuli (w) is extensive, what the researcher has partially presented are the individual alignments and Oahunui's great-great-grandparents on the side of Kawaookekahuli's father. This is what we now present; that there are those from Waianae, those from Oki Kupee, those from Wahiawā, of Kūkaniloko, and those of Mokuleia. The desire of the ancient period has passed away (Samuel R. Keliihahaimoku husband of Kawaookekahuli In McKinzie 1986:75)

The following excerpt from the *Genealogy of the Royal Descendants* living at the time of Queen Liliu`okalani further illustrates how the Hawaiian people were related: "The tillers of the soil were chiefly people. Rare indeed were the men and women who do not have their royal genealogy from ancient times up to this period" (McKenzie 1986:88).

The lands of Pa`ala`a-uka were awarded to Victoria Kamamalu, sister of Kamehameha IV & V.

Table 3. Lineage of Victoria Kamamalu [RP 7713] (McKinzie 1986:31; Spoehr 1989:8-9).

Kane (male)	Wahine (female)	Keiki (offspring)
Ke`eaumoku	Namahana	Kuakini (k)
"	"	Kalakua (w)
"	"	Ka`ahumanu (w)
Kamehameha I	Kalakua	Kina`u
"	"	Kamamalu
"	Keōpūolani	Liholiho
		Kauikeaouli
		Nahi`ena`ena
Mataio Kekuanao`a	Kina`u	Moses Kukuaiwa
		Victoria Kamamalu
		Lot Kamehameha (K-V)
		Alexander Liholiho (K-IV)
Alexander Liholiho (K-IV)	Emma Na`ea	Albert Edward Kauikeaouli

III-B-2. Mo'olelo. Legends or *mo'olelo* are a great source of information. Leib and Day (1979) state in their annotated bibliography of Hawaiian legends, that legends "are a kind of rough history." They noted "Luamala's idea of the value of myth and legend in the serious study of a culture" and her following quote. "To a specialist in mythology, a myth incident or episode is as objective a unit as an axe, and the differences and similarities of these units can be observed equally clearly and scientifically." Leib and Day also expressed concern about authenticity, and sometimes found it difficult to determine if a legend was a primary or secondary source. The following terminology and their definitions come from their work (Leib and Day 1979:xii, 1):

Tradition	used to refer to that which is handed down orally in the way of folklore
Folklore	a rather inclusive term, covering the beliefs, proverbs, customs, and literature (both prose and poetry) of a people
Myth	a story of the doings of godlike beings
Legend	deals with human beings and used interchangeably with 'myth'...because the collectors and translators of the tales often failed to make the strict distinction themselves
Ka'ao	"pure fiction"
Mo'olelo	deals with historical matters and somewhat didactic in purpose...included tales of the gods, as well as tales of historical personages...many have recurring patterns, plots, and types of characters

III-B-2-1. History of Mo'olelo Collecting. According to Leib and Day (1979) a substantial number of legends were collected and written in Hawaiian, during the century following Cook's arrival in Hawaii. A few accounts of the mythology were printed in the journals of missionaries and travelers, and a few of the Hawaiian lore were printed in languages other than English. Many of the legends were collected by Abraham Fornander, Thomas Thrum, Samuel Kamakau and Joseph Emerson.

III-B-2-2. Mo`olelo of Oahu [Central]

The following *mo`olelo* are from Kamakau (1991), translated from newspapers by Mary Kawena Pukui, and edited by Dorothy B. Barrère in the work *Tales and Traditions of the People of Old: Nā Mo`olelo a ka Po`e Kahiko*. These *mo`olelo* or stories of old are about some of the sacred places and chiefs of central O`ahu whose domain included the project area.

Mo`olelo of Kūkaniloko.

> Kūkaniloko was made by Nanakāoko and his wife Ka-hihi-o-ka-lani as a place for the birth of their child Kapawa. A line of stones was set up on the right hand and another on the left hand, facing north. There sat thirty-six chiefs. There was a backrest, a *kuapu`u*, on the upper side, this was the rock Kūkaniloko which was the rock to lean against. If a chiefess entered and leaned and rested on the supports to hold up the thighs in observance of the Līloe *kapu* [the prescribed regulations for birthing], the child born in the presence of the chiefs was called an *ali`i*, an *akua*, a *wela* – a chief, a god, a blaze of heat.
>
> When the child was born, it was immediately taken into the *waihau heiau* Ho`olono-pahu. There forty-eight chiefs ministered to the child and cut the navel cord. Ho`olono-pahu was a furlong and a half south of Kūkaniloko. Two furlongs to the west of Kūkaniloko was where the sacred drum Hawea was beaten; it indicated the birth of a chief. On the east of the stream on that side of Kua`ikua were the *maka`āinana* – a great many of them – and to the south, three furlongs distant, were the *kauwa*.
>
> However, chiefs who were born outside of Kūkaniloko or at the backrest [but not in the presence of the chiefs] were chiefs too. And if they were "born on the highway" (*ā i hanau i ke alanui*), they were chiefs also – "outside" chiefs (*he ali`i no; no waho*). Kamehameha greatly desired to have Keōpūolani give birth inside of Kūkaniloko. However, when she went there, the child did not come, and she went back. Only one chief of Maui ever entered Kūkaniloko—Ka`ulahea, the husband of Kapo-hānau-puni (Kamakau 1991:38)

Additional *mo`olelo* on Kūkaniloko can be found in Thrum (1997: 87-93) In *Hawaiian Folk Tales: A Collection of Native Legends*, originally published in 1907; and Kame`eleihiwa (1998:8-10) *Na Wahine Kapu: Divine Hawaiian women.* Other *ali`i* born at Kūkaniloko included the following:

> **Kalani-manuia.** Luaia was the father and Kūkaniloko, the daughter of Piliwale, the mother of Kalani-manuia [Kalai-manuia]. Luaia was an *ali`i kapu* of Maui; his father was Ka`ihiwalua and his mother was Kaualua; Ka-leo-iki-o-Kaka`e was his grandfather.... Kalani-manuia was born at Kūkaniloko, at Kapu`ahu`awa, in AD 1100, and at Ho`olono-pahu *heiau* her navel cord was cut. When this chiefess was a grown woman, she was taken to Kalauao.... She remained in Kalauao when she became ruler of the kingdom (Kamakau 1991:57).
>
> **Kākūhihewa.** In the birthing of Kākūhihewa at Kūkaniloko, the Līloe *kapu* of the supports and the removal of the child were observed. Kānehoalani, his maternal grandfather, was the one who took him into Ho`olono-pahu *heiau*. Forty-eight chiefs, including Mākō-kā`au, Ihu-kolu, Kā`aumaku`a, and Pakapaka-kūaua, observed the cutting of his navel cord, and the two drums `Opuku and Hawea were sounded to announced the birth of Kākūhihewa.... Kākūhihewa was taken to `Ewa and raised by his *kahu* at Wai-pi`o, Waiawa, and Mānana on the fat *awa* fish of Kuhia and the sweet mullet of Pauhala...(Kamakau 1991:68)
>
> Kākūhihewa was the son of Ka`ihikapu-a-Manuia and Ka`ū-nui-a-Kānehoalani. [Ka`ihikapu-a-Manuia was the son of Kalani-Manuia (daughter of Piliwale) and Lupa-kapu-ke-aho-makali`i; Ka`ū-nui-a-Kānehoalani was the daughter of Kanehoalani and Kualoa-ka-la`ila`i...both *kapu* chiefs].... When Ka`ihikapu-a-Manuia died Kākuhihewa inherited his kingdom. He was thirty-nine years old when he became ruler, the *noho ali`i*, and he ruled for fifty years (Kamakau 1991:57, 61, 68).

Lō Ali`i.

The chiefs of Līhu`e , Wahiawā, and Halemano on O`ahu were called *lō ali`i*. Because the chiefs at these places lived there continually and guarded their *kapu*, they were called *lō ali`i* [from whom a "guaranteed" chief might be obtained, *loa`a*]. They were like gods, unseen, resembling men (Kamakau 1991:40).

Mo`olelo of Lō Kaholi-a-Lale. Kamakau (1991:50-51).

Lō Lale was the father and Kelea-nui-noho-`ana-`api`api [sister of Kawaokaohele, Pi`ilani's father] was the mother of Lō Kaholi-a-Lale. He was born in the uplands of Līhu`e and raised there until manhood. This youth was an exceedingly handsome man with features like his mother's. Lō Kaholi-a-Lale was taught club wielding, *ke ka`ala`au*, and spear throwing, *ka lono-maka-ihe*, and he became highly skilled in striking, thrusting, and parrying. In striking, no creeping or flying thing did he miss.

The main occupation of the Līhu`e chiefs in olden times was to learn the art of spear throwing, and from there came the most skilled teachers. Spear throwing was also the main occupation of Piliwale, the *mō`ī* of `Ewa. He belonged to the chiefly family, *`ohana ali`i*, of Kumuhonua [Nana`ula genealogy according to editors notes] of Kūkaniloko, and he had two daughters, Kūkaniloko, the older, and Kohe-palaoa, the younger. The older was betrothed to the son of the *mō`ī* of Maui; Luaia was the name of this youth.

Piliwale said that if a man were found who was skillful in hurling spears and whose skill was as great as that of his own teacher, the reward would be his daughter Kohe-palaoa. The name of the chief's teacher of spear throwing was `Awa. We could grasp ten spears in his right hand and ten in his left. He was a "triple threat" in throwing; he could throw ten spears from the shoulder, two backwards, and two directly to the navel....

There were two days of sham battles on the plain of Pueohulunui, but no one challenged `Awa. However, Lō Kaholi-a-Lale studied the stances and thrusts of this teacher who was so skilled in *kākā lā`au*, the striking, thrusting, and parrying with the spear-club *lā`au pālau*. He himself already knew the thrusts and the stances of his own teacher, whose name was Ake-pao-a-nā-ihe. On the third day, the sham battles were resumed to seaward at Hālaulani. From there word came to the chief Piliwale that a young chief from upland Līhu`e had challenged `Awa-hāuna-la`au-nui in *kākā lā`au*. Here the youth exerted himself to the limit and was beyond compare in wielding the spear-club. The strokes by which he won were the *pane oluna* and the *hu`alepo*.... This incident gave names to places that remain to this day: Kūpahu, "to hurl," and Hanapouli, "make dark." These places are in Waipi`o in `Ewa.

Kohe-palaoa became the wife of Lō Kaholi-a-Lale. That was the beginning of the combining of the *lō* and the *wohi*, the ranks of Kaholi-a-Lale. As for Kohe-palaoa, her rank was that of a Kumuhonua chief of Kūkaniloko; she was a *ni`aupi`o*. They had a son named Kānehōalani who became the chief of Ko`olau (Ed Note: When you reach the narration of the Ko`olau ancestors, his daughter will be found there in the list of Waikīkī chiefs; she was Ka`ū-nui-a-Kānehoalani.)

Mo`olelo of Mā`ili-kūkahi.

Pua`a-a-Kahuoi was the father and Nononui the mother of Mā`ili-kūkahi. He was born at Kūkaniloko and was named the *ali`i kapu* for the land because of his dedication by the chiefs and priests and people; he had been vowed as such before the gods and had been anointed by the *kāhuna*. Chiefs born at Kūkaniloko were the *akua* of the land and were *ali`i kapu* as well.

Mā`ili-kūkahi was raised at Wahiawā and at Kānewai and at Wai`alua. When he was a little over twenty years of age, he was chosen by the chiefs to be the administrator of the government, the *mō`ī ho`oponopono o ke aupuni*. Mā`ili-kūkahi did not refuse them. Haka, a descendant of Kumuhonua, was the *ali`i mō`ī* at the time.

Haka was a bad chief and a stingy one. He did not take care of the chiefs and people. Because of this, the chiefs rebelled against him and fought with him. Haka took refuge in the *pu`u kaua* Waewae, the fortified hill at Kawiwi there in Līhu`e.... The rebelling chiefs and warriors came up, crowding thickly in the stronghold. Haka was the only person killed....

[Mā`ili-kūkahi] was taken to the *heiau* of Kapukapu-ākea at Pa`ala`a-kai in Wai`alua and consecrated by the *kahuna* to rule as *mō`ī*. At the end of this ceremony, he was taken inside the *heiau* for the ceremony of the cutting of the navel cord, just as at the birth of a chief. After that another important ceremony, that of circumcision, *`oki poepoe* was reenacted. This was to cleanse and purify him; `Ulonokū was the prayer. When this ceremony was over, he was installed as ruler of the island, *ke ali`i o ka moku*. This chiefly ritual pertained to high chiefs from remote time – *mai ka pō mai*. It was not performed for rebellious chiefs, however, nor for warrior chiefs who took the kingdom by force, but for "chiefs of Pōkano" [chiefs of unblemished bloodlines from remote times (MKP)]. That is the manner in which Mā`ili-kūkahi became ruler of the kingdom, and he ruled as *mō`ī* over the land [26 August 1865].

Soon after he became *mō`ī*, the chiefs took Mā`ili-kūkahi to Waikīkī to live; he was perhaps the first of the ruling chiefs to live there. Until then the chiefs had lived in Wai`alua and `Ewa. When the kingdom passed to Mā`ili-kūkahi, the land divisions were in a state of confusion; the *ahupua`a*, the *kū* – [*`ili kūpono*], the *`ili `āina*, the *mo`o* `āina, the *pauku `āina*, and the *kīhāpai* were not clearly defined. Therefore Mā`ili-kūkahi ordered the chiefs, *ali`i*, the lesser chiefs, *kaukau ali`i*, the warrior chiefs, *pu`ali`i*, and the overseers, *luna* to divide all of O`ahu into *moku* and *ahupua`a*, *`ili kūpono*, *`ili `āina*, and *mo`o `āina*. There were six districts, *moku*, and six district chiefs, *ali`i nui `ai moku*. Chiefs were assigned to the *ahupua`a* – if it was a large *ahupua`a*, a high chief, an *ali`inui*, was assigned to it. Lesser chiefs, *kaukau ali`i*, were placed over the *kūpono* lands, and warrior chiefs over *`ili `āina*. Lands were given to the *maka`āinana* all over O`ahu.

Mā`ili-kūkahi commanded the chiefs, *kahuna*, lesser chiefs, warrior chiefs, and people: "Cultivate the land, raise pigs and dogs and fowl, and take the produce for food. And you, chiefs of the land, do not steal from others or death will be the penalty. The chiefs are not to take from the *maka`āinana*. To plunder is to rebel; death will be the penalty. This is my command to the chiefs, the lesser chiefs, the warrior chiefs, the warriors, and the people; all the first-born sons, the *keiki makahiapo*, are to be mine to raise; they will be my sons, *ka`u keiki*, and mine to take care of."

The chiefs and people agreed with pleasure. Because of his exceedingly great concern for the prosperity of the kingdom, the chiefs and people never rebelled during his reign.... In the time of Mā`ili-kūkahi, the land was full of people. From the brow, *lae*, of Kulihemo to the brow of Maunauna in `Ewa, from the brow of Maunauna to the brow of Pu`ukua [Pu`u Ku`ua] the land was full of chiefs and people. From Kānewai to Halemano in Wai`alua, from Halemano to Paupali, from Paupali to Hālawa in `Ewa the land was filled with chiefs and people. The chiefs kept themselves apart, *`oko`a*, and the commoners kept to the *makai* side of the land. From Halahape to O`ahu-nui in Wai`alua was the *kūlanakauhale* of Mā`ili-kūkahi. There he raised the first-born sons of the *maka`āinana* and of the chiefs. The chiefs and commoners loved him for his great *aloha* for their children.... Mā`ili-kūkahi's name became famous from the skies to the earth and from Hawai`i to Kauai.

The chiefs of Hawai`i and Maui heard of Mā`ili-kūkahi and of the high state of his kingdom. Hilo, the son of Hilo-kapuhi, Hilo-a-Lu`ukapu, and Punalu`u, chiefs of Hawai`i, and Luako`a, a chief of Maui, decided to go and make war on Mā`ili-kūkahi. They sailed and landed in Waikīkī, then went to Kapua`ikāula in `Ewa with their canoes full of men. *Mauka* of Wai-kakala-ua gulch the battle was to begin. While they were going inland, they were cut off in the rear by the foster children of Mā`ili-kūkahi. Of the chiefs of Hawai`i and Maui, Punalu`u was killed on the plain now called Punalu`u. Corpses that "paved" a gulch gave the name Kīpapa to that place. Some of the invaders reached as far as the sea at `Ewa and Waimano – the gulches were filled with their corpses. The heads of Hilo *ma* were cut off and taken to Honouliuli to a place now called Po`o-hilo....

There was peace again on O`ahu, with fear of the kingdom of Mā`ili-kūkahi. It is said of this chief that he was a religious chief. The people all over O`ahu lived religiously and in peace. It is said of Mā`ili-kūkahi that he did not sacrifice men in the *heiau* and *luakini*. That was the way of Kūkaniloko chiefs. There were no sacrificial *heiau, po`okanaka*, there.

Mo`olelo of Halemano/Helemano

The following *mo`olelo* about the cannibal chief of Halemano/Helemano comes from William D. Westervelt (1915/1904) in *Hawaiian Legends of old Honolulu* [Reprint 1976: 189-203]. [Also in Sterling and Summers 1978:108-109].

Chief Man-Eater [189-203]

One of the legends of Ke-ali`i-ai Kanaka (The chief-who-eats-men) tells of the sudden appearance on the island of Kauai...of a stranger chief from a foreign land, with a small band of followers. The king of Kauai made them welcome...then came the discovery that secret feasts of a horrible nature were eaten by the strangers. They were driven from the island. They crossed the channel to Oahu. ...[and] went inland to the lofty range of the Waianae Mountains. Here they established their home, cultivated food and captured human victims, until finally driven out. Then they launched their boats and sailed away toward Kahiki, a foreign land...(Westervelt 1976:193).

The Oahu chief, Ke-ali`i-ai Kanaka, lived some time about the middle of the eighteenth century, as nearly as can be estimated. Up to the middle of the nineteenth century the accounts of Chief Man-eater's deeds and the accurate knowledge of his place of residence were quite fresh in the minds of old Hawaiians. It is still a problem to be decided whether Chief Man-eater was a foreigner or a Hawaiian.... It would seem best to accept the legend that the degenerate chief was a desperado and an outcast from the high chief family of Wai`alua , on the northwest coast of Oahu.

Ke-ali`i-ai-Kanaka was a powerful man. He is described as a champion boxer and wrestler. In some way he learned to love the taste of human flesh. When his awful appetite became known he was driven from his home.... In bitter anger he called the few servants who would follow him, and fled to the royal Waianae Mountains....

Kokoa and Kalo were the names by which he was known in his nobler young manhood, and Kokoa was his name to his followers.... It was a wild and wonderfully beautiful spot that Kokoa chose for his final home. It was a small plateau, or mesa, from two to three hundred acres on the top of a small mountain surrounded by other higher and more precipitous cliffs. It was luxuriantly covered with tropical growth and blessed with abundant rains. The Hawaiians have given the name **Halemanu** (house-of-the-hand) to this plateau. Its sides, sloping down into the valleys, were so precipitous as to be absolutely inaccessible. It could be entered only along a narrow ridge.... The *uluhe,* or tanglefern, massed and matted itself into a thick disguise for the cannibal's secret path through the valleys below....

[A very descriptive account of the flora, topography and traditional activity follows]

After a time Kokoa and his companions took a huge outcropping block of lava and smoothes away the top, making a hollow *ipukai*, or table dish, or more literally, a gravy dish, upon which their ghastly repasts were served. This stone table was finally rounded and its sides ornamented by rudely carved figures. The stone was five or six feet in circumference.... Sickness and death occasionally crossed the narrow ridge and struck down some of Chief Man-eater's followers, until at last Ke-ali`i-ai Kanaka stood alone by the ipukai....

He guarded his solitary retreat on the tableland.... One day he captured and killed a victim whom he carried through the forest to Halemanu. a brother [Hoahanau] of this victim discovered and followed him to the path along the ridge. He recognized the chief who had been driven long before from Waialua.... He went back to his village [and went into training]...then alone he sought the hiding-place of Chief Man-eater. He covered his lithe and sinewy body with oil.... He reached the narrow pass leading to Halemanu.

[eventually Hoahanau] whirled him [Aikanaka] over the edge of the plateau. Down the chief swept, broken and mangled by the rough, sharp spurs of lava rock, until the lifeless body lodged in the branches of a tall ohia-tree far below (Westervelt 1976: 194-202).

[Westervelt's note]: This was the beginning and ending of cannibalism in the Hawaiian Islands so far as history and definite legend are concerned. Halemanu [sic] was visited by Mathison, and a description of the carved stone table published in 1825.

In 1848, a little party of white men were guided to the crater by an old Hawaiian, who repeated to them the story of "Chief Man-eater" substantially as it is given in this record. **They found Halemanu. The foundations of the house, or at least of a wall around it, were easily traced. The ipukai and the imu were both there. The party did not notice any carved images on the side of the stone table. Indeed the stone had been so covered by decaying debris that it scarcely extended a foot above the soil.**

In 1879 and in 1880, Mr. D.D. Baldwin, a member of the party visiting **Halemanu** in 1848, again sought the ipukai without a guide, but the luxuriant growth of tangle-fern and grass made exploration difficult, and the carved stone table was not found. Somewhere under the debris of Halemanu it may wait the patient search of a Hawaiian archaeologist.

Mr. Joseph Emerson, who has had charge of governmental surveys of a large part of the islands and also is a prominent authority on Hawaiian matters, say that the sacrificial stone can still be found, and was seen by his brother within the past few years. He differs from the other writers in the name given to the place and also in regard to the locality. The right name should be "Helemano," carrying the idea of a train of followers of some high chief. The locality is some miles northwest of the Waianae Range in one of the valleys of the Koolau mountains. To this place the chiefesses of highest blood were wont to come for the birth of their expected children. The valley was "tabu" or "sacred." Near this sacred birthplace of chiefs was the home for a time of the noted man-eating chief (Westervelt 1976: 202-203).

Additional version of Halemano/Helemano can be found in: Fornander's *Collection of Hawaiian antiquities and folk-lore-II* "Legend of Halemano (Helemano) (228-263);" Fornander's (1959) *Selections from Fornander's Hawaiian antiquities and folklore.* "Legend of Halemano" (250-293) University of Hawaii Press, Honolulu; and *Ka Hae Hawaii* (1861) "Some cannibals on Oahu in olden times" and many versions are in Sterling and Summers 1978:108-112.

III-B-3. *Mele and Oli of Old*

Aside from the *mo'olelo,* legends or stories of these famous and infamous *ali'inui*, the chants and songs also give glimpses into the lives of the ancient ones. This research has revealed that there are literally thousands of *mele* and *oli* that have been recorded and/or written over the last 170 years. There are several indexes of songs and chants in the Hawaiian Collections at the University of Hawaii Hamilton Library (i.e., Horie 1990; Stillman 1988; 1990; 1993; 1995; 1996). Unfortunately, they just give the first line as titles, and it would probably take several months to go through each *mele* and *oli*. Pukui explained that it was common, for chants not to have a title, as it was the composer's role to create the *mele,* which was then given away. When formal titles were not specified, the first line of verse served as the title (Pukui, 1995:xvii).

III-B-3-1. *Mele.* The Hawaiian word *mele* included all forms of poetical composition and sometimes overlap *oli* or chant, the lyric utterance (Emerson, 1997a: 254). In regards to Hawaiian poetry or *mele*, "they had no exact word for so abstract a term as our 'poetry.'" The English equivalent to the Hawaiian *mele* means a song. All *mele* were sung, or rather chanted, or cantillated. This is equally true of all early poetry of whatever race.... The mele is interwoven in Hawaiian culture with the *hula* and the *ka`ao*--that is, poetry is interwoven with the dance and with mythology (Plews, 1980:176). The following *mele inoa* was written in honor of O`ahu *ali`i nui* Kākūhihewa and mentions the *lehua* of Halemano, and the sacred

birthing place, Kūkaniloko. The date and author has long been lost, but the *mele* continues to be sung and danced to by the *Halau Pua Ali`i `Ilima.* The *`olelo* Hawai`i words were provided by cultural practitioner Daniel Au (2001) who learned it from his *kumu hula* Vicki Takamine, who was given the *mele* by cultural practitioner Robert Cazimero. No English translation was provided.

Aia i Honolulu Ku`u Pōhaku

O Kākuhihewa ko`u haku ia,
Malia a loa`a pono aku `oe
Me ka lihilihi o pua komela

Ohuohu Halemano me ka lau lehua
Ka hano ho`uheno a kawili
Ua kanu nā pua Kūkaniloko,
Ma loko mai `oe me Liawahine.
I ke kui `ōhelo `ai a ka manu

I luna nō au me Leilehua
Ke `ala o ka maile lauli`ili`i,
Ke `ala o ka maile lauli`ili`i
Ka maile lauli`i a `o ko`iahi

Ua ahi ua wela mai nei loko
Ka hano ho`uheno a kawili
E hea mākou eō mai `oe
`O Kākuhihewa ko`u haku ia

He inoa no Kākuhihewa.

III-B-3-2. ***Oli.*** Pukui (1995) classifies chants or *oli* into three groups: (1) chants for the gods (*pule*); (2) chants for the *ali'i*, descendants of the gods; and (3) chants of activities that involved secular things.

III-B-4. ***'Olelo No'eau.*** *'Olelo no'eau* or proverbial/traditional sayings usually had several layers of meanings. They reflected the wisdom, observations, poetry and humor of old Hawai'i. Some of them referenced people, events and/or places. The following *'Olelo no'eau* that make references to Helemano/Halemano were compiled by Mary Kawena Pukui between 1910 and 1960 with both translations and an explanation of their meaning (Williamson, et al. in Pukui, 1983:vii), which are often more *kaona* (hidden or double meaning) than obvious.

'Olelo no'eau	*Halemano honi palai o uka.*
Translation:	Halemano smells the fern of the upland.
Meaning:	At Halemano, O`ahu, the breezes bring the fragrance of fern from the upland. (p 53 #433)
'Olelo no'eau	*`Ohu`ohu Halemano i ka lau lehua.*
Translation:	Bedecked is Halemano with Lehua leaves.
Meaning:	An expression of admiration for a good-looking person. (p 260 #2379)

III-B-5. Place Names. Hawaiians of old generally named everything; from winds and mountains, to rocks, canoes, taro patches, fishing stations, and "the tiniest spots where miraculous or interesting events are believed to have taken place" (Elbert in Pukui et al., 1974:x). They all represented a story; some known only locally, while others became legendary. Unfortunately, the stories and meanings of many place names today have been forgotten.

Hale-mano.	*Lit.* many houses. Same as Hele-mano. (Pukui et al. 1974:38).
Hele-mano.	*Lit.* many snared or many going. Stream, elementary school, reservoir, ditch, and camps, Wahi-a-wa and Hale-`iwa qds., O`ahu. See Hale-mano (Pukui et al., 1974: 44) To travel with thousands; Waialua, Oahu (Alexander 1903: 403)
Helemano Camp:	Traveling with a large retinue; Camps 2, 4, 5, 6; land section; reservoir (2); school/stream; Triangulation Station (Jones and Addleman 1937:5)
Pa`ala`a:	*Lit.* sacred firmness. Land section, Haleiwa qd., O`ahu. (Pukui et al 1974:173).
Pa`ala`a Uka:	*Lit.* inland Pa`ala`a. Land division, Haleiwa qd., O`ahu. (Pukui et al 1974:173).

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Pa`ala`a Uka: *Lit.* inland Pa`ala`a. Land division, Haleiwa qd., O`ahu. (Pukui et al 1974:173).

III-C. Historic References.

In this report, Historic References pertain to events written about, after 1778. These were generally in the form of ship's logs or journals, diaries and other records of voyagers, whalers, missionaries, merchants and journalists. In the mid-1800s native historians were encouraged to recount the life and times of the Hawaiian people in the form of school papers and articles for Hawaiian and English newspapers of the mid-1800s to early 1900s. Other forms of historic references include government records, company reports, reports of studies, letters, maps, business reports and historical texts. Many of these records, reports and texts provide information on the land use for the project area and vicinity.

III-C-1. History of Land Divisions. It was during the time of Kaka'alaneo of Maui that the division of lands is said to have taken place under a *kahuna* named Kalaihaohi'a. He portioned out the island into districts, subdistricts, and smaller divisions, each ruled over by an agent [*ali`i ai*] appointed by the landlord [*konohiki*] of the next larger division, and the whole under control of the ruling chief over the whole island or whatever part of it was his to govern. (Beckwith, 1970:383).). Each island was divided into *moku* or districts that were controlled by an *ali'i 'ai moku.* Within each of the *moku* on each island, the land was further divided into *ahupua'a* and controlled by land managers or *konohiki.* The boundaries of the *ahupua'a* were delineated by natural features such as shoreline, ridges, streams and peaks, usually from the mountain to the sea, and ranged in size from less than ten acres to 180,000 acres (Moffat and Kirkpatrick, 1995:24-29, see also Chinen 1958:3; Gay 1965:50). "The principal tax levied on an ahupua`a were hogs. *Ahu* [altar] is a place where things were brought in and stored or piled up, and *pua`a* is hog or pig. Hence the name *ahupua`a*" (Gay 1965:49). Each *ahupua'a* was often divided and sub-divided several times over (i.e., *ili, kuleana, mo'o, pauka, koele, kiha pai*), answerable to the *ali'i* where the lesser division was located. However the *ili kupono* or the *ili ku* was "completely independent of the *ahupua'a* in which it was situated [and] tributes were paid directly to the king himself" (Chinen 1958:4).

During the period between 1839 to 1855, several legislative acts transformed the centuries-old Hawaiian traditions of *ali'inui* land stewardship to the western practice of fee simple or private land ownership. In the first stage King Kamehameha III [Kauikeaouli] divided up his lands among the highest ranking *ali'i* (chiefs), *konohiki* (land managers), and favored *haole* (foreigners) (Chinen 1958:7-14; Moffat and Fitzpatrick, 1995:11, 17). In 1846 he appointed a Board of Commissioners, commonly known as the Land Commissioners, to "confirm or reject all claims to land arising previously to the 10th day of December, AD 1845." Notices were frequently posted in *The Polynesian,* a widely distributed local newspaper (Moffat and Kirkpatrick, 1995). The legislature did not acknowledge this act until June 7, 1848 (Chinen 1958:16; Moffat and Kirkpatrick, 1995:48-49), known today as *The Great Mahele.* The *mahele* did not actually convey title to the various *ali'i* and *konohiki*; it essentially gave them the right to claim the lands assigned to them--these lands became known as the *konohiki* lands. They were required to present formal claims to the Land Commission and pay a commutation fee, which could be accomplished by surrendering a portion of their land to the government (Chinen 1958:20).

The government could later sell these lands to the public. Upon payment of the commutation fee, the Minister of Interior issued a Royal Patent to the chief or *konohiki.* The last one-third was originally designated to the *maka`āinana,* but not acted on--instead it was set aside to the government, "subject always to the rights of the tenants" (Moffat and Kirkpatrick, 1995:41-43; see also Chinen 1958:15-21). *Ili kupono* were the only *ili* [parcel] recognized in this process, all the *ili* and lesser divisions were absorbed into the *ahupua'a* claim (Chinen 1958:20). In 1892 the legislature authorized the Minister of Interior to issue Royal Patents to all *konohiki* or to their heirs or assignees where the *konohiki* had failed to receive awards for their lands from the Land Commission. The Act further stipulated "that these Royal Patents were to be issued on surveys approved by the Surveyor General of the kingdom..." (Chinen 1958:24; Moffat and Fitzpatrick 1995:41-43). Kamehameha III formalized the division of lands among himself [one-third] and 245 of the highest-ranking *ali'i* and *konohiki* [one-third] between January 27 to March 7, 1948. He acknowledged the rights of these individuals to various land divisions in what came

to be known as the *Buke Mahele* or 'sharing book.' Many *ali`i* were awarded portions of or entire *ahupua`a*. Many ali`i, especially descendants of the royal line, inherited very large land awards on all the islands, including Ni`ihau. This occurred because the royal children of Kamehameha I did not leave any immediate descendants. Their lands were subsequently awarded to descendants from lesser lines.

III-C-2. Overview of Pa`ala`a-uka Ahupua`a History

The *ahupua`a* of **Pa`ala`a** [kai and uka] has a long, industrious and interesting history. For several centuries [1300s-1600s] it was the part of the domain of the Lō Ali`i. After Kamehameha I conquered O`ahu in 1795, he re-distributed all the conquered lands among his loyal chiefs, warrior and relatives. Some of the land remained for some time in the Kamehameha legacy. This was the case for Pa`ala`a Ahupua`a. Kamehameha III awarded it to Victoria Kamamalu, grand-daughter of Kamehameha I. From there some of the lands were purchased by the Robinson-Holt Estate which eventually became part of the holdings of Castle & Cooke, Ltd. in various forms and land uses. It continues to be a part of the Castle & Cooke, Ltd. history up to the present.

C-2-1. Victoria Kamamalu Award. The *ahupua`a* of **Pa`ala`a** [kai and uka] was awarded [Ali`i Award LCA # 7713, 50 apana according to Mahele Book 1-6 (6-11)] to Victoria Kamamalu, granddaughter of Kamehameha I, daughter of Kinau and Mataio Kekuanaoa, sibling of David Kamehameha, Moses Kekuaiwa, Lot Kapuiwa [Kamehameha V] and Alexander Liholiho [Kamehameha IV]. Her father Mataio Kekuanaoa and John I`i, executor of her estate (Mahele Book 1,3,5, 6, 8,10) relinquished the following lands: 23 *ahupua`a* in Hawaii; 3 *ahupua`a* on Kauai; 8 *ahupua`a* on Maui; 1 *ahupua`a* in Molokai; the island of Ni`ihau; 11 *ahupua`a* on O`ahu; 2 *`ili* on Kauai; and 48 *`ili* in Honolulu. However they received on her behalf 18 *ahupua`a* and 4 *`ili* on Hawaii; 2 *ahupua`a* on Kauai; 1 *ahupua`a* on Lanai; 7 *ahupua`a* and 1 *`ili* on Maui; I *ahupua`a* on Molokai; and 11 *ahupua`a* and 11 *`ili* on O`ahu, including **Pa`ala`a.** They "surrendered in lieu of commutation (as listed in Indices 63-64) all the lands of Hana, Maui.

Victoria Kamamalu died on May 29, 1866 leaving her father Mataio (Matthew) Kekuanaoa her sole heir (Barrère 1994:222-228). However, before she died some of her lands were already being transferred to others by authority of her Guardians as recorded in the Grantee Index 1845-1869 A-K and Grantee Index 1845-1869 L-Z (BOC 2001a).

Table 4. Estate of Victoria Kamamalu land transfers in Pa`ala`a Ahupua`a. [A-K 1845 – 1869 Grantee Index]

Pg	Ins	Grantee	Grantor	DOI	Bk	Pg	Rcd Date	NOA	NOL
159	C/M	Holt, James R.	Holt, Owen	10/9/1865	20	318	12/4/1865	1/2int LS+	Halemano
159	B/S	Holt, Owen J.	Holt, James	10/9/1865	20	317	12/4/1865	1/2int LS+	Halemano

Table 5. Estate of Victoria Kamamalu land transfers in Pa`ala`a Ahupua`a. [L-Z 1845 – 1869 Grantee Index]

Pg	Ins	Grantee	Grantor	DOI	Bk	Pg	Rcd Date	NOA	NOL
146	L	Robinson, James et al.	Kekuanaoa	5/29/1842	2	185	11/20/1846	pc land	Helemano
146	S/D	Robinson, James et al.	VK/bG	1/24/1852	5	165	1/28/1852	12 pcs land	Paalaa
146	C	Robinson, James et al.	Kaahumanu	11/17/1856	5	170	11/18/1856	12 pcs land	Paalaa
149	S/D	Robinson, James/Co.	VK/bG	1/21/1852	5	170	11/18/1856	12 pcs land	Paalaa
149	C	Robinson, James/Co.	Kaahumanu	11/17/1856	5	170	11/18/1856	12 pcs land	Paalaa

*Legend:
(Pg) Page; (Ins) Instrument; (DOI) Date of Instrument; (Bk) Book; (Rcd Date) Date Received; (NOA) Number of Award (NOL) Name of Land (L) Lease; (S/D) Sheriffs Deed; (C) Confirmation; (M) Mortgage; (VK/bG) Victoria Kamamalu by Guardians; (est) Estate of by Administrators; (int) interest; (LS+) Livestock, carts, tools.

When Mataio Kekuanaoa died November 24, 1868, all of the remaining Kamamalu lands were inherited by her half-sister Princess Ruth Ke`elikōlani [her first husband was William Pitt Leleiohoku; her second husband was George Hueu Davis, son of Issac Davis advisor to Kamehameha I] (Holt 1993:180).

C-2-2. Robinson & Holt Connection. Part of the land history of Pa`ala`a Ahupua`a and its *`ili* Halemano or Helemano involves Robinson & Company [James Robinson, Robert Lawrence & Robert Holt] and the Robinson and Holt families. Descendant John Dominis Holt, IV provides some of this history in the following excerpts.

> Robinson's first wife was a close relative of the High Chief Kalanimoku...[who] gave Robinson and Lawrence the choice waterfront location Pakaka Point (now the area of Aloha Tower).... [the recently widowed] Robert Holt...settled in Honolulu...and very quickly offered his credentials and cash to Robinson and Lawrence. They accepted both and gave Holt a one-third interest in the firm. Whaling in the Pacific was at its height at this period [1830s] and Honolulu was one of the major ports of call (Holt 1993:265).

> Holt established a family tie with his partner Robinson by marrying Tauwati, or Caroline Robinson, who was the daughter of James Robinson's first wife [1835]. [Holt, Robinson and Lawrence] made a great success of their shipyard enterprise. They were the richest men in the Kingdom in 1850.... Two years after the Mahele, my great great-grandfather Holt and his partners...bought several large estates, including the ahupua`a of Makaha, from the High Chief Abner Paki, father of Princess Bernice Pauahi Bishop. From the estate of Victoria Kamamalu (she was...only eleven years old), they purchased the lands known as **O`ahu Nui, Wahiawā, Helemano, and Waialua** ...(Holt 1993:280).

> When the lands of Robinson and Company were divided between the partners, Robert W. Holt (former brother-in-law of Captain John Dominis, consort of Queen Liliu`okalani), my great great-grandfather, received the ahupua`a of Makaha and the great Halemano-Waialua `ili. It became a country home of the Holts in 1851. In time the Holts created an estate there centered around ranching (Holt 1993: 32-33).

> When they dissolved their firm in 1860, there were assets exceeding half a million dollars. Holt's share was a hundred thousand dollars in cash and the lands of Makaha, **Helemano, and Waialua, which totaled nearly thirty thousand acres.** Robert Holt...took all the rural lands of the company (except for the ahupua`a of O`ahu Nui, now called Waipahu) on behalf of his three sons--John Dominis Holt I, James Holt, and my great grandfather Owen Jones Holt (Holt 1993:279). Eventually, Owen Jones Holt, the youngest son, took control of all the lands, leasing them independently from the Robert Holt Trust Estate...(Holt 1993:280).

> [Great] Uncle William [K. R. Holt] lived in the style of a great old chief with his sampan, locomobile, and a huge estate at Waialua, with an orchard, taro patches, and a flower garden.... He had made a judicious and profitable arrangement with **Castle & Cooke** for the sale of his share of the Holt lands at Wahiawā, Helemano, Waialua, and Haleiwa. The family once owned all of the land from the south edge of Wahiawā town to Hale`iwa Beach, an enormous *`ili* acquired from the **Princess Victoria Kamamalu estate.** Uncle William's arrangement with the sugar people paid him a handsome monthly income for life..... In the Waialua and north shore area, he was looked upon as the local *ali`i* (Holt 1993: 287).

> In the nineteen thirties, my great uncles went to court in an attempt to recover the one-third interest in the Waialua and Helemano lands inherited by my great great-uncle John Dominis Holt I upon the dissolution of my great great-grandfather R. W. Holt's trust in 1906.... There are nine volumes on the case in the library of the United States Supreme Court (Holt 1993:339).

During part of the land history of Wahiawā/Helemano/Wai`alua lands when it was owned by the Holt Estate, some of it was being used by the Waialua Agricultural Company, Limited, [WACO] Hawaiian Pineapple Company, Limited and Castle & Cooke (see Holt 1993:340-341).

III-C-2-3. Castle & Cooke. Samuel Northrup Castle and Amos Starr Cooke were members of the eighth missionary company, sent to the Sandwich Islands in 1837 by the American Board of Commissioners of Foreign Missions, Boston to "handle the business of the missions." Castle assisted the

ailing Levi Chamberlain, and Cooke and his wife started the *Young Chief's Boarding School*. After Chamberlain died they operated the 'Mission Depository' as fiscal agents, then later after much discussion with Boston, they were allowed to open their own store in 1851 as wholesale and retail merchants, as long as they kept up with Mission business (Smith 1942:7-9). In 1852 the Royal Hawaiian Agricultural Society, which Castle helped organize, experimented by bringing 180 Chinese laborers to Hawaii from Hong Kong (Taylor et al 1976:76). In 1858 they began buying stock in sugar plantations started by friends. J.B. Atherton [Cooke's son-in-law] joined Castle & Cooke in 1858 (Smith 1942:8-9).

In 1864 Castle & Cooke backed two missionary children [Warren and Levi] of the older Levi Chamberlain, in a sugar venture on lands in Waialua, O`ahu. The Chamberlains owned 588 acres of adjoining lands, but eventually lost everything to Bishop Bank who sold it to O.R. Wood, who had borrowed money from Castle & Cooke, then went bankrupt, leaving Castle & Cooke to foreclose. Young Levi ran the plantation until Castle & Cooke sold the mortgage to Halstead and Gordon. When Gordon died Halstead bought his interest for his sons who paid off the mortgage and turned the plantation into a moneymaker for the Halsteads and Castle & Cooke. This plantation was later to become "the nucleus around which Castle & Cooke was to build the prosperous Waialua Agricultural Company (Taylor et al. 1976:80-81). In 1894, at the age of 86, Castle died. *Castle & Cooke* became *Castle & Cooke, Ltd.* when Joseph Ballard Atherton who represented the Cooke family, and George P. Castle and James B. Castle decided to incorporate the business. In 1898 they sold their merchandise business to B.F. Dillingham and became general agents and stockholders for several companies [i.e., Kohala Sugar Co., Paia Sugar Plantation, Onomea Sugar Co., Haiku Sugar Co., Halsteads, Matson Navigation and many others (Smith 1942:9-11; Taylor et al. 1976:71, 122-127).

After annexation in 1898, the sugar prices began to rise and profits from Ewa Plantation allowed Castle & Cooke to consider other ventures. Dillingham also saw an opportunity to expand his railroad and his company in the northshore area. He proposed a consolidation with Halstead Plantation and turned to Castle & Cooke, Ltd. This venture became the Waialua Agricultural Company, Ltd. [WACO] in October 1898 (Taylor et al 1976:129).

III-C-2-4. Waialua Agricultural Company, Ltd. [WACO]. The Waialua Agricultural Company, Ltd. was incorporated October 11, 1898 with an agreement by and between Joseph B. Atherton (pres), Edward D. Tenney (Sec), Benjamin F. Dillingham (VP), William A. Bowen (Treas), Henry Waterhouse (Auditor) and Mark P. Robinson. [Wm. W. Goodale was Manager] (WACO 1898, 1899). Their agents were Castle & Cooke, Ltd. of which J.B. Atherton was president. They immediately began modifying the landscape with waterways, reservoirs, roads, bridges, fences, railroads, wells, mills, buildings, steam pumps and live stock. Over 900 acres of sugar cane was planted for the crop of 1900 in May 1899 "on unused lands that could be watered from the Kaukonahua stream" while the new mill was being built. (WACO 1899:11-12).

The Seventh Annual Report ... ending December 31, 1905 Goodale reports on the "Water Development" and "New Land."

> Very little has been done this year to develop new water supplies, except to complete the Poamoho Ditch and take out the water of the Helemano stream at an elevation of about 700 feet. From this point the water of the Helemano stream can be used on all the lower lands of Helemano, Kaheka, the Valley, and Paalaa. Work on the Anahula and Upper Helemano ditches was begun early in the year and carried on until May.... The Wahiawā Ditch Extension has been dug across Kemoo, Kaheka, Helemano and partly across Opaeula....
>
> **In April 1905, we came into possession of Helemano, belonging to the Holt Estate. By leasing these lands our fields are now continuous, and we have made a large addition to our area of cane land** (WACO 1906: 3-6).

The Eighth Annual Report ... ending December 31, 1906 Goodale reports on the crops and weather conditions and the use of the Helemano lands. 367 acres of crop 1907 cane are growing "on the Helemano lands, watered from the Wahiawā reservoir and the Poamoho ditch." Of the crop 1908, "1406 acres of plant cane are growing on the Helemano land, acquired by the Company in April, 1905. This is new land and is irrigated entirely by water from the Wahiawā, Poamoho and Helemano Streams" (WACO 1907: 2-3). *The Ninth Annual Report* ... ending December 31, 1907 Goodale reports on the "Water Development."

> The only expenditure...during the year has been for the ditch that takes the water out of the Helemano gulch and delivers it to the upper Helemano lands. The total cost of this work will be about $20,000 including the cost of excavation, intake, weir and extension of ditch for delivering the water into the Helemano Reservoir and the Wahiawā ditch. The stream has a large flow and has not failed during the nine years it has been under observation. The ditch is 12,1132 feet long, 10, 421 feet of tunnels, and 1, 567 feet of open ditch. From the lower end of the Helemano Ditch the extension is 8,650 feet long to a point at an elevation of 1,050 feet, where the water can be taken into the Wahiawā ditch and reservoir system... (WACO 1908: 5).

Permanent improvements for the year included: clearing new land; the Helemano Reservoir; Helemano Upper Ditch; buildings for laborers on new lands, and new houses for Portuguese and Spanish immigrants.

> We have opened up a large tract of land suitable for pineapples at an expense of $1,862.45 for roads and bridges, and have leased 825 acres of the land on favorable terms.... All the difficult and expensive land clearing is finished and so much of the Railroad, Ditch and Reservoir systems have been completed, that but little more remains to be done.... The plantation has been at great expense during the year for the cost of bringing Portuguese and Spanish laborers to the country, has built a large number of new cottages for them, has built new camps for laborers on the new lands, and has re-modeled the Japanese Camps.... By the use of the Helemano ditch there will be an additional saving in the cost of water for irrigation... (Goodale 1908: 6-7).

Assets for the year included real estate, all their improvements, and stocks in Wahiawā Water Co, Ltd., Sugar Factor's Co. Ltd., Kaala Land Co., Ltd., Anahulu Land Co., Ltd., Kawailoa Land Co., Ltd., Helemano Land Co., Ltd., sisal cultivation, and etc. (Robinson in WACO 1908:10).

The *Tenth Annual Report*...ending December 31, 1908 indicates that the Helemano Ditch was being completed and more attention are being paid to pineapple.

> An order has been placed for two miles of 25 lb. Rails. This is to connect, for the first time, the three sections of the Plantation – Waialua, Helemano, and Kawailoa, along the upper main line of our track. The road-bed and the bridge across the Helemano Stream are finished and ready for rails.... $4,055 expended in water development completed the Helemano ditch referred to in the last annual report. The weather has been so dry that the flow in the Helemano stream, like all other streams in this District, has been unusually small and there have been no nearby freshets since the ditch was finished on March 20, 1908.... We have leased 1100 acres of upper Helemano and Wahiawā to pineapple plantations and have a large area of similar lands suitable for any crops that do not require irrigation (Goodale 1909: 6-7).

The *Eleventh Annual Report*...ending December 31, 1909 has additional news about the Helemano Ditch; as well as Filipino and Russian workers, Forestry activity and pineapple land leases.

> This year we are extending a branch of the main line on Kawailoa and another on Halemano.... It will be necessary to go on building small houses for laborers and their families. The introduction of Filipinos and Russians require new camps with complete water systems.... We have planted about 20,000 trees of different kinds, for a future supply of firewood, fence posts and railroad ties. The ravines in the upper lands of Kawailoa are rapidly filling up with forests of young koa, showing the effect of the removal of all cattle from the lands.... 2,873 acres of our upper lands are now under lease to pineapple planters (Goodale 1910: 4, 6-8).

In the *Twelfth Annual Report*...ending December 31, 1910, manager Goodale list the types of trees that are being planted: Eucalyptus, Algaroba, Ironwood, Monterey Cypress, Pride of India, Japanese Cedar, Black & Golden Wattle, Fruit trees, and Silk Oak.... There are now 3,549 acres of our upper lands under lease to pineapple planters (WACO 1911:7).

The *Thirteenth Annual Report*...ending Dec 31, 1911Goodale reports the following:

> The new Kamananui ditch will supply water for about 150 acres of new land on Kawailoa and we may be able to plant another tract of 150 acres on Helemano to be irrigated with water from the Helemano-Poamoho ditch system.... The Helemano and Poamoho ditches... combined flow...has delivered 3,827,865,384 gallons during the year (WACO 1912:4-5).

Often field methods are reported in the annual reports. Goodale reported in *The Eighteenth Annual Report*...ending December 31, 1916 the following:

> The land was plowed to a depth of about sixteen inches, furrowed out on contour...it has been kept thoroughly tilled according to the methods followed in the dry districts.... We have plowed also about 250 acres of the older Helemano fields that have been fallowed [sic] for one year. The furrowing out this year is to be done with Caterpillar tractors. We have found that a 30 or 45 horse power tractor with two men will do more work and better work in our heavy soils than an old style furrowing out plow with its team of eight or twelve mules and three men (Waco 1917:7-8).

In the "Forestry" section of *The Twenty-third Annual Report*...ending December 31, 1921, Goodale reported that "The Hawaiian Sugar Planter's Association's Department of Forestry is planting trees on the upper part of Helemano, on abandoned pineapple lands and on burned over areas and side of gulches as part of a comprehensive plan for conserving water" (WACO 1922:7).

"The 700 acres of cane on Helemano above the Wahiawā ditch, referred to in my last report, have been abandoned for cane cultivation and turned over to the Hawaiian Pineapple Co., Ltd." stated Goodale in *The Twenty-fourth Annual Report*...ending December 31, 1922. As part of a transaction with the Hawaiian Pineapple Co., Ltd., [HPC] the Waialua Agricultural Company, Limited, "was given the opportunity to acquire a one-third stock-holding interest" in HPC. Under this arrangement HPC gained control of 12,150 acres of pineapple lands for a lease of 17 ½ years with options (WACO 1923:5-6, 9).

Goodale summarized the last twenty-five annual reports for his *Twenty-fifth Annual Report*...ending December 31, 1923 and discussed the various crops years. "A large tract of land on Helemano that formerly drew upon our Helemano ditch system for water had been withdrawn from the cane area and put into pineapples."

> At the time the Waialua Agricultural Co., Ltd., was organized in October, 1898, it took over the old Halstead Plantation with about 600 acres of cane, certain leases of large tracts of unimproved land covered with lantana and stones, several hundred acres of rice and ranch land, a small mill, one five-million-gallon pumping station, no reservoirs or railroads, one small set of steam plows and other equipment of a small plantation. We now have 70 million gallons per day pumping capacity, 30 miles of permanent railway, the Wahiawā reservoir, capacity 2,540,000,000 gallons, and 33 other reservoirs, ditches to bring out the water of the Poamoho, Helemano, Opaeula, Kawaiiki, Kamananui and Waimea gulches, a good mill, six locomotives, cane cars, six steam plow engines and plows, tractors, trucks, buildings and about 9,000 acres of cane....
> Unfortunately for the Company and much to the disappointment of the many stockholders and everyone connected with the Plantation, we could not acquire a large wedge-shaped tract of land cutting the Plantation into two widely separated parts until April 1, 1905 – too late for planting a large area that year.... The most important and far-reaching events in the history of the Plantation were: securing a lease of, and later buying the land just previously referred to: the building of the dam at Wahiawā, finished March, 1906; and the arrangement with the Hawaiian Pineapple Co., Ltd., in 1922 (WACO 1924: 6-7).

Treasurer White reported in the *Annual Report of the Waialua Agricultural Company, Limited*...for the year ended December 31, 1934 that Castle & Cooke, Limited exercised its option to purchase preferred stock [20,000 shares] of Hawaiian Pineapple Company, Limited; he also reported on the court case regarding the Holt interest [lands] (WACO 1935:17; see also WACO 1938; WACO 1939; WACO 1941). Midkiff reported in the 1935 annual report that each month the doctor and nurse hold baby clinics in the Mill, Kawailoa, and Helemano Camps" (WACO 1936:4). In the annual report for 1938 we see WACO moving "away from the old 'hand and hoe' cultivation methods...to a number of light caterpillar tractors equipped with discs for weed control with split moldboards for loosening up track lines...." However, mule-drawn cultivators are still being used (WACO 1939:10). Midkiff reported in the annual report for 1940 that the following camps or villages have been eliminated: Mokuleia 2, 3 and 5; Mill 2 and 11; Helemano 1 and 8; and Kawailoa 6 (WACO 1941:13).

The "War Years" were very difficult for everyone and the Waialua Agricultural Company, Limited was no exception as Midkiff write in his *Annual Report for the Year 1942*.... (WACO 1943:2-3).

> Our preliminary experiments in vegetable cultivation in this district, which is not particularly suited to the production of temperate-zone crops, came in good stead this past year. Early in season we planted to vegetables a number of areas. These crops were raised in cooperation with the Office of the Military Governor. A total of 287,703 pounds of lima beans, over 100,000 pounds of string beans, 15,000 pounds of carrots and other produce were raised and marketed. In addition to this 1,233,524 pounds of Irish potatoes were grown as a plantation enterprise.

In the *Report to Employees, 1946* it mentioned that "the United States government condemned several hundred acres of our property for its use. The largest tracts taken consist of 304 acres in the upper Helemano area for the U.S. Signal Corps radio station and 133 acres for the Mokuleia Airport (WACO 1946:n.p.).

The annual report for 1948 [50th anniversary] provided a recap of the company from its pre-history to its organization in 1898 up to the current year. It was also reported that "on December 14, 1948, the 50-year-old corporation was reorganized into two new companies, each with an authorized capital of $7,500,000. The new Helemano Company, Limited, includes the non-sugar business of the original company, such as pineapple land rentals and dividends from Hawaiian Pineapple Co. The new Waialua Agricultural Company, Ltd. represents the sugar-producing end of the original company (WACO 1949:n.p.).

On December 15, 1967 the shareholders of Waialua Agricultural Company, Limited were advised that the Board of Directors of the company had voted to approve a merger "under which Castle & Cooke, Inc. would acquire all of the outstanding capital shares of Waialua [WACO] through a wholly-owned subsidiary for that purpose (Bush 1968 In WACO 1968).

III-C-2-5. Hawaiian Pineapple Company, Ltd. [Hapco]. The Land Act of 1895 allowed Byron O. Clark and others to homestead a tract of land called Wahiawā in the summer of 1898. They formed the Hawaiian Fruit and Plant Co. and began settling and farming the land. One of the members, Alfred W. Eames also founded the Hawaiian Island Packing Company in Wahiawā. This later became the Del Monte Corporation (Nedbalek 1984:62-65; PGAH 1977:15; C&CF 1973b:4). In 1900, 61 acres of untilled Wahiawā land was sold at a public auction to 22-year-old James D. Dole, a recent Harvard graduate, and second cousin of Sanford B. Dole, [republic and territorial governor] (Nedbalek 1984:62-65). On December 6, 1901 James Drummond Dole incorporated and started the Hawaiian Pineapple Co. on 12 acres of land in Wahiawā. Albert F. Judd was the company's first president (C&C, Inc. 1969:1). Dole was not interested in the fresh-fruit market, but in canning the fruit for retail. His first laborers [other than friends and family] were Chinese immigrants (WCP 1934:3). One of his main problems was getting water. Fortunately the Wahiawā Water Co. was founded the same year he bought his property, by agreement between the Waialua Agricultural Co., the government, and the stockholders of the Wahiawā

colony cooperative. Water rights would be extended to the homesteaders for 35 years." Dole convinced others to invest in his business. In 1903 he built a small cannery next to his Wahiawā land (Nedbalek 1984:85-86), and replaced Judd as president (C&C, Inc. 1969:1).

Dole persuaded Walter Dillingham of Oahu Railway [also one of Dole's Directors] to extend the railway to Wahiawā. Construction started in 1906 and was completed in 1907 (Nedbalek 1984:85-86); the same year Dole moved his canning operation to Iwilei (C&CF 1973:1; C&C, Inc 1969:2). "Between 1907 and 1909, Waialua Agricultural Company leased 3,000 acres of land not suitable for sugar to Dole's Hawaiian Pineapple Company and other pineapple operators. By 1913...[the] planters had more than 6,000 acres of Waialua's lands in pineapple." In 1922 Dole bargained with Waialua for 12,000 acres of their non-sugar lands on a "seventeen-year prepaid lease with the right of renewal. For the lease and $1,250,000 in cash, Dole would give Waialua one-third ownership of his Hawaiian Pineapple Company." Castle & Cooke was the dominant stockholder [20 percent] of Waialua Agricultural Company and its agent (Taylor 1976:165-166).

In 1918 Hapco "sold its interest in Haiku Fruit & Packing Co. Ltd., of Maui and bought all stock of Hawaiian Fiber Co., which had a long lease on 1,600 acres of land" (C&C, Inc. 1969:4). In1920 the company bought a small 788 acre-plantation known as Lyman property of fee simple pineapple land. The1922 annual report noted that land arrangements with Waialua Agricultural Co. Ltd., were completed. Hapco obtained permanent tenure of 4,000 acres of lands the company had been using, securing 8,000 additional acres. A lease held by *Calpak* was transferred by the land-owner Waialua Agricultural Co. to Hawaiian Pineapple Co. in 1925. "In this transaction, Waialua received a one-third interest in Hawaiian Pineapple Co. which in turn obtained a paid-up lease on 11,771 acres of Waialua lands." At the end of 1932 a reorganization of Hawaiian Pineapple Company occurred. "James Dole (president and general manager from 1901 to 1932) became chairman of the board, young Atherton Richards succeeded him as president and general manager, Castle & Cooke [was] appointed agent" of Hawaiian Pineapple Co. Ltd. (WPC 1934:3-4). 'Dole' brand label was introduced (C&C, Inc. 1969:6).

In 1939 the company exercised its option to extend its lease with Waialua Agricultural Co., Ltd. for 20 more years. In the 1940s World War II had a far-reaching affect which extended to pineapple operations. In 1946 a 380-acre tract of land was acquired in Wahiawā for plantation housing—"later to become known as Whitmore Village" – they would later be made available to employees for purchase in 1953 (C&C Inc. 1969:9).

III-C-2-6. Dole Plantation Company. Castle & Cooke, Inc. put together a "Historical Fact Sheet" about Dole Pineapple in 1977, but much of the history of Dole Plantation comes from records, reports and articles in the Dole Collections archives located in the Hawaiian Collections of Hamilton Library at the University of Hawaii. *Dole Plantation Company* was founded in 1901 by James Drummond Dole as the *Hawaiian Pineapple Company.* A reprint article in December 1954 *The Reader's Digest* by Frank J. Taylor, contained the history of James D. Dole and the pineapple industry in Hawaii. It also had a note stating that the Hawaiian Pineapple Company, Limited "is now called Dole Company" (Taylor 1954:n.p.). In 1958 at the age of eighty, James Drummond Dole died in Honolulu on May 14, 1958. Dole stockholders approved the merger of the company into Castle & Cooke, Inc. in 1961 (C&C, Inc 1969:10-11). In 1965 Dole Corporation became Dole Company, a division of Castle & Cooke, Inc. (C&C, Inc. 1977:13).

III-C-2-7. Helemano Company, Ltd. [HCL]. "Helemano was a holding company organized in 1948 to take over all of the assets of Waialua Agricultural Company other than the mill equipment and 200 acres of land around the mill. These assets included Waialua's interest in Hawaiian Pineapple Company and 27,000 acres of land, which produced substantial annual rental payments" (Taylor 1976:225). The Articles of Association were signed on December 14, 1948 (HCL 1952:8). "Of the 26,971 acres owned by Helemano, 20,681 are under lease...6,246 acres are leased...to Waialua Agricultural Company, Limited

of which 1,821 acres are waste and forest and 4,425 acres are used for sugar production. Hawaiian Pineapple Company leased 6,413 acres until 1962 (HCL 1950:2).

It was only later – in 1958, when Helemano Company, Ltd., was merged into Castle & Cooke, and in 1961 through the Dole merger – that Castle & Cooke became the substantial Hawaiian landowner it is today (Taylor 1976:225, 231). The merger was announced at the annual stockholders meeting on April 30, 1958. "Castle & Cooke, Limited will be the surviving corporation in the merger. Its name will be changed to Castle & Cooke, Inc." (HCL 1958:1).

III-D. Previous Surveys/Studies.

III-D-1. Handy & Handy (1930s). In the 1930s E.S. Craighill & Elizabeth Green Handy set out to study the Hawaiian as a "native planter." Their observation was that Hawaiians were more than just fishermen. They found that "for every fishermen's house along the coasts there were hundreds of homesteads of planters in the valleys and on the slopes and plains between the shore and forest." They believed that "the Hawaiians, more than any other Polynesians, were a people whose means of livelihood, whose work and interest, were centered in the cultivation of the soil" (Handy & Handy 1978:vi). The following excerpt is from their work *Native Planters in Old Hawaii: Their Life, Lore, and Environment:*

> Westward from Waimea is a long, rather barren strip of coastal land, and beyond this an area rich in agricultural potential which is now given over to the operations of the largest sugar plantation on Oahu. Kawailoa Stream was the first in the system of large streams watering this rich area, including the complex of those, which continue to form the Waialua River. These drain the watershed of a long stretch of the leeward slopes of the northern Ko`olau range. There was Helemano Stream, with many terraces along its course. On flat lands between the junction of Helemano and Poamoho Streams there were terraces, as also in Kaukonahua Valley. In the gulches of these streams sweet potatoes and bananas were planted around home sites along the ridge, and near taro patches at the bottom of the gulch.
>
> Inland from Kawailoa and south of these stream systems is Wahiawā on the broad slope descending from the Ko`olau range, opposite to Kualoa and Kahana on the eastern flank. It is very far from the sea in any direction. There was quite a sizable population there if we can judge from the various areas of *lo`i* northwest of the present town of Wahiawā. There must have been extensive sweet potato and yam plantations here. It is one of the few places where sweet potatoes are known to have been irrigated. Water was brought to the northern *lo`i* from Helemano Stream. Inland along that stream there were terraces. There were extensive terraces that drew water from Wahiawā Stream, both above and below the present town. There were many small terrace areas along the sides of the valleys of all the streams of this general area. Above and west of the site of the present town was Kukui-o-Lono, a place famous in legend. In its vicinity are a number of *lo`i* developments. Kūkaniloko was the name of an ancient high chief of Oahu who is said to have made the first *lo`i* here.... Wahiawā was from very ancient times identified with the ruling *ali`i* of Oahu.... (Handy & Handy 1978:464-465).

III-D-2. Soil Survey Interpretations (1971). In 1970-71 the U. S. Department of Agriculture Soil Conservation Service-Honolulu, conducted a soil study "Soil Survey Interpretations for Recreational Uses, Islands of Oahu and Kauai" for the State Department of Planning and Economic Development. A soil study ascertains general pattern of soils in an area.

Helemano-Wahiawā General Soil Area

> This general soil consists of well-drained, moderately fine, and fine-textured soils formed from material weathered from basalt. It occupies broad nearly level to moderately sloping uplands dissected by very steep gulches. Elevation ranges from 100 to 1,200 feet. Annual rainfall is 25 to 50 inches in most areas but is as high as 60 inches. Most of it occurs during the winter months. Mean annual soil temperature is 71° to 75 °F.... Helemano soils are used for pasture. Wahiawā,

Kunia, Lahaina, and Molokai soil are used extensively for sugarcane and pineapple. Sugarcane is grown under irrigation, and pineapple is grown without irrigation except in the driest areas (SCS 1971).

III-D-3 Environmental Assessment Report: Helemano Military Reservation (1978). In 1976-78 R.M. Towill Corporation and Marshall Kaplan, Gans, Kahn & Yamamoto conducted a joint venture: "Analysis of Existing Facilities Environmental Assessment Report, Master Plan, Basic Information Maps: Helemano Military Reservation" for the U.S. Army Engineer Division, Pacific Ocean Corp of Engineers. The Helemano Military Reservation was acquired by Department of the Army in 1944 under the Emergency Powers Act for the development of a major communications station. However, radio and operational facilities had already been constructed in 1943 in the latter part of WWII. In 1956 the facility was named Helemano Military Receiver Station as a permanent sub-installation of Schofield Barracks. Its current designation is Helemano Military Reservation, headquarters and operation facilities for the 125th Sig. Bn, 372nd ASA Co., and the 521st Sig. Co. – units of the 25th Infantry Division. It occupies 282 acres of land (Towill 1978:II-1, 2) and abuts the Dole Plantation property (south); it's located northeast of the Aloha Gardens project area. The study determined that there were no archaeological or historical sites on the Reservation.

A bird survey in 1976 and 1977 conducted by Robert J. Shallenberger, Ph.D. of *Ahuimanu Productions* (1977) as part of this study, recorded various introduced birds in the Helemano Reservation--only the ricebird was seen in high numbers (Towill 1978:II-21-26):

III-D-4. Stormwater Pollution Study (RSC 1981). The Russ Smith Corporation, Consulting Engineers, conducted a stormwater pollution study at Fort Shafter, Tripler Army Medical Center and Helemano Military Reservation for the Department of the Army-PacDiv Corps of Engineers in 1979-80.

> Helemano Military Reservation was formerly a pineapple field and the lands adjacent to the southwestern and western boundaries are still utilized as commercial pineapple fields.... All of the soils found at Helemano Military Reservation belong to the Wahiawā series (WaA and WaB).... Station 875 Helemano rain gauging station, located approximately 0.2 mile east of the Reservation at an elevation of 1,160 feet above mean sea level...best describes the rainfall for Helemano Military Reservation...[with] a mean annual rainfall of 60.97 inches (RSC 1980:26-27, 31).
>
> The receiving waters of stormwater runoff from Helemano Military Reservation are Helemano Stream to the north of the reservation, and Upper Helemano Ditch and Upper Helemano Reservoir to the south. These receiving waters ultimately flow into Kaiaka Bay, which is situated along the coastline between Waialua and Haleiwa. Helemano Stream flows into Paukauila Stream, which later enters Kaiaka Bay. Flows from Upper Helemano Ditch enter Upper Helemano Reservoir, which is managed and used by Waialua Sugar Company for irrigation of its surrounding sugar cane fields. Overflows from Upper Helemano Reservoir are discharged to Poamoho Stream, one of the tributary streams of Kaukonahua Stream which flows into Kaiaka Bay. The Helemano Sewage Treatment Plant, a 55,000 gallon per day facility which serves Helemano Military Reservation, discharges secondary effluent to Helemano Stream.... Review of the monthly discharge monitoring reports in 1979 for Helemano Sewage Treat Plant indicate that the plant is meeting the discharge requirements except for settleable solids and fecal coliform (RSC 1980:33, 35)

III-D-5. Final EIS for Army Family Housing...Helemano Military Reservation (Wanner 1988). The need for new housing prompted this study before new construction could begin. Several recommendations were made.

> Water for Helemano is pumped from the U.S. Army Deepwell Pump Station in East Range but cannot exceed the amount allocated by the State Department of Land and Natural Resources.... The transmission line to HMR, installed in 1940 and badly corroded or tuberculated, would be replaced or completed by a new 8-inch line from NAVCAMS, leaving the old line in place as a backup (Wanner 1988:C-8-10).

III-E. Previous Archaeological Studies

Very few in-depth archaeological studies have been conducted in the project area because of the extensive modification to the landscape in the last 100 years by agricultural ventures--primarily ranching, sugar cane and pineapple, although several vegetable crops were grown during the World War II era, as well as a short venture in sisal cultivation by the Hawaiian Fiber Company, Limited. Colonies of sisal are still found in the gullies and valley southeast of the project area.

Abraham Fornander collected information and legends in the 1800s; Thomas G. Thrum translated Fornander's collections and they were published by Bishop Museum in the early 1900s. Thrum also collected and published countless articles, lists of heiau, and other bits of information for his *Hawaiian Annuals* in the late 1800s to early-1900s. Others have and continue to refer to both Fornander's and Thrum's seminal works. McAllister (1976) and Sterling & Summers (1978) were no exception. However, both were more involved with the "archaeology" of the sites although they both included the *mo`olelo* if known. McAllister did his surveys and mapping of sites in 1930. Sterling and Summers used McAllister's work as a base and compiled more data and added sites discovered after McAllister's 1930 survey. Their compilations were first published in 1962 (Sterling and Summers 1978:viii, ix). Limited excerpts of the works of McAllister (1933, reprinted 1976) and Sterling and Summers (1962, reprinted1978) are presented below along with a report by John Stokes regarding petroglyphs in the Halemano area.

III-E-1. Stokes. The following excerpt is from the notes of John F.G. Stokes, as well-known researcher in the early 1900s, on 'Oahu Petroglyphs.'

> At Helemano, in Waialua, Mathison [Gilbert Farquhar Mathison, *Narrative of a visit to Brazil, Chile, Peru and the Sandwich Islands*, London (1825)] saw a stone covered with petroglyphs, of which he gives an illustration of a drawing taken on the spot. A copy may be seen in the Hawaiian Annuals for 1898, page 122, and 1904, page 180. While some of the pictures may pass for Hawaiian work, others do not resemble anything yet noticed in this group, nor in Mallery's splendid record of pictographic writing. A cannibalistic foreigner is reputed to have used this stone as a platter, and Dr. Alexander, noted authority on Hawaiian history, expressed the opinion to the writer that the man was a Marquesan. Petroglyphs found in those islands may throw some light on the subject. The stone is believed to have been demolished in 1895 (Stokes 1910: 66-67) .

III-E-2. McAllister (1976). J. Gilbert McAllister compiled information about artifacts and sites during the course of his field work on Oahu. In 1930 he examined the features of 384 sites around Oahu and created a map of sites (Figure 7).

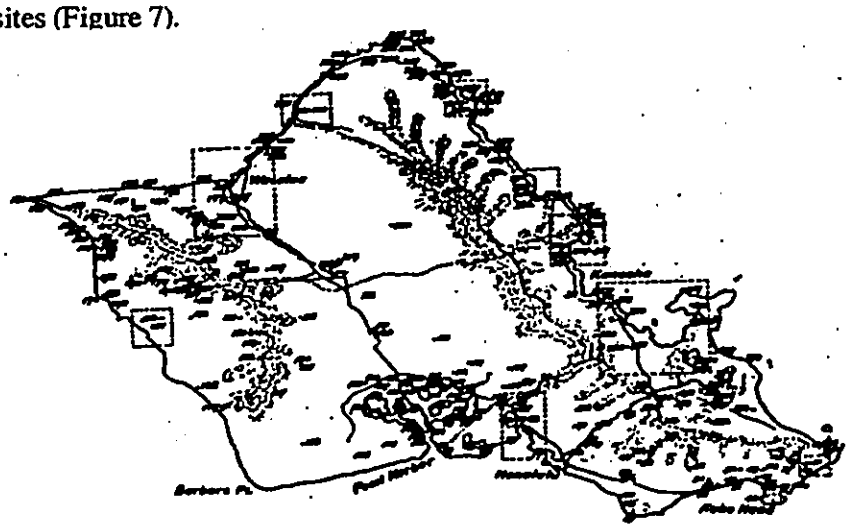

Figure 7. Map of O`ahu sites (From McAllister 1933).

McAllister also made a list of sites that were referred to in published works or in native tradition but could no longer be located. The following sites are in the vicinity of the Aloha Gardens project. It should be noted that not all of the information McAllister provided in his work (originally published 1933) has been reproduced in this report--it would be much too extensive. The following 'site' data is verbatim from McAllister's work unless otherwise noted.

> Site 203. Heiau near Kaukonahua Stream, Waialua. It is said that a small heiau once occupied the site where the Waialua Agricultural Company has installed their Pump Number 1. This is near the mountain side of the bridge which crosses Kaukonahua Stream near the plantation settlement. The name is not known (McAllister 1933:132).
>
> Site 204. Approximate location of Oahunui, a stone whose outline is said to resemble that of Oahu, in the gulch near the division line between Ewa and Waialua. The stone was formerly visited by the Hawaiians, for no one could say that he had been entirely around the island of Oahu, unless he had been around this stone.... Oahunui is also the name of one of the former chiefs of Oahu. He came under the influence of the cannibal chief (Site 220), Lo Aikanaka, and learned to *like human flesh. It is reported that he killed and ate his two nephews, the children of his older* sister, who shared with him the royal power and prerogative. Lehuanui avenged the death of his children by killing Oahunui and his wife, Kilikiliula, who had it within her power to save her children. It is said that Oahunui and Kilikiliula and the attendants that participated in the killing and cooking of the children were turned to stone and are still to be seen [Thrum (1907) In McAllister 1933:132].
>
> Site 205. Akua stone, Poloa grove, Kamananui. The grove, once sacred to Pele, has been left untouched in the midst of cane, and covers an area of approximately 80 by 170 feet. On the eastern side is a stone, triangular in cross section, standing 1.7 feet high, 0.6 foot thick, surrounded by eight small stones. The plantation placed a small iron fence about this stone many years ago and it is now almost completely rusted. The stone was believed by Oscar Cox to be called Kaneaukai, but his uncle Hookala does not remember that name applied to this stone. Hawaiians have been buried in the grove within the last 50 years, though there is nothing to indicate such graves, which are shaded by breadfruit, mango, kukui, and Pride of India trees (McAllister 1933:132).
>
> Site 207. Kawai heiau was located just below the junction of Poamoho and Kaheeka gulches, on the elevation below the Waialua Plantation manager's house. It was one of the first heiau to be destroyed (McAllister 1933:132).
>
> Site 209. Worked stones, found some years ago in Poamoho Gulch. When the shaft for the pump in Poamoho Gulch was being dug, a number of artificially worked stones were found at depths of 13 to 18 feet. Gravel and silt were found above the artifacts, according to G. L. Trist, who was in charge of the work. The stones are said to have resembled *ulumaika* (McAllister 1933:133).
>
> Site 210. Indications of former habitations, Kaukonahua Gulch, Waialua. House sites on both sides of the stream and in the south bank a small cave with the decayed remnants of skeletal material. Four piles of large stones approximately 3 feet in height are built in a perfect line, with an interval of approximately 20 feet between each pile.... No explanation has been obtained. The Hawaiians say that the stone piles were built by Europeans (McAllister 1933:133).
>
> 218. Kukaniloko, located near Wahiawā, on the Waialua side of Kaukonahua Gulch, one of two famous places in the Hawaiian islands for the birth of children of tapu chiefs.... Due to the efforts of the late W.W. Goodale of the Waialua Plantation, and the Daughters of Hawaii, this site is assured permanent protection. It is the only ancient site on Oahu that is being officially preserved...(McAllister 1933:134-135).

[Note: Much has been left out here. McAllister includes a lot of information taken from Fornander (vol 4, 5, 6) and Thrum (1892, 1896, 1899, 1900, 1904, 1907, 1908, 1909, 1910, 1911, 1912, 1915, 1916, 1926,

1927, 1928, 1929) – too numerous to include in this report.

219. Hoolonopahu heiau, near Wahiawā. A heiau which functioned in connection with Kukaniloko. Here were kept the sacred drums of Opuku and Hawea which announced the birth of an alii. Nothing now remains of the temple. The land is planted in pineapple (McAllister 1933:137).

220. Pa Aikanaka, Halemano (Helemano/Halemanu), Paalaa, the site of the former cannibal feats of a chief on Oahu, located 8 miles east of Haleiwa in the mountains of Haupu. It is a level area, biconical in shape, between two deep ravines, with only a narrow neck of land a few yards wide at each apex. Dibble's (1909) description, which he obtained from 'the missionary residing near the spot' is given:

On this little ox-bow of one or two hundred acres is the site of a heathen temple of oblong shape, about two hundred feet by sixty, sufficiently large to seat 3,500 people, in the native way and leave a small space unoccupied. Near this is the site of a house said to have been occupied by the chief, -- dimensions sixty feet by forty. Between the house and the temple, a little to the west, is a large excavation in the earth, sufficient to admit an ox to be roasted whole; this is pointed out as the oven in which men were formerly roasted for the feats of the chief. Still further to the west and distant from the temple about twelve *or fifteen rods is a large flat stone, with a smooth surface, nearly an octagonal shape, six feet perhaps in diameter and of one or two tons weight. On this stone it is said the roasted victims of this cannibal chief were dissected and eaten. The stone goes by the name of Kalo's ipukai, or meat platter. Natives say that pieces of this stone broken off and exposed to the action of fire have frequently developed an oily substance which they suppose arises from having been saturated with the fat of victims. The experiment, however, which we made did not satisfy us that such would likely to take place at this late period.*

Kalo is reported as having been a chief over about three thousand people, all of whom lived within a few miles of the heiau, or temple—where he was accustomed occasionally to feast on the dead body of some enemy, intruder, or stranger who might be dispatched for the occasion. Kaanokeewe, his servant or under chief, lived at a place called Kanewai, where there is a very narrow pass between two ravines, and very abrupt on both sides. On the neck of land Kaanokeewe built his house; reaching from bank to bank, so that all who might go to the mountains for timber in that direction must go through his house; travelers also from the north side of the island frequently passed that way. All of these he was in the habit of questioning as to the object of their several journeys, and if by any artifice he could implicate them in deception, real or fancied, he regarded them as lawful prey, took their lives, and carried them with haste to Kalo to be devoured....(McAllister 1933:137).

This is identical with the version told to me by Hookala and Annie Keahipaka. In the legend of Oahunui (Thrum 1907) these cannibals are said to have come from the south:

At Helemano...the last of the cannibal chiefs from the South Seas finally settled when driven from the plains of Mokuleia and Waialua by the inhabitants of those districts; for the people had been exasperated by the frequent requisitions on the kamaainas (old inhabitants) by the stranger chiefs to furnish material for their cannibal feats (McAllister 1933:138).

A much more detailed version is given by Daggett (1888), who describes Kokoa (Kalo Aikanaka) as of chiefly proportions, with muscular limbs tattooed with rude representations of birds, sharks and other fishes, and adds: 'His features were rather of the Papuan cast, but his hair was straight, and the expression of his face was not pleasant.' Ten years before, the cannibals are said to have landed on Kauai in starving condition, blown there in their double canoes by adverse winds. They were driven from Kauai and landed on Oahu...(McAllister 1933:138).

Sketch of the Halemano petroglyphs (Site 220) as seen By Mathison (1825) and figured in his narrative. The Rock, 5 feet broad and 6 or 7 feet long [Figure 8], was said to have Served as an *ipukai* (meat platter) upon which the cannibal chief dissected his victims. The figures were on the smooth upper surface (McAllister 1933:1379). In response to a query made by Dr. C. M. Hyde in the October 28, 1890 issue of the Pacific Commercial Advertiser, asking if anyone had seen the 'sculptural stone at Waialua' Baldwin made the following reply:

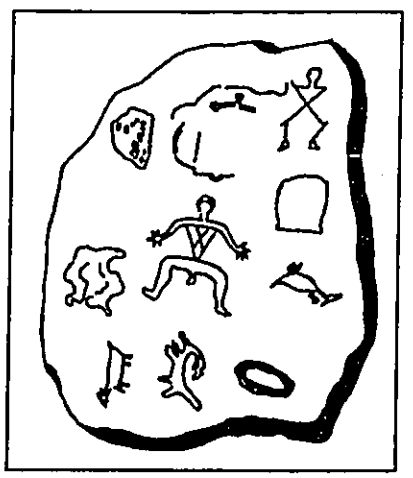

Figure 8. Mathison (1825) description of petroglyphs. (in McAllister 1976:139)

'In 1848...under the guidance of an old Hawaiian, we visited Halemanu.... Here we were shown where Ke-Alii-Aikanaka's house stood.... The foundation lines of the house were at that time well defined. Further on was a flat, historic stone, the Cannibal Chief's 'ipukai' or gravy dish, on which he carved and served his ghastly entertainment's. It was a large round stone, five or six feet in diameter, firmly imbedded in the ground, and extending about one foot above it. The top was smoothly hollowed out like a platter or soup plate. We did not observe on it any sculptural representation as mentioned by Mr. Mathison.... Near by was the large hole in the ground which serves as the 'imu' or oven in which the human victims were baked. In 1879 with my son...I again visited Halemanu. We looked for the historic 'ipukai' but could not find it.... Since then I have been there many times.... I was there in August last. The vegetation in the whole locality had been burnt off, but not a vestige of the stone was to be seen' (McAllister 1933:139).

> Nothing at present remains of the former inhabitants at Helemano, for the land had been planted in pineapples, and the narrow connecting neck has been graded down to the width of a one-way road with a precipitous drop on either side. In the same vicinity were formerly pointed out the stones of Kilikiliula and Lehuanui [from Thrum 1907] (McAllister 1933:140).

III-E-3. Sterling & Summers (1978). In 1962 Bishop Museum published eleven notebooks of data compiled by Elsbeth Sterling and Catherine Summers which included archaeological sites as well as history, legends, traditions, place names, and land descriptions. Their work was later re-published in 1978. Only the information not previously published in McAllister (1933/1976) or other sections of this report will be included here as excerpts. Sterling and Summers (1978) compiled several stories about Helemano and the cannibal chief said to live in that area. Only a few are included here.

> The Valley of Spears (Keawawaihe). When the slow-moving board of army officers at Washington, comprising a board of selection of the War Department, to select a site for a great army post on the island of Oahu, it considered various locations, and then decided upon Leilehua for the future Schofield Barrack cantonment, they probably had no idea that they were merely continuing the ancient "School of War" established in olden times by the Hawaiian chiefs. And similarly the board members probably had no idea that the swift-descending slope overlooking Haleiwa, through which the Waialua Hill road threads its way from Schofield Barracks to the sea, was called 'The Valley of Spears,' and that it, too, had a military significance. In ancient days soldiers were taught the arts of war as now, but with very different weapons. Instead of bayonets...they held a shark's tooth in the palm of the hand, bound to the rest of the hand with olona fiber, and with this they disemboweled their opponents...(Sterling & Summers 1978:107).

> Pa Aikanaka, Halemano. There is a modern legend to the effect that the Kamehameha school boys, while camping in the vicinity of Halemanu several years ago destroyed the stone in order to rid the land of the one evidence of cannibalism (From Thrum 1904:179 In Sterling and Summers 1978:108).

Ke-Alii-ai-Kanaka. Chief Man-Eater. It would seem best to accept the legend that that degenerate chief was a desperado and an outcast from the high chief family of Waialua, on the northwest coast of Oahu. Ke-allii-ai-kanaka was a powerful man. He is described as a champion boxer and wrestler....

Mr. Joseph Emerson, who has had charge of governmental surveys of a large part of the islands and also is a prominent authority of Hawaiian matters says that the sacrificial stone can still be found and was seen by his brother within the past few years. He differs from the other writers in the name given to the place and also in regard to the locality. The right name should be 'Helemano' carrying the idea of a train of followers of some high chief. The locality is some miles northwest of the Waianae range in one of the valleys of the Koolau mountains. To this place the chiefesses of highest blood were wont to come for the birth of their expected children. The valley was 'tabu' or sacred. Near this sacred birthplace of chiefs was the home for a time of the noted man-eating chief (From Westervelt 1904:12 In Sterling and Summers 1978:108-109).

Inland, ten miles from this village (Waialua) is a beautiful and retired rural spot. It lies between two deep ravines and resembles, in shape, an ox-bow. The only access to it is from towards the sea, over an isthmus of but a few yards in width. Its area embraces several hundred acres, verdant and picturesque, but now regarded with superstitious dread, from once having been the rendezvous of a clan of cannibals. The ruins of an extensive heiau can still be traced, and the site of the house of the chief, who was the terror of the island. Near it, is a large flat stone, which goes by the name of *ipu kai* or meat eater (From Jarves 1844:72 in Sterling and Summers 1978:109).

The Lo Chiefs. The Lo chiefs are those who, like those of Lihu`e, Wahiawā and Halemano went to the mountains to live but kept up their tapus as chiefs and were descended from tapu chiefs on both the father's and mother's side and intermarried with tapu chiefs and bore children and guarded their tapus. When the country had no ruler one was found among these to become ruling chief over the land. If a chief needed a wife he could find one among their descendants (Kamakau In Sterling and Summers 1978:111).

Legend of Halemano. Halemano son of Wahiawā and Kukaniloko falls in love with Kamalalawalu of Puna in his dreams. He goes to seek her and brings her back to Oahu. When she refuses to go with the King of Oahu when he sends for her, Halemano and she flee to Hawaii. There she goes with the king of Puna and Halemano leaves for Kauai. She follows him and they return together to live on Oahu. However two kings from Hawaii set out after her. They make war on Oahu. Terrible slaughter takes place and at the end Kamalalawalu is found alive and taken by the two kings back to Hawaii (From Fornander Vol V-II-228 In Sterling and Summers 1978:112).

East of the Helemano Military Reservation, the Helemano Stream gulch and an unnamed stream gulch come very close together creating a neck as described above [Figure 9]. This neck of land coincides with the path of the Poamoho Ridge Trail [see Figure 9; Figure 10].

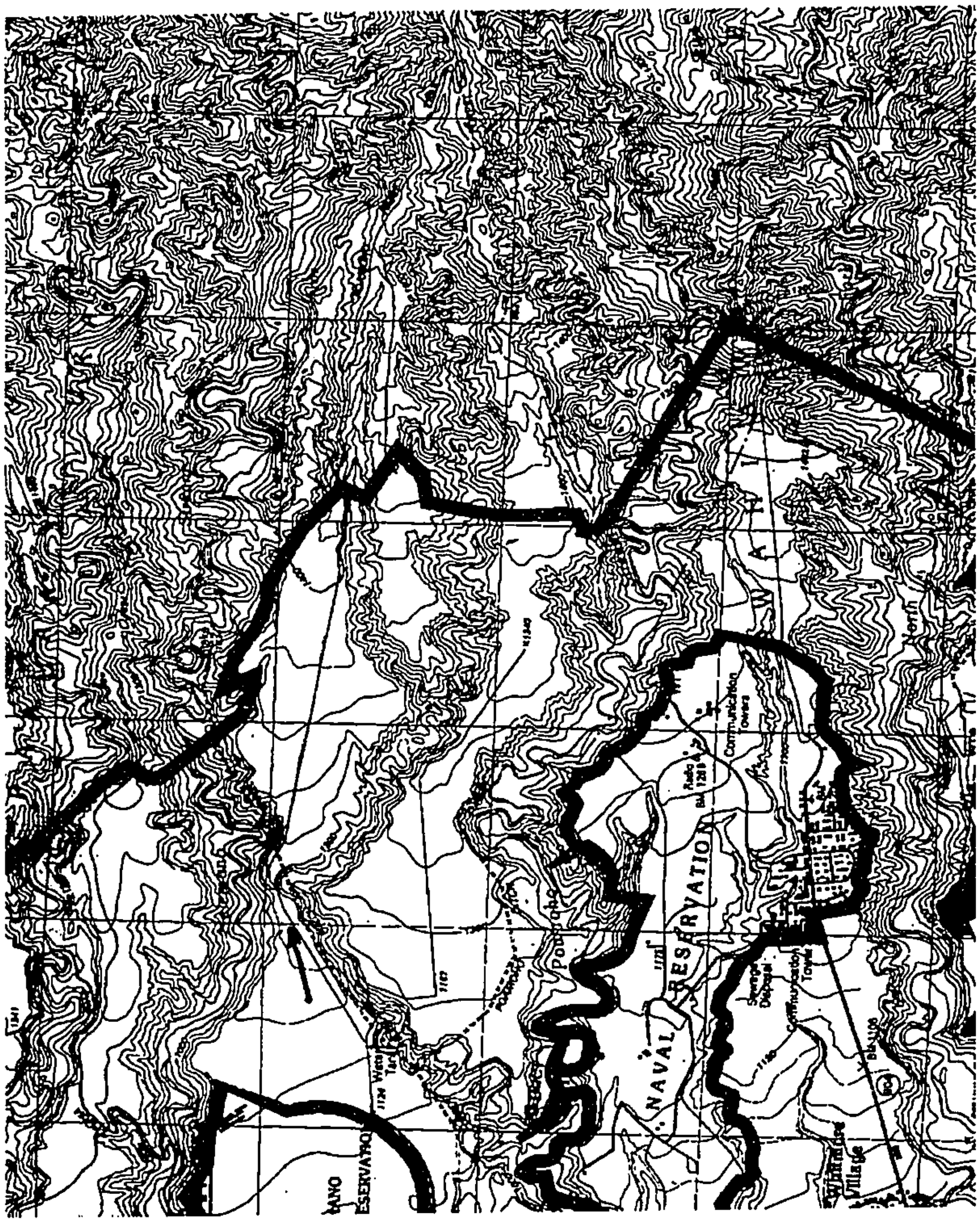

Figure 9. USGS Map illustrating narrow passage and Poamoho Ridge Trail (1992)

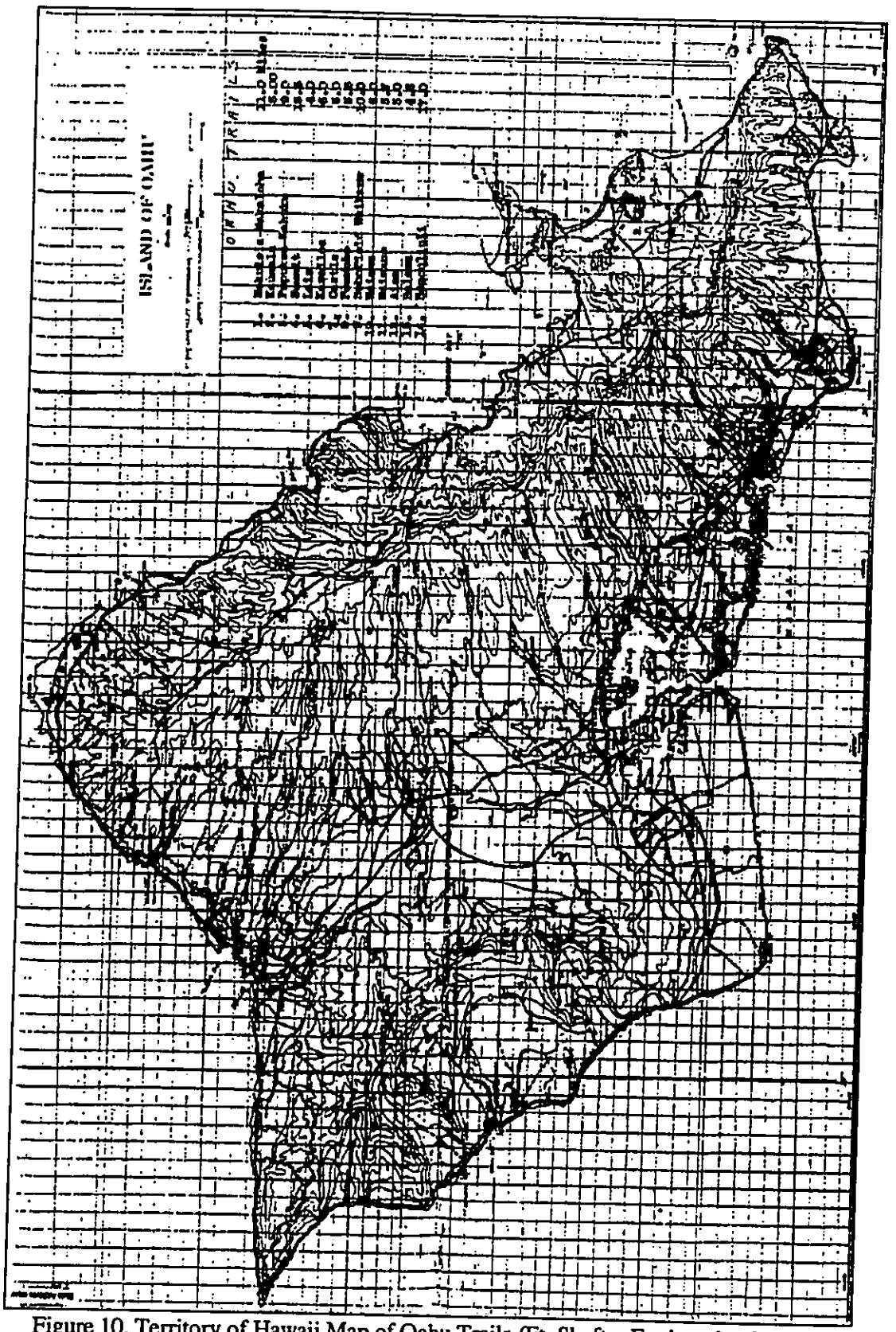

Figure 10. Territory of Hawaii Map of Oahu Trails (Ft. Shafter Engineering Dept.)

III-E-4. Rosendahl (1977) In Wanner (1988).

> Helemano Military Reservation was previously investigated in a preliminary reconnaissance level survey by Dr. Paul Rosendahl (1977), formerly with the Bernice P. Bishop Museum, as part of the baseline environmental surveys conducted for the USASCH Draft Environmental Impact Statement. Because that investigation involved only surface reconnaissance and did not include any of the specific areas outside HMR which the current project affects, it was decided that a new archaeological reconnaissance survey would be performed to more fully assess the potential for prehistoric or historic sites or materials within the area of potential environmental impact (Wanner 1988:D-15).

III-E-5. Fankhauser (1987). A reconnaissance survey of Helemano Military Reservation was conducted by Fankhauser for the U.S. Corps of Engineers and included a background research of the history, prehistory and environmental portions of Waialua and Ko`olau Range, Wahiawā District; a reconnaissance survey and back-hoe sub-surface testing of Helemano Military Reservation, and the proposed sewer trunk line from Helemano Military Reservation to Schofield Barracks; Laboratory and data analysis; and reports. Fankhauser and his crew surveyed the reservation and the gulch to the north. They then asked the Dole cultivation manager for permission to walk along the fields south and west of the reservation. Walk-through surveys were also conducted in three other gulches: unnamed gulch just south of Dole Visitor's Center, Poamoho and Kaukonahua along the proposed sewer line (pp10-11).

III-F. Previous Oral Histories.

Only one previous oral history study was reviewed. This does not imply that no other oral history or ethnographic studies of the area have been conducted. "Talking Story: A Retrospective Account of Life in Wahiawā" (1998) was done by the 5th Grade class of Helemano and their teachers. The students interviewed several members of the community, many of whom attended the old Helemano School where the Helemano Plantation complex [adjacent to Brodie 2 Camp] now stands. Many also worked and/or lived on the many plantation camps in the area.

They shared with the students life in a plantation community. As a thirteen-year old a woman worked in the pineapple fields digging weed with a hoe--called "hana hoe" by the workers. Many of them also picked pineapple or trimmed the crowns. One woman shared that the new Helemano School in Whitmore Village was built in 1957 – she was in the first graduating class (Borrello et al., 1998:25, 44).

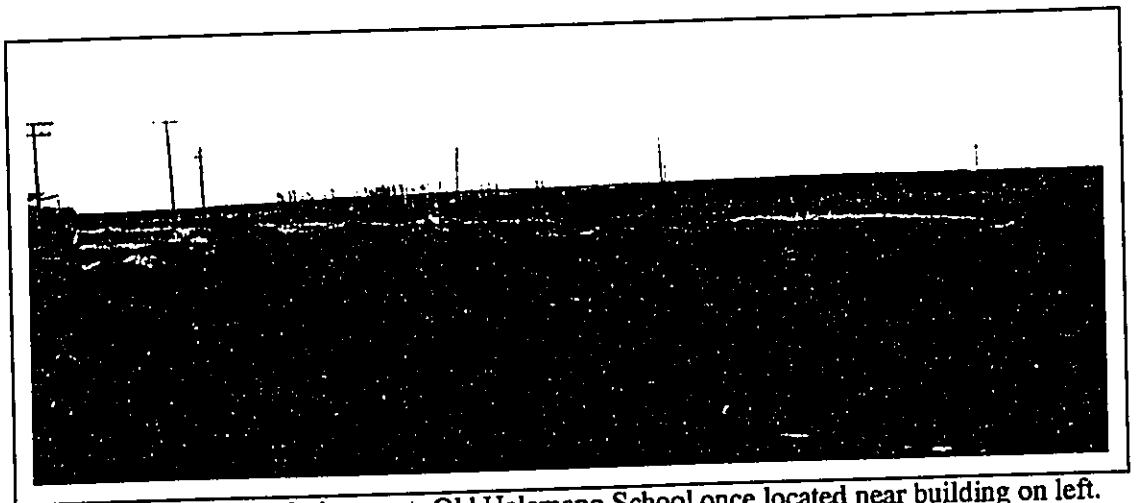

Photo 5. Project area facing west. Old Helemano School once located near building on left.

Part IV. Ethnographic Survey

The ethnographic survey was conducted using three methods: oral history "talk-story" interviews; an email interview; and exerpts from previous ethnographic studies (Orr 2001; Orr 2000). This survey is part of the Cultural Impact Assessment and is considered a 'low level of effort' as explained in the Introduction. Four interviews were conducted in a semi-structured, talk-story method. All of them were done in the homes of consultants in Whitmore Village and Wahiawā (one of these was in addition to information from a previous interview); the fifth interview was done by email as a supplement to previous interviews. All consultants signed 'release of information' forms, including previous interviews.

In this section, the transcripts were analyzed for primary themes such as "Consultant Background," "Land Management and Use," "Traditional Use," and "Water Management and Use." Most of the responses used in this section are verbatim, paraphrased or verbatim statements that have been combined for the sake of continuity. In other words the person may have said something about a subject in the beginning of the interview, then added something later. The interviews primarily focused on the research themes stated above, but as a result of consultant responses or expertise, sub-categories have been added [i.e., Plantation Life] and anecdotes. The first name of each consultant is used to identify the speaker throughout this section, as two consultants have the same last name.

Ethnographic Interviews

IV-A. Consultant Background. Each consultant was first asked to talk about their background generally, then as it relates to the project area. All of the consultants currently live in Wahiawā or Whitmore. Most of them went to schools in the Helemano and Wahiawā area. Four of the consultants worked for the *Hawaiian Pineapple Company, Limited* at one time. Only one consultant is part-Hawaiian, and a curator for the nearby Kukaniloko Birthing Site, now part of the Hawai`i State Park system.

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Mitsuo Nagaki. I was born in that old camp, Ondo Camp, way in the mountain...Ondo Camp is in the valley [mauka/east of Dole Plantation Visitor Center]. You pass this reservoir [Upper Helemano] then come to...before used to get Helemano Camp... then there's a road going to the old Ondo Camp. But I don't know if the road is there anymore. I was born June 29th, 1919. [My father is from] Hiroshima, Japan. He must have been a young boy [when he came] to Hawaii. [My mother was] picture bride I think...from Japan. I think my sister was born over there [Ondo Camp] but the rest was born someplace else at Brodie 4 Camp. Ondo Camp or Wong-luk Camp I think something like that. Wong-luk was a Chinese foreman so they sometimes called it that. I must have been three or four years, because I don't remember because from there we moved to this new Camp. They start knocking down the guava trees and clearing up for the pineapple plants. So my father was chosen as a foreman for that Camp – Brodie 4 Camp. We lived there until I was oh maybe about 12, 13 years I think. From Brodie 4 Camp we used to go school to [old] Helemano School. We used to walk up to the pine tree...and follow the pine trees then we walk right to Helemano School. Before the war broke out I was [living] here in Brodie 2 Camp, someplace over here near [the old] Helemano School (Mitsuo 2001).

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Francisco Pascua. I was born in the Philippines, in 1913, September 29, 1913. In the Province of Ilocos Sur, then at the age of five, I move to the Province of Pangasinan. There I grew big there. And then when I was six years old I went to school in the village. When I reach the grade of five, I went to the town of Bayangbang Intermediate School. There I finish seventh grade and I stop in 1929. After that my parents were living very poor so I discontinue my studies. They were poor, no money. So I help them, I work the land as a farmer. In 1929

they move again to the town of Rosales, Pangasinan. I married there in 1935…to Miss Leonarda Antonio. And we had five children. After the war, took a new job. HSPA hired 6,000 laborers, so I was one of them as a *sakada* (new comer or first generation to Hawaii) 1946). So, because the immigration office was located in the town of Vigan in Ilocos Sur, I went there to apply to come in Hawaii. I was hired and I brought my family here…five children, to work for Hawaiian Pineapple Company, Limited [Francisco 2002].

*****

Candido Lumabao. I was born Laoag, Ilocos Norte, January 24, 1928. I came to Hawaii in 1946 at18 years old. I came because hard labor in the Philippines, so my uncle went order me [sent him order papers] sakada. I come because I like work and make money. The order was for Maui. I stay three months and then there was union strike. I never like strike so I move to Oahu in 1946. I came here and went straight to Apaiola [Camp], the jungle mountain [laughs]…located 2 miles from Takiyama Camp -- got a river in between them. To Takiyama you go from the main highway, pass Haleiwa… go up to Waimea… about 10 or 15 miles away from Haleiwa. When the machine came I was a operator…and I'm the low señority on the job, "Mr. Lumabao, you gotta go back to your job." Pick pineapple [Candido 2002].

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Photo 7. Candido & Teresita Lumabao

Teresita Pascua Lumabao. Well I was born in the Philippines, Rosales Pangasinan, Barrios Salvacion, PI. I went go school…when I came to Hawaii I was ten…third grade when I came to Hawaii…during the war. We came to Hawaii, May 14, 1946. We rode the military boat *Marine Falcon*. We're the second batch…ladies came to Hawaii. We reached Hawaii June 1, 1946 -- fifteen day boat ride 'til we reach Oahu. And the camp we live was Robinson 2. We live there 1946 to 1948 then we came to Whitmore Village, Wahiawa. We lived at N. Circle Mauka Place [Where Mr./Mrs. Pascua still live. I went to Helemano Elementary School when I first came here [across Brodie 2 Camp]. I went to there until the 8th grade, then I went to Leilehua School until 10th grade, then I get married when I was 16 years old to Candido Lumabao. I move out from N. Circle Mauka Place in 1959 when I get married, then I live here at Circle Mauka St. [Teresita 2002].

*****

Tom Lenchanko. My name is Thomas J. Lenchanko (Tom) and I reside in Whitmore Village, Wahiawā. Our family moved to Waipio Acres from Kalihi back in 1959. My Dad is Ukraine from Kiev. My Mom is Hawaiian/Chinese from Waipio Valley, Hawaii Island. I went to Kipapa Elementary School, Wahiawā Intermediate and Leilehua High School. What is now Mililani Town was our playground for as far as one wished to travel by foot or bicycle…from Kipapa Gulch, Waikele Stream, Waikakalaua Stream (Devil Swamp), East Range to Wahiawā Reservoir; all had flowing water in those days, good swimming and fishing for cat fish (pun tat), o'opu, crayfish and just having fun eating guava, rosy apple, mountain apple, pineapple, avocado, plums that would stain your clothes. I work for the City & County of Honolulu today out at Waianae, District Road as Maintenance Superintendent [Tom 2001].

IV-B. Land Management & Use

The primary objective of this ethnographic survey was to gather information that would provide information about land and water management and use within the project area as it relates to the broad cultural context of the landscape. Therefore the interviews focused on questions that were directly related to these points. Sub-categories were created to reflect the responses or knowledge areas of the consultants: Brodie 2 Camp, plantation life, agriculture, hunting, fishing, gathering, and pre-contact evidence. The area of this study focussed on the 43.28 acres across form Helemano Plantation.

IV-B-1. Brodie 2 Camp. For almost a century sugar cane and/or pineapple was grown in the Wai`alua district under various entities that changed names, ownership and industry. In the project area, what the consultants remembered first, was that Brodie 2 Camp [which may have been built in 1928 or the 1930s according to Mr. Mitsuo Nagaki, 2002] was situated there first. It was later demolished and the people moved to Whitmore Village. The following are descriptions of the Brodie 2 Camp as recalled by the consultants:

> No sugar cane, was all pineapple. The sugar cane was below...nothing above here [the highway]. Use to be Brodie 2 Camp right over there [on the corner opposite from where Helemano Plantation is today. There's only an empty field there now.] But the road is same you know. The road used to go up that way...same road, seventy years. In olden days the Camp boss used to have a big house way on the top. Camp boss, then the assistants, then all the other people in the group.... Brodie 2 Camp boss was a Portuguese man. He was a tall man, but the wife was Hawaiian. My house was right next to this [Kamehameha] highway. Yeah before the war broke out I was here in Brodie 2 Camp (Mitsuo 2001).

> The Government Road [current Kamehameha Highway] is here, you pass the small cement bridge, then you turn to your right and here is Brodie 2 Camp. There were warehouses right over here, right below the Brodie 2 Camp. Then you go some distance, up this way, and right here was the Helemano School right in here on the corner...the old Helemano School. And the Camp #10 was right over here [northeast of Brodie 2 Camp]. Korean people used to live...only Korean people. Used to get a small road go up to that Camp #10. And as you pass this Helemano School then you go to Helemano Camp and there's the Army camp too.... On the top [of Brodie 2 Camp area] was the drinking water tanks. Then they had [row of] three houses. One of them was the foreman's house, Mr. DuPont. Then they had about eight rows of houses, eight to ten each row and each house two bedrooms. See the road came this way...the camp road [north direction]. And next to the camp road was the Government Road. Then there was a road going up to the tank over here; they had two tanks. And this was the foreman's house right over here [near the tanks] on the hill, it kind of slopes a little [Mitsuo 2002].

> That location across Helemano Elementary School was Brodie 2 Camp. It had wooden houses [Francisco 2002].

> Brodie 2 had wooded tank between Brodie and Helemano...brown tank. Brodie 2 Camp was the same like Whitmore but not too much cars. I know Mr. Walter Gomes (from Brodie 2 Camp); he was a truck driver. They had mix people in the Camp. Dupont Family, they work for the Company, but they higher than us, office job. [Brodie 2 Camp breakdown] same time as Helemano because all the people that scattered they come to Whitmore...the camps all came to Whitmore...all the way down to the beach...in the 1950s [Teresita 2002].

Brodie 2 Camp and its wooden houses served the plantation employees for a number of years. Some of the camp homes continue to be used to this day, although not in the same location.

> [In 1959] I bought a 2 bedroom Brodie 2 Camp house from Dole...cost $5,130 at that time. Then in 1963 we build a 3-bedroom house (in front of the Brodie 2 Camp house) [Teresita 2002].

Photo 8. Brodie 2 Camp house bought in 1959 by Mr. & Mrs. Lumabao. They later built in Front of the house.

Photo 9. Another Brodie 2 Camp house; a neighbor of The Lumaboa's.

After World War II when I came home in 1946, I was living in the same house in Brodie 2 Camp, but not for too many more years. Then the Dole Company decided to compile all these small Camps into one, at Whitmore Village. My same house you know from Brodie 2 Camp they transferred to Whitmore and then we live in the same house in Whitmore. Later we sold em, but it's still there yeah. It's an old house yeah. All the Camp houses was transferred to Whitmore [Mitsuo 2002].

The project area and Brodie 2 Camp would transform again after all the houses were transferred to Whitmore Village.

Well they planted pineapple [Mitsuo 2002].

IV-B-2. Plantation Life. Only Mr. Nagaki lived at Brodie 2 Camp, however, some of the other consultants had occasions to go there. Most of the consultants lived on plantation camps and described plantation life in Brodie 2 Camp as well as other plantation camps in the vicinity.

> We were living right by the Government Road [Brodie 2 Camp], our house was some place around here [about a block up from the current dirt road that is adjacent to the Helemano Plantation] next to the Government Road. So lot of noise nighttime you know when the cars pass. My father was a foreman so we had a big house, three-bedroom house, and with the latrine in side; but the other people all the restroom was outside of the house. They had several [outside toilets located between the houses, two stalls per outhouse, oriented back-to-back mauka/makai]. So the mauka houses use the mauka side and the lower side people used to use the lower side...but same building. They had two community bathhouses [like a furo], one over here and one down below. We used to go up and take a bath in that. They had that bathtub where you scoop the water and mix em with your cold water and used to take a bath. We couldn't go in there because unsanitary so all take a bath on the cement floor. Each house had kitchen with a kerosene stove. Right around here there was a store, Miyashiro Market (he later moved to Wahiawa and he made a big super-market over there) and a Clubhouse right over here. They had a pool table at the end of this the clubhouse. Everybody planted all kind of their own vegetables, and well for the Camp all kind of trees; I don't know what kine of trees but all over the Camp had trees [Mitsuo 2002].

> Well [Brodie 2 Camp] it's nice. Lovely people, but I never stay over there long. I just go visit and come home. Brodie 2 we walking sometime. Filipino-style we go fight the chicken, visiting the Camp. It was in somebody's big yard, if not raining on the weekends. That's Filipino gambling. Well I try [raise] one, but mostly I buy and let somebody take care for me. That's it, no humbug. Then I raise pig in Apaiola and bring em all to Takiyama [Camp] in a truck [Candido 2002].

> But when I was young Mr. Yoshida made some farming stuff so we used to go help him over there. It's in the valley [where Ondo Camp was] and near the ditch that water was running. You know the ditch was running so he could irrigate his vegetable. He had all kinds of vegetables...wonbok like that...wongbok cabbage. When we used to go help him we could see that ditch from the mountain coming down so from there he could irrigate his vegetables. In the camps people would grow things, mostly vegetables like sweet potatoes, cabbage...and that green, small fruit, we call that senda tree. I don't know actually what the name of that tree...it's a big tree. Mostly guava trees we used to see (Mitsuo 2001).

> Had Brodie 2 & 4, Helemano, and then Camp #9 [actually Poamoho Camp] by the trees, Robinson 1 & 2; Waimea; Tatiyama; Apaiola. We live Robinson 2 Camp in Kunia before we moved to Whitmore Village. Brodie 2 had wooded tank between Brodie and Helemano--brown tank.... They get trees, they get coconut, mango, pine tree, papaya, tangerine, and they raised gardens. They get vegetables, all kind of variety: long beans, squash, tapioca plant, pumpkin, potato, bitter melon [*parea*]. They had a store. At recess we run over to the store at Brodie 2 [from old Helemano School], buy pack *si moi* [crack-seed] for 10 cents--big package. [In those days things were cheap] rice before #100 bag rice only $12; spam 12 cents; aku, the big fish, before you can buy $5 for a huge one; so cheap. The *bakalau*, cod fish, real cheap. So the living before, little bit money you can buy lots of food. And friends like that they kill pig, you pay $10 worth. That $10 worth, you cannot carry with your two finger. Today, $10 only your two finger can carry. Was real cheap before. [Later we went to Brodie 2 Camp for] parties, birthdays. They had outside toilet, "box toilet" no need flush with individual doors, clean every week. Community bath or "bafiyo" was where they took baths; the shower house. Camp life was better than Philippines because they get washing machine as opposed to the paddle in the river or the scrub board; the washing machine with rollers. [In Robinson2 Camp] in 1946 there were 15 single men [we did] laundry for $10 a month – wash and iron to make extra money. We make Cancanen, Filipino cake/pastry; sometimes sew pillow case, underwear; sometime go [?taxi] dancing with Candidata girls. They [the single men] forget to pay laundry, forget families in the Philippines. Payday they go dance, drink, forget their Filipino families. Some marry Hawaiian, Filipino, Japanese girls. After 5 years they become citizens then order their family [Teresita 2002].

Brodie 2 Camp had some Chinese laborers, about thirty. Every day the Chinese laborers eat hot lunches so the cook cooked hot lunches and carried it on his shoulders to the field where they were planting. All were single laborers from China [Mitsuo 2002].

Yeah...and we used to play ball up old Helemano School grounds: football, baseball, we used to play down there. It's near to the camp so we use to walk and play over there [Mitsuo 2002].

IV-B-3. Plantation Work. Most of the consultants worked in the vicinity for the Hawaiian Pineapple Company, Limited, later the Dole Plantation Company. After Brodie 2 Camp was demolished, it was planted with pineapple fields where some of the consultants later worked. The consultants had a variety of plantation jobs ranging from field laborer to supervisory positions. Both of Mr. Nagaki's parents worked for the plantation as well.

Oh my father was a foreman, he used to work for the Plantation. And my mother was laborer. She used to work in the Plantation too – Hawaiian Pineapple Company, later they changed to Dole. She worked right around that area. It's lot of land right around Brodie 2 Camp...weeding gang, you know. Most of the ladies were weeders. Trim plants too, planting...all kind of jobs...pick pineapple. My dad was tractor foreman. He had a pickup assigned to him and would take the laborers to the tractor like that. And pau hana he bring them back to the camp. When he was at that Wongluk Camp he was a big truck driver. I don't know how he managed to drive those things you know. And that was a dangerous hill too. I was surprised he was driving trucks over there. Until then when they started to open up the Brodie 4 Camp he was promoted to foreman see. Then we live in Brodie 4 Camp for a while [Mitsuo 2002].

My father was truck driver, so you know they already had pineapple [when I was born in 1919]. From the valley [where Ondo Camp was located] they used to go up to the flatland [topside] and you know the pineapple was planted someplace around the flatland.... I was young you know so my mother used to carry me up and she used to walk up that hill [from the valley of Ondo Camp] and then you know on that flat ground she used to work in...pineapple work. [She] must have been young yeah. They cleared the Ondo Camp and they planted pineapple. He got promoted to foreman...my father was chosen as a foreman for...Brodie 4 Camp (Mitsuo 2001).

Well firstly, the season came, the business part of pineapple is to pick the pineapple and put it in the bag. The next season, the Company made conveyors. Conveyors were carried by the big truck in the big box...they call bin. And then the gang foreman recommend me to practice as conveyor operator. And I passed the conveyor operator job. Until then I work as conveyor operator and truck driver until 1961. The business time of pineapple they hired school boys during vacation, intermittent workers or season workers. Then they get laid off when they go back to school. Then they hire again schoolchildren to pick up pineapple. Some of the job in pineapple is planting, stripping, weeding and push down the new plant on the side [Francisco 2002].

Well I pick pineapple in Brodie 2, Helemano, in Waimea, Robinson, Takiyama, Apaiola, wherever had the pineapple. Fist I made 55 cents an hour. After, for 25 years I made $1.05 an hour. I was sub-luna, year-round, until I retired in 1998. I was 63 then. [Sub-luna] you watch the gang, work with the gang, teach them how to pick pineapples, show them how ripe the pineapple, how to pick up slips and crown. At summer time school children come and adults.... The children as they grow up, maybe they no like work pineapple. So the family stay back. When they [kids] go college, they no come back to work for Dole. Like us we work for Dole; our children no like work pineapple field. Summertime maybe they work [Teresita 2002].

IV-B-4. Korean Camp. Mr. Mitsuo Nagaki shared a lot of information about what the area looked like when he grew up there: the location of the camps; the number of buildings in each camp; the types of vegetation; and the impact of the war on plantation life. By the time he was born in 1919 sugar cane was no longer being planted east of the present Kamehameha Highway. Other consultants also knew about the Korean Camp or Camp #10.

> Used to get Korean Camp [Camp #10] someplace over here [points to north of Helemano School]. Korean Camp used to be here [where a grove of Eucalyptus trees are located today] in the 1930s. They had maybe about six, seven houses. And they had Korean School in that Helemano School after the school [day] was over. Japanese [language] school too over here at Helemano School. In the 1940s was a Filipino Camp – the Filipinos moved in and all the Koreans moved out. Brodie 2 Camp used to have mules to work the fields; mules to cultivate (Mitsuo 2001).

Photo 10. Eucalyptus trees in the background mark the former site of the Korean Camp.

Many plantation work camps were all along this plain. Camp 10 just to the north of Helemano Plantation where the old bamboo grove and a stand of eucalyptus trees are, was said to be a probable battle ground where many human remains lay up until the 1920's when the need to prepare the fields uncovered many wagon loads. Where were they taken? Who were they? [Tom 2001]

They had a lot of Eucalyptus trees yeah. They had about one, two three, four, five six...only about seven homes yeah. And they had a bathroom house too yeah. [The pile of rocks] wasn't there. But they start to farm on that land and whatever big rocks they just accumulate there and just left it there. After the Korean Camp disappeared, the Filipino people moved in (Filipino laborers for Dole) until everybody moved to Whitmore. All the camps; Kemoo Camp, Brodie 4 Camp, Kaukonahua [Mitsuo 2002].

IV-B-5. Traditional Use. When asked specifically about ancient Hawaiian sites and/or artifacts, according to the consultants they did not see or know of any in the project area. However, one consultant used to have long conversations with another old time plantation employee who did imply/indicate that one area was probably an ancient site. The area referred by consultants as Camp #10 or the Korean Camp [later the Filipino Camp] has a large mound of basalt cobbles of various sizes. Unfortunately, the person who was originally given the information about that area prior to the 1920s is deceased.

> Yeah it's the same rocks yeah (from when I remember) [between 1930s to 1950s]. It wasn't a Hawaiian thing. They [Dole Plantation workers] just accumulate the stones over there.... When they cleared this field and they find stones they just pile them up. It's not Hawaiian (Mitsuo 2001).

> I would like to add information given to me by two informants who had given me testimony during research for the proposed Galbraith lands development and a follow up to a newspaper interview in Wahiawa. Toki Uchida of Poamoho Camp gave a site interpretation of the location of the different camps located in the general area of the project, Halemano, Brodie, Kemoo, Ontai and Hasebe. Toki's time line refers back to 1925 through 1995 when he was growing up and employed by CPC and Del Monte. Stanley Nakasone of Camp 10 recalls testimony given by grandmother which dated to the 1920's when the land, today stone pile and eucalyptus trees are, was first cleared for the camp that wagons were filled with many human bones. He states that this area was possibly a battle ground because there was no cemetery in the area. Where the bones were taken he does not know, but there were many wagon loads. We stood at the geodetic survey marker at the Old Halemano road and he pointed out in general the camp locations along with The natural ditch that cut through the land heading to the north shore [Tom 2002].

Mr. Tom Lenchanko discussed the same site, but his perception was from the context of the broader history of the area and region--the ancient history of this area. The following excerpt is from his email interview.

> In 1992 the Galbraith family, who own twenty-two hundred acres of land north of Wahiawā, decided they wished to develop about nine hundred of those acres in central O'ahu. This became the birth of the Friends of Kukaniloko, researchers for the Hawaiian Civic Club of Wahiawā. The development proposed to create jobs, a light industrial park, townhouse and single family residential lots and an eighteen-hole golf course with clubhouse. This project, however, would be encroaching upon the most sacred Hawaiian site on the island of O'ahu. The traditional birthplace, of the *iku pau, hoa ali'i* (descendants of Kane) the highest *ali'i* class, Kukaniloko and its associate *waihau* Ho'olonopahu. Kukaniloko was established 1060AD by Nanakaoko (k) and Kahihiokalanai (w) for the setting apart and recognized birth of their son, Kapawa - *ke ali'i o* Waialua. *Liloe kapu* - the prescribed practice, *'ike maka* - the eye witness by thirty-six warrior *ali'i* and the ten-day ceremonies of purification, *iku pau* recitation, hulas and chants in tribute to the newborn and the eventual cutting of the umbilical cord by the splitting of the bamboo knife between the teeth and severing the cord. These rituals were overseen by forty-eight *ali'i kapu* at *waihau* Ho'olonopahu.
>
> We must understand that the lands of the Lo-ali'i encompassed some thirty-six thousand acres on the island of O'ahu, demarcated by the Ka'anani'au, Kapu boundary markers. These would include but not limited to, Halawa, Paupalai, Oahunui, Halemano, Halahape, Kanewai, Kulihemo, Puu Kuua and Maunauna. Lihue, Wahiawā and Halemano were the land areas where the Lo-ali'i lived continuously, and guarded their *kapu*. Should one be needed to manage people one could be obtained from Kukaniloko, for they were the highest *ali'i* class, *iku pau* [Tom 2001].

IV-C. Water Management & Use.

In the project area, it appears that the only sources of water were the two water tanks located on the "hill" or top of the slope, which provided the drinking water; and the pump located west of the Helemano Reservoir. This pump supplied water to many camps in the vicinity. Pineapple field irrigation was not mentioned, but it is assumed the same system was utilized.

IV-C-1. Pump System. Mr. Nagaki lived for several years at Brodie 2 Camp. He talked about the pump and the person who looked after it.

> The Ditchman house was right there [just above (north) of the pump house below (west) of the Helemano Reservoir and dam]. Used to have a small house over there. The Ditchman [Mr. Iwanaga] and the wife had one daughter, one son I think. That's the man threw the cane knife when we was catching some fish [laughs]. Not supposed to so you know. Mr. Iwanaga was from Halemano Camp; he used to watch the pump house [west of the reservoir and dam]. Any time Bro-2 or Bro-4 or any Dole Plantation camps needed water he would go and check the pump. Those days, the pump house was controlled by the Waialua Plantation, Castle & Cooke (Mitsuo 2001).

> Yeah through that pump you seen at the reservoir [Helemano]; that's where Mr. Iwanaga used to go and check you know. *From the reservoir*, they used to pump that water there to various camps. That's why they needed a pump man to watch yeah. He also had a store in Helemano Camp [Mitsuo 2002].

IV-C-2. Water Tanks. The water tanks appear to have been used only for drinking water.

> Brodie 2 Camp water tanks, that's for the community to drink [Mitsuo 2002].

IV-C-3. Irrigation Ditches. Although no ditches were in the project area, there were a couple of plantation irrigation ditches very close by. Mr. Nagaki remembers taking advantage of them as childhood recreation resources.

> Well we used to go down the ditch during the hot summer days to swim in the ditch, the Waialua Irrigation Ditch. That water goes to the Waialua sugar cane. [across the Government Road]. It was behind the packing shed. Then we used to go up the reservoir [Helemano] fishing. When big rain, they say goree [ʻoʻopu] comes down so we used to go and hook lot of gorees [Mitsuo 2002].

> Get frog, but hardly can get that frog. He jump, I don't know how many feet...long jump though [Candido 2002].

PART V: ASSESSMENT SUMMARY

The archival data supported by the ethnographic surveys suggest that the project area has a long and broad history regarding land and water management and use that span many centuries. The traditional oral histories indicate that this area was part of the O`ahu *ali`i* history dating back to well before the 1300s. Late nineteenth century ethnographic works (Kamakau 1991:55) state that this area was "filled with chiefs and people." Early land use studies by Handy & Handy (1978) in the 1930s found that most of the valleys with perennial streams were being utilized by early Hawaiians for cultivation, habitation and ritual purposes.

The historic use of the lands of and in the vicinity of the project area are well documented by several primary and secondary sources. The land was first used by the Robinson-Holt family as a horse ranch and family estate after purchasing [between 1842-1865] it from and through the guardians of Victoria Kamamalu, a young grandchild of Kamehameha I who "received" it during the transfer of lands to *ali`i* by Kamehameha III in the Mahele process [see pp 37-38 of this report]. During part of the land history of Wahiawā/Helemano/Waialua lands when it was owned by the Holt Estate, some of it was being used by the Waialua Agricultural Company, Limited, Hawaiian Pineapple Company, Limited and Castle & Cooke (see Holt 1993:340-341). In 1905 the Helemano lands were acquired by the Waialua Agricultural Company, Limited and work began immediately on the upper Helemano ditches, along with the planting of sugar cane and in some areas, pineapple. It would eventually become mostly pineapple cultivation with a brief period of vegetable gardens.

The historic multi-cultural fabric of this area was once extensive as American, Chinese, Japanese, Portuguese, Russian, Spanish, Korean and Filipino people all made their home here as they worked the land for Waialua Agricultural Company, Ltd., Hawaiian Pineapple Company, Ltd., Dole Plantation and Castle & Cooke, Inc. in the sugar cane, pineapple and fiber [sisal] industries. There is relatively little trace of the various ethnic groups because their camps and houses were all destroyed or re-located when they moved to other places such as Whitmore Village and Wahiawā.

The Aloha Gardens project area was once a thriving plantation camp community of about 80 wooden houses, a general store, a clubhouse, two community bathhouses and several duplex outhouses. Each resident had gardens of vegetables, fruit, and flowers. And various fruit trees grew throughout the camp called Brodie 2. In the early 1950s all the plantation camps were disassembled, and land graded for pineapple cultivation, removing all traces of the camps. However, most of the houses were re-located to Whitmore Village where some of the consultants were able to purchase them and continued to live in the Brodie 2 Camp houses.

Just north of the project area is a grove of Eucalyptus trees and bamboo marking the area where the Korean/Filipino Camp was located. In the grove is a mound of rocks that an informant from the early 1900s shared was where wagon loads of human bones were removed. It is believe by one of the consultants to be remains from an old Hawaiian battlefield. A few early nineteenth century ethnographic works support that theory by recounting events of several battles and incidents in the vicinity. However, no information was passed on that indicated where the bones where taken. Sadly, the only person who may have additional information did not return calls placed by the ethnographer or one of the consultants. Mr. Nagaki who used to live in Brodie 2 Camp could not recall any names of people who lived in the Korean Camp.

Other than the site mentioned above, there is no surface evidence of any traditional or historic cultural remains located in the project area due to pineapple cultivation of the land following the dismantling of Brodie 2 Camp. However, due to past history of undertakings encountering sub-surface features/sites, and

due to the rich traditional and historic chronicles of the area and vicinity, the following recommendations are advised:

- ❖ It is recommended that a cultural monitor and archaeologist be on-site if any grading of consequence [more than one foot] is to be done, as excavation [ditch work] in the nearby Helemano Military Reservation revealed a traditional *imu* or earth oven below the plow level.

- ❖ It is recommended that a mitigation plan for the Korean Camp site be designed and implemented.

- ❖ It is recommended that a partnership or alliance be developed between ORI Anuenue Hale, Inc. staff and the Wahiawā Hawaiian Civic Club and other interested parties in the vicinity [i.e., Leilehua High School, Waialua High School, Helemano Elementary School] to create a more amicable, equitable and cooperative relationship with the extended communities of Whitmore Village, Wahiawā and Waialua, and to honor past relationships with these lands.

- ❖ It is recommended that the traditional history of these lands and district be honored in a significant or prominent manner on-site in order to educate the local and outside visitor as well as to enhance their experience with this knowledge.

- ❖ It is recommended that plans that incorporate new plantings first consider using second generation native plants from the immediate area in order to re-establish the native landscape.

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APPENDICES

APPENDIX A

A BILL FOR AN ACT RELATING TO
ENVIRONMENTAL IMPACT STATEMENTS
[UNOFFICIAL VERSION]

HOUSE OF REPRESENTATIVES H.B. NO, 2895 H.D.1
TWENTIETH LEGISLATURE, 2000
STATE OF HAWAII

A BILL FOR AN ACT
RELATING TO ENVIRONMENTAL IMPACT STATEMENTS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai`i's culture, and traditional and customary rights.

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit' in Hawaii. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawai`i Revised Statutes, is amended by amending the definitions of "environmental impact statement' or "statement" and "significant effect", to read as follows:

"'Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The initial statement filed for public review shall be referred to as the draft statement and shall be distinguished from the final statement which is the document that has incorporated the public's comments and the responses to those comments. The final statement is the document that shall be evaluated for acceptability by the respective accepting authority.

"Significant effect" means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic [or] welfare, social welfare[.], or cultural practices of the community and State."

SECTION 3. Statutory material to be repealed is bracketed. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor as Act 50 on April 26, 2000

APPENDIX B

15.914: National Register of Historic Places
Criteria for Evaluation:

The following criteria are designed to guide the States and the Secretary of the Interior in evaluating potential entries (other than areas of the National Park System and National Historic Landmarks) to the National Register:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, building, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and;

(A) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(B) that are associated with the lives of persons significant in our past; or

(C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) that have yielded, or may be likely to yield, information important in prehistory or history. Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register.

However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories.

(a) a religious property deriving primary significance from architectural or artistic distinction or historical importance; or
(b) a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
(c) a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life; or
(d) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
(e) a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
(f) a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance, or
(g) a property achieving significance within the past 50 years if it is of exceptional importance.

APPENDIX C

Scope of Work (SOW)

A. Cultural Assessment [in accordance with OEQC Guidelines]

1. identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua`a;

2. identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;

3. receive information from or conduct ethnographic interviews and oral histories with person(s) having knowledge of the potentially affected area;

4. conduct ethnographic, historical, anthropological, and other culturally related documentary research;

5. identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

6. assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

APPENDIX D

Guidelines for Assessing Cultural Impacts

Adopted by the Environmental Council, State of Hawaii
November 19, 1997

I. INTRODUCTION

It is the policy of the State of Hawaii under Chapter 343, HRS, to alert decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An environmental assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343, and promotes responsible decision making.

Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires environmental assessment of cultural resources, in determining the
significance of a proposed project.

The Environmental Council encourages preparers of environmental assessments and environmental impact statements to analyze the impact of a proposed action on cultural practices and features associated with the project area. The Council provides the following methodology and content protocol as guidance for any assessment
of a project that may significantly affect cultural resources.

II. CULTURAL IMPACT ASSESSMENT METHODOLOGY

Cultural impacts differ from other types of impacts assessed in environmental assessments or environmental impact statements. A cultural impact assessment includes information relating to the practices and beliefs of a particular cultural or ethnic group or groups.

Such information may be obtained through scoping, community meetings, ethnographic interviews and oral histories. Information provided by knowledgeable informants, including traditional cultural practitioners, can be applied to the analysis of cultural impacts in conjunction with information concerning cultural practices and features obtained through consultation and from documentary research.

In scoping the cultural portion of an environmental assessment, the geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment. Thus, for example, a proposed action that may not physically alter gathering practices, but may affect access to gathering areas would be included in the assessment. An ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action, particularly if it includes all of the types of cultural practices associated with the project area. In some cases, cultural practices are likely to extend beyond the ahupua'a and the geographical extent of the study area should take into account those cultural practices.

The historical period studied in a cultural impact assessment should commence with the initial presence in the area of the particular group whose cultural practices and features are being assessed. The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs.

The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

The Environmental Council recommends that preparers of assessments analyzing cultural impacts adopt the following protocol:

1.identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua`a;

2.identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;

3.receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;

4.conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;

5.identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

6.assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

Interviews and oral histories with knowledgeable individuals may be recorded, if consent is given, and field visits by preparers accompanied by informants are encouraged. Persons interviewed should be afforded an opportunity to review the record of the interview, and consent to publish the record should be obtained whenever possible. For example, the precise location of human burials are likely to be withheld from a cultural impact assessment, but it is important that the document identify the impact a project would have on the burials. At times an informant may provide information only on the condition that it remain in confidence. The wishes of the informant should be respected.

Primary source materials reviewed and analyzed may include, as appropriate: Mahele, land court, census and tax records, including testimonies; vital statistics records; family histories and genealogies; previously published or recorded ethnographic interviews and oral histories; community studies, old maps and photographs; and other archival documents, including correspondence, newspaper or almanac articles, and visitor journals. Secondary source materials such as historical, sociological, and anthropological texts, manuscripts, and similar materials, published and unpublished, should also be consulted. Other materials which should be examined include prior land use proposals, decisions, and rulings which pertain to the study area.

III.CULTURAL IMPACT ASSESSMENT CONTENTS

In addition to the content requirements for environmental assessments and environmental impact statements, which are set out in HAR §§ 11-200-10 and 16 through 18, the portion of the assessment concerning cultural impacts should address, but not necessarily be limited to, the following matters:

1.A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and

features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.

2.A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.

3.Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.

4.Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.

5.A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.

6.A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.

7.A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.

8.An explanation of confidential information that has been withheld from public disclosure in the assessment.

9.A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.

10.An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.

11.A bibliography of references, and attached records of interviews which were allowed to be disclosed.

The inclusion of this information will help make environmental assessments and environmental impact statements complete and meet the requirements of Chapter 343, HRS. If you have any questions, please call 586-4185.

APPENDIX E

Agreement to Participate in this Cultural Impact Assessment

Project Title: **Aloha Gardens – ORI Anuenue Hale, Inc.**
TMK 6-4-003: 03
Pa`ala`a-uka Ahupua`a and `Ili of Helemano, Moku of Waialua

Investigator: Maria E. Ka`imipono Orr, M.A.

You are being asked to participate in a cultural impact assessment [study] conducted by an independent investigator contracted by Kusao & Kurahashi, Inc. for ORI Anuenue Hale, Inc. **Aloha Gardens** project. The investigator will explain the purpose of the study, the procedures to be used, the potential benefits and possible risks of participation. You may ask the investigator any question(s) in order to help you to understand the study or procedures. A basic explanation of the study is written below. If you then decide to participate in the study, please sign on the second page of this form. You will be given a copy of this form to keep.

I. Nature and Purpose of the Study:

ORI Anuenue Hale Inc. is requesting a land-use boundary amendment, North Shore sustainable communities plan amendment, zone change, and conditional use permit to re-zone TMK 6-4-003: 03 (portion); approximately 14.8 acres of land from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District and approximately 28.44 acres of land from AG-1 Restricted Agricultural District to AG-2 General Agricultural District. The purpose of this cultural impact assessment is to gather information about these lands through interviews with individuals knowledgeable about life in the associated plantation camps or legends, songs, chants or other information of these areas, including traditional and historic information. The objective of this study is to facilitate in the identification and location of any possible pre-historic and/or historic cultural resources, or traditional cultural practices in the area mentioned above, in accordance with applicable historic preservation laws, regulations, and guidelines, including:

Office of Environmental Quality Control [OEQC] Guidelines and Act 50 HB2895 [A.D.2000], HRS Chapter 343; and National Register of Historic Places Criteria.

II. Explanation of Procedures

After you have voluntarily agreed to participate and have signed the consent page, the investigator will tape record your interview and transcribe it later. Data from the interview [ethnographic research] will be used as part of the background history summary for this project. The investigator may also need to take notes and/or ask you to spell or clarify terms or names that are unclear.

III. Benefits

This study will give you the opportunity to express your thoughts (mana`o), and your opinions will be listened to and shared; your knowledge may be instrumental in the preservation of significant information about the area mentioned above.

IV. Discomforts and Risks

Foreseeable discomforts and/or risks may include, but are not limited to the following: having to talk loudly for the recorder; being recorded and/or interviewed; providing information that may be used in reports which may be used in the future as a public reference; knowing that the information you give may conflict with information from others; your uncompensated dedication of time; possible miscommunication and/or misunderstanding in the transcribing of information; loss of privacy; and worry that your comment(s) may not be understood in the same way you understand them. It is not possible to identify all potential risks, however reasonable safeguards have been taken to minimize risks.

V. Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected **if you so desire.** You may request, for example, that your name and/or sex not be mentioned in write-ups, such as field notes, on tape, on files (disk or folders), drafts, reports, and future works; or you may request that some of the information you provide remain "off-the-record" **and not be recorded in any way.** In order to ensure protection of your privacy, confidentiality and/or anonymity, you should immediately advise the investigator of your desires. The investigator will ask you to specify the method of protection, and note it on this form below. We will need to obtain your signature to document your request.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the investigator for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise and/or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, _____, understand that Maria E. Ka'imipono Orr, an independent investigator contracted by Kusao & Kurahashi, Inc. and ORI Anuenue Hale, Inc., will be conducting oral history interviews with individuals knowledgeable about the lands of Pa`ala`a-uka Ahupua`a, *[*TMK 6-4-003: 03*]* and `ili of Helemano The oral history interviews are being conducted to collect information on possible pre-historic and/or historical cultural resources associated with these lands

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say about any of these lands.

_____ I am willing to participate.
_____ I am willing to participate, under the following conditions:

_____

Interviewee **Date**

_____

Investigator **Date**

MAHALO NUI LOA

Part II: Personal Release of Interview Records

I, _____, have been interviewed by Maria E. Ka'imipono Orr, an independent investigator contracted by Kusao & Kurahashi, Inc. and ORI Anuenue Hale, Inc., I have reviewed the written transcripts of tape recordings of the interview, and agree that said documentation is complete and accurate except for those matters specifically set forth below the heading "CLARIFICATION OR CORRECTIONS."

I further agree that Kusao & Kurahashi, Inc. and ORI Anuenue Hale, Inc., may use and release my identity and address and all other interview information, both oral and written, for the purpose of using such information in a report to be made public, subject to my specific objections to release as set forth below under the heading "SPECIFIC OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."

CLARIFICATION OR CORRECTIONS:

SPECIFIC OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

Interviewee **Date**

Investigator **Date**

MAHALO NUI LOA

APPENDIX F

Ethnographic Survey
Basic Research Instrument for Oral History Interviews
Aloha Gardens – ORI Anuenue Hale, Inc.
TMK 6-4-003: 03
Pa`ala`a-uka Ahupua`a and `Ili of Helemano, Moku of Waialua

This research instrument includes basic information as well as research categories which will be asked in the form of open primary questions which allow the individual interviewed (Consultant) to answer in the manner he/she is most comfortable. Secondary or follow-up questions are asked based on what the Consultant has said and/or to clarify what was said. The idea is to have an interview based on a "talk-story" form of sharing information. Questions will NOT be asked in an interrogation style/method, NOR will they necessarily be asked in the order presented below. This research instrument is merely a *guide* for the investigator and simply reflects general categories of information sought in a semi-structured format. Questions will be asked more directly when necessary.

The Consultants were selected because they met one or more of the following criteria:

- Referred By Office of Hawaiian Affairs (OHA) Staff
- Had/has Ties to Project Location(s)
- Known Hawaiian Cultural Resource Person
- Known Hawaiian Traditional Practitioner
- Referred By Other Cultural Resource People

[NOTE: This part of the interview, #1-4 is mutual sharing and rapport building. Most of the information for research categories "Consultant Background" and "Consultant Demographics" come from this section, but not exclusively.]

1. *Name?* *Birth Year?*
   Address? *Phone #?* *Email address?*

   [This information can be addressed in a couple of ways. After the investigator first turns on the tape recorder, the following information will be recorded: Day/Date/Time/Place of Interview/Name of Consultant (if authorized by Consultant)/Name of Investigator/Questions: Have you read the Agreement To Participate?/Do you have any questions before we begin?/Will you please sign the Consent page. The investigator will explain again the purpose of the interview.

   The investigator will then ask the Consultant to "Please tell me about yourself--when/where were you born? where did you grow up? where did you go to school?" This general compound question allows the Consultant to share as much or as little as he/she wants without any pressure. Most of the information for #1 may already be known to the investigator.]

2. *Family Background: History? Hawaiian connection (if any)?*

   [Much of the information for questions #2, 3, and 4 usually comes from the "monologue" answer to Question #1. If it does not, then these questions will be asked. The answers in this section usually establishes how the Consultant meets the criteria; how the Consultant developed his/her information base, etc.]

3. *Youth? Where lived?*

4. *Schooling?*

[NOTE: This part of the interview, #5-7 reflects information sought for the following research categories: "Significant Properties," "Significant People," "Significant Events," "Traditional Cultural Practices,"

'Traditional Arts/Crafts," and Oral History/Folklore/Place Names." The questions are open-ended so as NOT to "put words in the mouths" of the Consultants.]

5. *Can you tell me what you know about the lands of Pa`ala`a-uka? Specifically the area across Helemano Plantation? The related ili of Helemano? Or former plantation camps? And their use(s)?*

   [NOTE: Generally when people share information about a specific topic/place, they usually state where their information came from. If it isn't volunteered, it is asked as a follow-up question(s). A map of the project area should be available to confirm that investigator and consultant are talking about the same place. Photos would also help if a field trip is not possible. The best scenario would be to be "on-site" at some part of the interview...although this is not always practical.]

6. *What are your recollections and/or personal experiences of this area?*

   [NOTE: If Consultant was a resident of the former plantation camps, follow-up question(s) is asked.]

7. *Please describe the plantation camp and activities when you were living there?*

   [NOTE: Possible follow-up questions for Aloha Gardens project:

   - How are you or your family connected to the lands of Pa`ala`a-uka? Helemano?
   - What year(s) were you and/or your family associated with the lands of Pa`ala`a-uka?
   - What was this place/area called when you were growing up?
   - Can you describe what the area looked like--what kinds of natural and/or man made things?
   - To your knowledge what kind of activities took place in this location?
   - Do you know of any traditional gathering of plants, etc in the area?
   - To your knowledge please describe any fishing, gathering [i.e., plants] practices nearby?
   - Any other land/water use?
   - What was the historic land use? Sugar Cane? Agriculture? Habitation? Dwellings?
   - When were the ditches put in? How were they developed?
   - Where were these "features" located? **[Have map ready for marking.]**
   - Do you know about any burials in the project area?

8. *Do you know any stories/legends/songs/chants associated with these areas?*

9. *Is there anyone you know who can also tell me about the project area?*

   [NOTE: Usually in the course of the interview, Consultants suggest other people.]

10. *As soon as I have transcribed this interview I will send you two copies. Please review the transcript, make any corrections and/or additions. If you're satisfied, please sign the attached third page of the Consent Form thereby releasing the information. Then mail one set back to me in the enclosed stamped addressed envelope.*

MAHALO NUI LOA

CONSULTANTS SIGNED CONSENT & RELEASE FORMS

IV. Discomforts and Risks

Foreseeable discomforts and/or risks may include, but are not limited to the following: having to talk loudly for the recorder; being recorded and/or interviewed; providing information that may be used in reports which may be used in the future as a public reference; knowing that the information you give may conflict with information from others; your uncompensated dedication of time; possible miscommunication and/or misunderstanding in the transcribing of information; loss of privacy; and worry that your comment(s) may not be understood in the same way you understand them. It is not possible to identify all potential risks, however reasonable safeguards have been taken to minimize risks.

V. Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected **if you so desire.** You may request, for example, that your name and/or sex not be mentioned in write-ups, such as field notes, on tape, on files (disk or folders), drafts, reports, and future works; or you may request that some of the information you provide remain "off-the-record" **and not be recorded in any way.** In order to ensure protection of your privacy, confidentiality and/or anonymity, you should immediately advise the investigator of your desires. The investigator will ask you to specify the method of protection, and note it on this form below. We will need to obtain your signature to document your request.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the investigator for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise and/or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, _____, understand that Maria E. Ka'imipono Orr, an independent investigator contracted by Kusao & Kurahashi, Inc. and ORI Anuenue Hale, Inc., will be conducting oral history interviews with individuals knowledgeable about the lands of Pa`ala`a-uka Ahupua`a, [TMK 6-4-003: 03] and `ili of Helemano The oral history interviews are being conducted to collect information on possible pre-historic and/or historical cultural resources associated with these lands

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say about any of these lands.

_____ *I am willing to participate.*
_____ *I am willing to participate, under the following conditions:*

Mitsuo Nagaki 3/1/02
Interviewee **Date**

Maria Orr 3/1/02
Investigator **Date**

MAHALO NUI LOA

Release of Information of the 10/31/01 Dole Plantation Info.

Part II: Personal Release of Interview Records

I, _____, have been interviewed by Maria E. Ka'imipono Orr, an independent investigator contracted by Castle & Cooke Properties, Inc. I have reviewed the attached written transcripts of tape recordings of the interview, and agree that said documentation is complete and accurate except for those matters specifically set forth below the heading "CLARIFICATION OR CORRECTIONS."

I further agree that Castle & Cooke Properties, Inc *may use and release my identity and address and all other interview information, both oral and written, for the purpose of using such information in a report to be made public, subject to my specific objections to release as set forth below under the heading "SPECIFIC OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."*

CLARIFICATION OR CORRECTIONS:

SPECIFIC OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

Mitsuo Nagaki — 3/1/02
Interviewee **Date**

Maria Orr — 3/1/02
Investigator **Date**

From: Smvl520@aol.com
Date: Tue, 5 Mar 2002 02:20:11 EST
Subject: Re: Helemano
To: kaimi@lava.net
X-Mailer: AOL 3.0 for Windows 95 sub 76

Aloha Maria,

I consent to the use of information forwarded to you by myself, Thomas J. Lenchanko, for presentation on the Halemano project (Helemano).

I would like to add information given to me by two informants who had given me testimony during research for the proposed Galbraith lands development and a follow up to a newspaper interview in Wahiawa.

Toki Uchida of Poamoho camp gave a site interpretation of the location of The different camps located in the general area of the project, Halemano, Brodie, Kemoo, Ontai and Hasebe. Toki's time line refers back to 1925 through 1995 when he was growing up and employed by CPC and Del Monte. Stanley Nakasone of camp 10 recalls testimony given by grandmother which Dated to the 1920's when the land, today stone pile and eucalyptus trees are, was first cleared for the camp that wagons were filled with many human bones. He states that this area was possibly a battle ground because there was no cemetery in the area. Where the bones were taken he does not know, but there were many wagon loads.

Maria no maps from Toki for we stood at the geodetic survey marker at the old Halemano road and he pointed out in general the camp locations along with the natural ditch that cut through the land heading to the north shore. Wish Mr. Nakasone would call.

eo hawaii Tom.

IV. Discomforts and Risks

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I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say about any of these lands.

_✓_ *I am willing to participate.*
_____ *I am willing to participate, under the following conditions:*

Francines Kaeuna 2/26/02
Interviewee **Date**

Maria Orr 2/26/02
Investigator **Date**

MAHALO NUI LOA

IV. Discomforts and Risks

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I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say about any of these lands.

✓ *I am willing to participate.*
_____ *I am willing to participate, under the following conditions:*

Teresita Lunabas 2/26/2002
Interviewee **Date**

Maria Orr 2/26/02
Investigator **Date**

MAHALO NUI LOA

IV. Discomforts and Risks

Foreseeable discomforts and/or risks may include, but are not limited to the following: having to talk loudly for the recorder; being recorded and/or interviewed; providing information that may be used in reports which may be used in the future as a public reference; knowing that the information you give may conflict with information from others; your uncompensated dedication of time; possible miscommunication and/or misunderstanding in the transcribing of information; loss of privacy; and worry that your comment(s) may not be understood in the same way you understand them. It is not possible to identify all potential risks, however reasonable safeguards have been taken to minimize risks.

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✓ *I am willing to participate.*
_____ *I am willing to participate, under the following conditions:*

Cunfidio P Lunabao 2/26/2002
Interviewee **Date**

Maria Orr 2/26/02
Investigator **Date**

MAHALO NUI LOA

APPENDIX V

BOTANICAL RESOURCES ASSESSMENT

BOTANICAL RESOURCES ASSESSMENT
ALOHA GARDENS PROPOSED FACILITY
HELEMANO, WAIALUA DISTRICT, O'AHU

by

Winona P. Char

CHAR & ASSOCIATES
Botanical Consultants
Honolulu, Hawai'i

Prepared for: ORI ANUENUE HALE, INC.

March 2002

BOTANICAL RESOURCES ASSESSMENT
ALOHA GARDENS PROPOSED FACILITY
HELEMANO, WAIALUA DISTRICT, O'AHU

INTRODUCTION

ORI Anuenue Hale, Inc., is a private, non-profit agency based in Helemano, O'ahu, which provides education, employment, and training opportunities for the community. The agency intends to develop a separate facility to assist a broad spectrum of the community, including, but not limited to: the elderly, persons developmentally disabled, the economically disadvantaged, immigrants, displaced workers, and the unemployed.

The proposed facility will be located adjacent to and north of the existing facility on TMK: 6-4-3: Portion of 3. The land is currently used for pineapple cultivation. Approximately 7.49 acres of land will need to be rezoned from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District, and approximately 35.75 acres of land from AG-1 Restricted Agricultural District to AG-2 General Agricultural District. The proposed facility is envisioned to be an integrated setting with outdoor areas for appreciation of nature and recreation, a learning center and vocational school, a daycare for elders, a health and wellness center for elders, a group living facility (special needs housing), administrative facilities, diversified agricultural activities, and a farmer's market.

Field studies to assess the botanical resources on the proposed project site were conducted on 28 February 2002. The primary objectives of the survey were to:

1) prepare a general description of the vegetation on the project site;

2) search for threatened and endangered species and species of concern; and
3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

SURVEY METHODS

Prior to undertaking the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical studies conducted in the general area. The conceptual plan for the project and a colored, aerial photograph of the site were examined to determine vegetation cover patterns, terrain characteristics, access, boundaries, and reference points.

A walk-through survey method was used. The dirt roads which service the pineapple fields provide access throughout the property. Notes were made on plant associations and distribution, disturbances, substrate types, drainage, exposure, topography, etc. Plant identifications were made in the field; plants which could not be positively identified were collected for later determination in the herbarium, and for comparison with the recent taxonomic literature.

DESCRIPTION OF THE VEGETATION

The plant names used in the following discussion are in accordance with Wagner et al. (1990), and Wagner and Herbst (1999). The few recent name changes are those recorded in the Hawaii Biological Survey series (Evenhuis and Eldredge, editors, 1999-2000).

Almost all of the site is under active pineapple cultivation. At the time of this survey, the fields had been harvested and recently plowed. A few patches of weedy plants are found scattered throughout the fields.

The most abundant species on the recently tilled fields are slender amaranth (Amaranthus viridis), sourgrass (Digitaria insularis), and purple-flowered wild bean (Macroptilium atropurpureum). Other species which are locally common to occasional include cheeseweed (Malva parviflora), wiregrass (Eleusine indica), wild bittermelon (Momordica charantia), pigweed (Portulaca oleracea), and southern pokeberry (Phytolacca octandra). A number of weedy composites (Asteraceae) are frequently encountered; these include sowthistle (Sonchus oleraceus), Spanish needle (Bidens pilosa), pualele (Emilia fosbergii), and Crassocephalum crepidioides. A few remnant pineapple plants (Ananas comosus) are also found on the site.

The vegetation on the uncultivated portions of the property, such as along the margins of the fields and along the drainage ditch which crosses the site, consists of dense clumps of Guinea grass (Panicum maximum), 3 to 4 ft. tall, and an assortment of weedy species similar to those already mentioned above. Some weedy species common to these areas include bur clover (Medicago polymorpha), field bindweed (Ipomoea indica), virgate mimosa (Desmanthus virgatus), narrow-leaved plantain (Plantago lanceolata), swollen fingergrass (Chloris barbata), and pepperwort (Lepidium virginicum). Woody components such as koa haole (Leucaena leucocephala), castor bean (Ricinus communis), and Asiatic butterfly bush (Buddleia asiatica) are found on these uncultivated sections.

DISCUSSION AND RECOMMENDATIONS

The site proposed for the new facility supports actively cultivated pineapple fields along with an associated network of dirt roads and a drainage ditch. Uncultivated areas, such as along the margins of fields and the drainage ditch, support dense clumps of Guinea grass along with an assortment of weedy species. Soils on the site belong to the Wahiawa series (Foote et al. 1972). These are

well-drained, dusky-red colored soils found on the uplands of O'ahu. Permeability is moderately rapid; runoff is slow and the erosion hazard is slight.

The level to gently rolling fields support species commonly associated with agricultural lands. No threatened and endangered species or species of concern (U.S. Fish and Wildlife Service 1999; Wagner et al. 1999) occur on the site. Only one native species was observed during this study. The popolo or glossy nightshade (Solanum americanum) is an indigenous species, that is, it is native to the Hawaiian Islands and elsewhere; it prefers disturbed, open habitats. All the other plants are introduced or alien species, that is, they were bought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (Cook's arrival in the islands in 1778). A recent botanical survey of the nearby Dole Plantation lands (Char 2001) recorded similar findings.

Given these findings, the proposed project is not expected to have a significant negative impact on the botanical resources of the site or the general region. There are no botanical reasons to impose any restrictions, conditions, or impediments to the proposed development of the site.

LITERATURE CITED

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Wagner, W.L. and D.R. Herbst. 1999. Supplement to the Manual of the flowering plants of Hawai'i, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the flowering plants of Hawai'i. Revised edition. 2 vols. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.

APPENDIX VI

AVIFAUNAL AND FERAL MAMMAL SURVEY

AVIFAUNAL AND FERAL MAMMAL FIELD SURVEY OF

TMK:6-4-3: PORTION OF 3 OAHU

Prepared for:

Aloha Gardens – Developer ORI Anuenue Hale, Inc.

Prepared by:

Phil Bruner
Environmental Consultant
Faunal (Bird & Mammal) Surveys
Box 1775
BYU-H
Laie, Hawaii 96762

1 February 2002

INTRODUCTION

This report gives the findings of a one day (26 January 2002) field survey of TMK: 6-4-3: Portion of 3, Oahu. Published and unpublished sources were consulted and are referenced to support the results of the field work. The goals of the field survey were to:

1- Document all of the species of birds and mammals currently on or near the property.

2- Focus special attention on native species, particularly those that are listed as endangered.

3- Note any natural resources important to native and migratory birds at this site.

GENERAL SITE DESCRIPTION

The majority of this property was devoid of vegetation due to recent plowing. This area is currently used for pineapple cultivation. Small patches of grass and weeds were found along the edges of roads and drainage ditches. No wetland habitat was found on the survey.

SURVEY METHODS

The field survey was conducted by walking the entire site. All species of birds seen or heard were noted. Table One gives the names of all introduced species. Migratory shorebirds were individually tallied. Data on mammals were obtained by visual sightings, tracks and scats. No attempts to trap mammals in order to determine their relative abundance were made. Such an effort was unnecessary and beyond the scope of this survey.

The weather during the survey was overcast with light rain. The wind was less than 10mph from the SE.

Scientific and common names of birds used in this report follow those given in Pyle (1997). Honacki et al. (1982) was used as the source for mammal names.

RESULTS AND DISCUSSION

Native Waterbirds:

No native waterbirds were recorded during the survey. A nearby irrigation reservoir contained five native waterbirds (Bruner 2001).

Native land birds:

No native land birds were observed on the survey. The only species that might occur in this area is the Short-eared Owl or Pueo (*Asio flammeus sandwichensis*). The Oahu population of this species is listed by the State of Hawaii as endangered. Pueo forage over open fields as well as forests. They nest on the ground in areas with tall grass (Pratt et al. 1987, Hawaii Audubon Society 1993).

Migratory Birds:

Twenty six Pacific Golden-Plover (*Pluvialis fulva*) were seen foraging on the property. This species has been the subject of intensive research over the past 20 years (Johnson et al. 1981, 1989, 2001). They are not listed as endangered or threatened. Plover breed in the arctic and are found in Hawaii from August through April. The only other migratory shorebird that would be expected to forage on this property is the Ruddy Turnstone (*Arenaria interpres*). This species is also not endangered or threatened.

Introduced Birds:

Ten species of introduced birds were counted on the survey. Table One gives the names of these species. This list includes those typically found in this area (Bruner 1992, 2001). None are endangered or threatened.

Mammals:

Four Small Indian Mongoose (*Herpestes auropunctatus*) were counted on the survey. No rats, mice or cats were seen but likely occur in this area. The endangered and endemic Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) is rare on Oahu but is frequently observed on Kauai and the Big Island (Tomich 1986, Kepler and Scott 1990). They forage in a wide variety of habitats including urban areas and generally roost solitarily in trees. No bats were seen on this survey.

CONCLUSIONS

The field survey found the typical array of introduced birds. No unusual or unexpected species were encountered. No endangered or threatened species were found on the property. The only migratory bird recorded was the Pacific Golden-Plover. This species is the most abundant migrant in Hawaii. The Small Indian Mongoose was the only mammal seen on the survey.

This property contains no natural undisturbed habitat. The entire site is developed for agriculture. No unique natural resources were identified on the survey. The development of this property will produce a more diversified array of habitats that will likely increase the numbers of birds and the variety of species at this site.

TABLE ONE

Introduced birds recorded at TMK: 6-4-3:Portion of 3, Oahu

COMMON NAME	SCIENTIFIC NAME
Cattle Egret	*Bubulcus ibis*
Ring-necked Pheasant	*Phasianus colchicus*
Spotted Dove	*Streptopelia chinensis*
Zebra Dove	*Geopelia striata*
Red-vented Bulbul	*Pycnonotus cafer*
Japanese Bush-warbler	*Cettia diphone*
Common Myna	*Acridotheres tristis*
Japanese White-eye	*Zosterops japonicus*
Common Waxbill	*Estrilda astrild*
Java Sparrow	*Padda oryzivora*

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APPENDIX VII

ENVIRONMENTAL NOISE ASSESSMENT

Project No. 02-01

ENVIRONMENTAL NOISE ASSESSMENT
ALOHA GARDENS
WAHIAWA, HAWAII

February 2002

Prepared for
ORI Anuenue Hale, Inc.
Wahiawa, Hawaii

CONTENTS

1.0 SUMMARY

1.1 The project area and vicinity are currently exposed to daytime ambient noise levels of 40 to 63 dBA, with the dominant noise sources being traffic on Kamehameha Highway, wind, birds, and an occasional small aircraft flyover.

1.2 Traffic noise levels, due to the project, are not expected to significantly increase along the existing roadways in the vicinity of the project.

1.3 The dominant noise sources during project construction will probably be earth moving equipment, such as bulldozers and diesel powered trucks, assuming pile driving equipment will not be required. Noise from construction activities will occur on the subject property. Noise from construction activities should be short term and must comply with State Department of Health noise regulations.

1.4 Predicted traffic noise level increases along local roadways in the vicinity of the project following completion were determined to be less than 2 dBA, which is below the threshold of perceptible change in noise level for most people and not considered significant.

2.0 PROJECT DESCRIPTION

The project site is located in Central Oahu, north of Wahiawa, Hawaii, and next to the existing Dole and Helemano Plantations (Figure 1). The project consists requesting a State Land Use Boundary Amendment, a North Shore Sustainable Communities Plan Amendment, a Conditional Use Permit, and rezoning 7.49 acres of land from AG-1 Restricted Agricultural District to B-1 Neighborhood Business District and 35.75 acres of land from AG-1 Restricted Agricultural District to AG-2 General Agricultural District. The B-1 zoning is proposed to include a learning center, vocational school, a health and wellness center for elderly, administrative facilities, and a farmer's market. The AG-2 zoning is proposed to include an outdoor recreation area, a daycare for elders, and a group living facility.

3.0 NOISE STANDARDS

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

3.1 U.S. Federal Highway Administration (FHWA)

The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels, L_{eq}, for traffic noise exposure [Reference 1], which are listed in Table 1. For example, Category B, defined as picnic and recreation areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals, has a corresponding maximum exterior L_{eq} of 67dBA and a maximum interior L_{eq} of 52 dBA. These limits are viewed as design goals, and all projects meeting these limits are deemed in conformance with FHWA noise standards.

3.2 Hawaii Department of Transportation (HDOT)

The HDOT has adopted FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy [Reference 2]. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "approach" or exceed FHWA's design goals or when the predicted traffic noise levels "substantially exceed the existing noise levels." The policy also states that "approach" means at least 1 dB less than FHWA's design goals and "substantially exceed the existing noise levels" means an increase of at least 15dB.

3.3 U.S. Department of Housing and Urban Development (HUD)

HUD's environmental noise criteria and standards in 24 CFR 51 [Reference 3] were established for determining housing project site acceptability. These standards are based on day-night equivalent sound levels, L_{dn}, and are not limited to traffic noise exposure. However, for project sites in the vicinity of highways, the L_{dn} may be estimated to be equal to the design hour $L_{eq(h)}$, provided "heavy trucks (vehicles with three or more axles) do not exceed 10 percent of the total traffic flow in vehicles per 24 hours and the traffic flow between 10:00 p.m. and 7:00 a.m. does not exceed 15 percent of the average daily traffic flow in vehicles per 24 hours." For these same conditions, L_{dn}, may also be estimated as 3 dB less than the design hour L_{10}.

HUD site acceptability criteria rank sites as Acceptable, Normally Unacceptable, or Unacceptable. "Acceptable" sites are those where exterior noise levels do not exceed an L_{dn} of 65 dBA. Proposed housing projects on "Acceptable" sites do not require additional noise attenuation other than that provided by customary building techniques. "Normally Unacceptable" sites are those where the L_{dn} is above 65 dBA, but does not exceed 75 dBA. Housing on "Normally Unacceptable" sites requires some form of noise abatement, either at the property line or in the building construction, to ensure the interior noise levels are acceptable. "Unacceptable" sites are those where the L_{dn} is 75 dBA or higher. The term "Unacceptable" does not necessarily mean that housing cannot be built on those sites. It means that more sophisticated sound attenuation will likely be needed.

3.4 U.S. Environmental Protection Agency (EPA)

The U.S. EPA has identified a range of yearly day-night equivalent sound levels, L_{dn}, sufficient to protect public health and welfare from the effects of environmental noise [Reference 4]. The EPA has established a goal to reduce exterior environmental noise to an L_{dn} not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an L_{dn} not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

3.5 State Department of Health (DOH)

The State DOH defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc., and equipment related agricultural, construction, and industrial activities [Reference 5]. These levels are enforced for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 2. With respect to mixed zoning districts, DOH specifies the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level.

3.6 City and County of Honolulu Land Use Ordinances (LUO)

The City and County of Honolulu LUO [Reference 6] noise regulations differ from the DOH noise regulations in that maximum permissible octave band sound pressure levels are specified instead of A-weighted sound pressure levels. Also, there is no specified period of time associated with the exceedence of these levels. The LUO noise regulations which are presented in Figure 3, are the LUO noise regulations are theoretically enforced by the Building Department, however, since they do not have noise measurement capabilities, noise complaints are usually handled by the DOH.

4.0 EXISTING ACOUSTICAL ENVIRONMENT

Ambient noise level measurements were conducted on February 5, 2002 to assess the existing acoustical environment at the project site and in the surrounding areas as illustrated in Figure 4. Noise level measurements were taken using a Larson-Davis Laboratories, Model 800B and Model 824 Sound Level Meters. The results obtained, shown in Figure 2, are expressed in terms of equivalent sound levels, L_{eq}, and in units of A-weighted decibels.

Presently, the dominant noise sources at the above locations include traffic, wind, birds, and occasional distant aircraft flybys. Traffic volume and vehicle mix was also recorded during the measurement at Location 3.

5.0 POTENTIAL NOISE IMPACT DUE TO THE PROJECT AND NOISE MITIGATION

5.1 Project Construction Noise

Development of project areas will involve excavation, grading, and construction of new buildings and infrastructure. The various construction phases of the project may generate significant amounts of noise. The actual noise levels produced will be a function of the methods employed during each stage of the construction process. Typical ranges of construction equipment noise are shown in Figure 5. Earthmoving equipment, e.g., bulldozers and diesel-powered trucks, will probably be the loudest equipment used during construction, assuming that pile driving will not be required.

In cases where construction noise exceeds, or is expected to exceed the DOH's "*maximum permissible*" *property line noise levels [Reference 5], a permit must be* obtained from the DOH to allow the operation of vehicles, construction equipment, power tools, etc., which emit noise levels in excess of "maximum permissible" levels. Specific permit restrictions for construction activities are:

> "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels . . . before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday."
>
> "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels . . . before 9:00 a.m. and after 6:00 p.m. on Saturday."
>
> "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

5.2 Project Generated Traffic Noise

Measured traffic noise levels along with traffic volume and vehicle mix counts obtained during the measurements were used to calibrate the FHWA's Traffic Noise Prediction Model [Reference 7]. The noise model together with the traffic data [Reference 8] was then used to calculate the peak hour traffic noise levels

with and without the project. The existing and predicted traffic noise level results are presented in Table 3.

As can be seen, the predicted AM and PM peak hour traffic noise level increase along Kamehameha Highway due to the project is 1.9 and 1.1 dBA, respectively. The minimal change in noise levels perceptible to the average listener is generally taken to be 3 dB, therefore, the increase in traffic noise due to the project will not be significant. Thus, no traffic noise impact will occur as a result of the project. The traffic noise levels presented in Table 3 are those expected at a distance of 62 feet from the roadway centerline.

5.3 Noise From On-Site Equipment

Noise from pumps, AHU's, compressors, condensing units, and other on-site equipment must be addressed during the design phase of the project. Noise at the property line from on-site equipment must be within the DOH maximum permissible sound limit for the specific zoning district. If on-site equipment exceeds these limits, mitigation in the form of barriers, enclosures, silencers, etc. should be included in the design.

6.0 POTENTIAL TRAFFIC NOISE IMPACT ON THE PROJECT

The proposed project, as envisioned, incorporates a 200 foot wide landscape buffer between Kamehameha Highway and any project structure. Predicted noise levels from highway traffic meet the FHWA, HDOT, HUD, EPA, DOH, and LUO design goals and regulations. Unless structures are constructed closer than 200 feet, no further highway noise mitigation will be necessary. However, recommended limits may be exceeded occasionally by high impulsive noises such as emergency vehicles.

7.0 REFERENCES:

1. *Department of Transportation, Federal highway Administration Procedures for Abatement of Highway traffic Noise,* Title 23, CFR, Chapter 1, Subchapter J, Part 772, 38 FR 15953, June 19, 1973; Revised at 47 FR 29654, July 8, 1982.

2. *Noise Analysis and Abatement Policy,* Department of Transportation, Highways Division, State of Hawaii, June 1977.

3. *Department of Housing and Urban Development Environmental Criteria and Standards,* Title 24, CFR, Part 51, 44 FR 40860, July 12, 1979; Amended by 49 FR 880, January 6, 1984.

4. *Toward a National Strategy for Noise Control,* U.S. Environmental Protection Agency, April 1977.

5. Chapter 46, *Community Noise Control,* Department of Health, State of Hawaii, Administrative Rules, Title 11, September 23, 1996.

6. *Section 3.11 Noise Regulations,* Land Use Ordinance, City and County of Honolulu, Oahu, October 22, 1986.

7. *Federal Highway Administration's Traffic Noise Model,* FHWA-RD-77-108; U.S. Department of Transportation, December 1978

8. Site Access Study Report: Helemano Plantation Expansion Draft, Julian Ng, Inc., February 9, 2002.

TABLE 1
Federal Highways Administration Recommended Equivalent Hourly Sound Levels Based On Land Use [Reference 1]

Activity Category	$L_{eq(h)}$	Noise Reduction Exterior-to-Interior
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	*67 (Exterior)*	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	---	Undeveloped Land
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

TABLE 2
Measurement Locations and Sound Pressure Levels

Measurement Location	Date/Time of Measurement	Duration of Measurement	Sound Pressure Levels (dBA)
1	2/6/02 4:07 PM	10 Minutes	42.6
2	2/6/02 4:25 PM	10 Minutes	39.8
3	2/6/02 4:45 PM	30 Minutes	62.8

TABLE 3
Peak Hour Traffic Noise Levels and Predicted Noise Level Increases
(Leq in dBA, 62 feet from centerline of Kamehameha Highway)

	Existing		Predicted Year 2010 Without Proposed Project		Predicted Year 2010 With Proposed Project	
Peak Traffic Noise Level	AM	PM	AM	PM	AM	PM
	61.5	62.7	61.9	63.1	63.4	63.8
Increase Above Existing	---	---	0.4	0.4	1.9	1.1

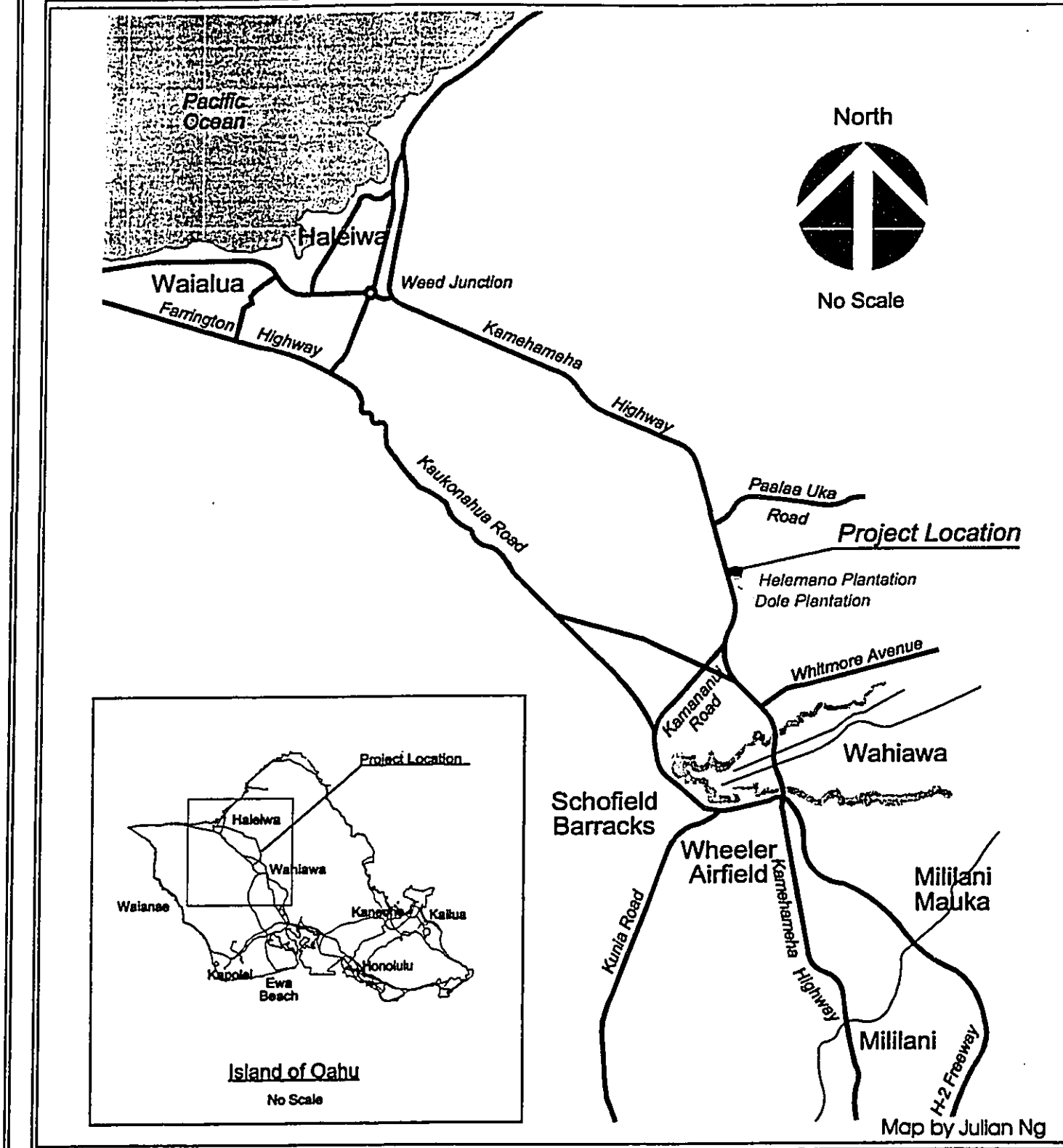

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FIGURE 1 - Project Location and Study Area