



EXECUTIVE CHAMBERS

HONOLULU

GEORGE R. ARIYOSHI
GOVERNOR

April 17, 1985

Ms. Letitia N. Uyehara
Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Based on the recommendation of the Office of Environmental Quality Control, I am pleased to accept the supplemental environmental impact statement for the Kakaako Community Development District Plan as a satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

This environmental impact statement will be a useful tool in deciding whether this project should be allowed to proceed. My acceptance of the statement is an affirmation of its adequacy under applicable laws and does not constitute an endorsement of the proposal.

When the decision is made regarding this action, I expect the proposing agency to carefully weigh the societal benefits against the environmental impact which will likely occur. This impact is adequately described in the statement, and together with the comments made by reviewers, provides a useful analysis of alternatives to the proposed action.

With warm personal regards, I remain,

Yours very truly,


George R. Ariyoshi

cc: HCDC
U. S. Department of Housing
and Urban Development



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Hawaii Community
Development Authority

and

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U. S. Department
of Housing and
Urban Development
82-5F(FS)

A Final Supplemental
Environmental Impact Statement

KAKAAKO COMMUNITY DEVELOPMENT DISTRICT PLAN



May 1985

Office of Environmental Quality Control
235 S. Beretania #702
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FINAL

SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

FOR THE

KAKA'AKO COMMUNITY DEVELOPMENT DISTRICT PLAN
AN ADDENDUM TO THE
FINAL ENVIRONMENTAL IMPACT STATEMENT
82-5F(FS)

JOINT LEAD AGENCIES


STATE OF HAWAII
HAWAII COMMUNITY DEVELOPMENT AUTHORITY

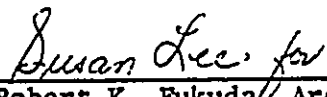
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U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

ACCEPTING AUTHORITY
GOVERNOR, STATE OF HAWAII

PREPARED PURSUANT TO CHAPTER 343, HAWAII REVISED STATUTES
and
42 U.S.C. 4371 et seq. and 40 CFR Part 1500-1508


Rex Johnson, Executive Director
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May 1985

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S U M M A R Y

At the request of the Hawaii Community Development Authority (HCDA or Authority), the State of Hawaii Office of Environmental Quality Control (OEQC) has determined that a Supplemental Environmental Impact Statement is required for the Makai Area Plan, which is an addendum to the Kaka'ako Plan adopted in 1982. OEQC's determination was based on the Environmental Impact Statement (EIS) Regulations of the State Environmental Quality Commission which require a Supplemental EIS any time there is a substantial change to an action for which an EIS was accepted. The Makai Area Plan represents a substantial change to the Kaka'ako District Plan. Accordingly, the information provided in the "Final Environmental Impact Statement for the Kaka'ako Community Development District Plan", which was accepted by the Governor on August 22, 1983, needs to be updated.

The Final EIS of August 1983 has been supplemented in several respects. In addition to disclosing the impacts from implementation of the Makai Area Plan, this Supplemental EIS describes and analyzes the impacts resulting from infrastructure improvements for the Increment 1 District-Wide Improvement Program, updates selected findings of the Final EIS, further evaluates traffic, air quality and noise impacts resulting from development of the entire Kaka'ako District, and examines the unresolved issues identified in the Final EIS.

This Supplemental EIS has been prepared to satisfy the content and procedural requirements of Federal environmental laws, as well as Chapter 343, HRS. The U.S. Department of Housing and Urban Development has assumed the Federal lead agency responsibility in the preparation of this Supplemental EIS. The joint preparation is in anticipation of Federal funding and permit approval for possible projects implemented under the Kaka'ako District Plan.

The Makai Area Plan allocates 4.4 million square feet of land area among three major land uses: a Mixed-Use Zone-Residential (MUZ-R), a Mixed-Use Zone-Commercial (MUZ-C), and a single-use Waterfront Industrial (WI) zone. Within the MUZ-R and MUZ-C zones, a mixture of commercial and residential uses is allowed, and light and service industrial uses are required at no less than a 0.3 floor area ratio (FAR). The WI zone allows for the accommodation of existing harbor-related industrial uses and provides space for possible expansion.

The makai area currently has a total floor area of approximately 1.4 million square feet (msf) and an overall FAR of 0.3. The Plan would increase the total potential floor area to 7.8 msf, with an average FAR of 1.8 for the developable land area.

Property within any makai area zone may be developed to a maximum height of 45 feet and a maximum FAR of 1.5. Developments exceeding these maximums are allowed only in the mixed-use zones under the Planned Development provisions of the Rules. During the design and review process, HCDA will establish building heights and floor area ratios for Planned Development projects based on the size of the development lot,

and the inclusion of housing, community facilities, and other improvements which meet the objectives and requirements of the Plan.

Streets and roadways in the makai area will be upgraded to meet or exceed City and County standards. Except for the possible closure of Coral and Ohe Streets between Ala Moana Boulevard and Ilalo Street, the existing circulation pattern in the makai area is to be maintained. Closure of these streets would allow for the creation of superblocks and would enhance the economic utility of lands fronting Ala Moana. An above-grade pedestrianway at the 45-foot level crossing over Ala Moana at Cooke Street may be provided, ensuring safe and efficient pedestrian access between the makai and mauka areas. A bikeway system along both sides of Ala Moana is also proposed. The County bus system will continue as the primary mode of public transportation for the area.

Three historic structures within the makai area are designated for protection by the Plan. The Rules require property owners to obtain a Certificate of Appropriateness from HCDA before demolishing or altering any historic property listed in the Plan or the Hawaii or National Register of Historic Places.

Approximately 1,366,000 square feet of floor area (roughly 17 percent of the total maximum floor area) is projected for housing in the makai area. Based on an average minimum dwelling unit size of 883 square feet and 2.5 persons per dwelling unit, a maximum of approximately 1,547 dwelling units could be built, providing housing for about 3,868 residents.

The reserved housing provisions of the Kaka'ako Plan and the Hawaii Housing Authority's (HHA) Hula Mae program are two measures which may increase housing opportunities in Kaka'ako for moderate-income homeowners. HHA and the City and County Department of Housing and Community Development each have programs specifically designed to provide housing for the very low and low income households. HCDA will not duplicate their efforts and will rely on existing programs to provide low income housing in Kaka'ako.

The Plan requires that future infrastructure be sized to meet the demands of the District developed to its maximum potential. Utility and drainage facilities will be systematically upgraded by HCDA concurrently with roadway improvements. Development will not be permitted if adequate infrastructure is not available.

Redevelopment of the makai area will not result in any significant adverse impacts on the natural environment. Existing and planned sources of drinking water will not be affected. Drainage from the makai area will not significantly increase the drainage flow from the mauka area and tributary areas. The diversion of 166.7 cfs peak discharge from Kewalo Basin to the Keawe Street drainage channel is expected to mitigate problems in Kewalo Basin after heavy rainfall.

Increased urban development will unavoidably result in higher noise levels, increased traffic congestion, and negative impacts on existing businesses. Federal and State regulations governing noise and air

quality, together with HCDA Rules and street improvements, should satisfactorily mitigate these impacts.

Some of the existing businesses in the makai area may be temporarily or permanently displaced as a result of redevelopment. HCDA's Relocation Program and Rules will mitigate the impacts of displacement by providing financial assistance to displacees of government actions and relocation services to displacees of both government and private development actions.

District-Wide Improvement Program Rules adopted by HCDA set forth the methods of assessing costs against real property that specially benefits from public facility improvements, government agency responsibilities for improvement costs, how the assessment area process will be conducted, and the methods of financing infrastructure improvements.

The first area targeted for implementation under the Kaka'ako District-Wide Improvement Program is called Increment I, which is a 138-acre area of the Ewa (West) portion of the District. Increment I is generally bounded by Punchbowl Street, King Street, Cooke Street, and Ala Moana Boulevard. Proposed improvements include street widenings and the provision of sidewalks, curbs, and gutters; installation of new sewer, water and drain lines; and new underground electrical, telephone, and cable television lines.

The Increment I area is divided into two proposed construction phases. Construction of the Phase I improvements is anticipated to begin in late 1985 or early 1986, and is estimated to take approximately 18 months. During the construction period, major impacts may be expected on air quality, noise, vehicular and pedestrian traffic, business activity, and the visual quality of the area. These impacts, however, for the most part will be temporary. Over the long-term, there will be significant positive impacts, such as reduction of hydrocarbon pollution in storm runoff, improved traffic circulation, increased industrial, commercial, and residential floor space, increased employment opportunities, increased property tax revenues, and an overall improvement in the quality of the environment. These benefits are considered to justify implementation of the proposed improvements, notwithstanding unavoidable adverse impacts.

CHAPTER I

INTRODUCTION

A. PURPOSE AND NEED FOR THE SUPPLEMENTAL EIS

The State of Hawaii Office of Environmental Quality Control (OEQC) has determined, at the request of the Hawaii Community Development Authority (HCDA or Authority), that a Supplemental Environmental Impact Statement (EIS) is required for the Makai Area Plan, which is an addendum to the Kaka'ako District Plan adopted in 1982. OEQC's determination was based on Sub-Part K of the EIS Regulations of the State Environmental Quality Commission which require a Supplemental EIS any time there is a substantial change to an action for which an EIS was accepted. Accordingly, the information provided in the "Final EIS for the Kaka'ako Community Development District Plan", which was accepted by the Governor on August 22, 1983, needs to be updated.

Under the EIS Regulations, a "substantial change" would arise whenever the proposed action has been modified to the extent that new or different environmental impacts are anticipated. Further, the conditions which warrant a Supplemental EIS are set forth as follows:

"...when the scope of an action has been substantially increased, when the intensity of environmental impacts will be increased, when the mitigating measures originally planned are not to be implemented, or where new circumstances or evidence have brought to light different or likely increased environmental impacts, not previously dealt with." [1]

Unless any of these conditions apply, the Final EIS for the Kaka'ako Plan would be valid and no other EIS would be required for any action described in the Final EIS.

The Final EIS of August 1983 has been supplemented in several respects. In addition to disclosing the impacts from implementation of the Makai Area Plan, this Supplemental EIS describes and analyzes the impacts resulting from infrastructure improvements for the Increment 1 District-Wide Improvement Program, updates selected findings of the Final EIS, further evaluates traffic, air quality and noise impacts resulting from development of the entire Kaka'ako District, and examines the unresolved issues identified in the Final EIS.

The intent of this Supplemental EIS is to update the findings of the Final EIS, providing a disclosure of environmental impacts of the actions contemplated under the Kaka'ako Plan and the Increment 1 Improvement Program as a whole by focusing on their cumulative impacts. This treatment of a group of proposed actions in a single EIS is required by the EIS Regulations. Accordingly, an EIS that is accepted for a group of proposed actions would satisfy the requirements of Chapter 343, HRS, and no other statement for any individual action described therein would be required,

provided there is no substantial change which would necessitate a Supplemental EIS.

This Supplemental EIS has been prepared to satisfy the content and procedural requirements of Federal environmental laws, as well as Chapter 343, HRS. The U.S. Department of Housing and Urban Development has assumed the Federal lead agency responsibility in the preparation of this Supplemental EIS. The joint preparation is in anticipation of Federal funding and permit approval for possible projects implementated under the Kaka'ako Plan. Appropriate agencies, organizations, and individuals have been invited to participate in the EIS process so their concerns will be addressed.

The information and findings of the Final EIS [2] are incorporated in this Supplemental EIS by reference. Changes to the findings and information of the Final EIS will be noted accordingly.

B. REFERENCES -- CHAPTER I

1. State of Hawaii, Environmental Quality Commission. "Environmental Impact Statement Regulations". 1975, amended.
2. State of Hawaii, Hawaii Community Development Authority. "Final Environmental Impact Statement for the Kaka'ako Community Development District Plan". June, 1983.

CHAPTER II

PROPOSED ACTION AND ALTERNATIVES

This Chapter describes (in the order listed) the following:

1. The primary features of the Kaka'ako District Makai Area Plan;
2. Alternatives that were evaluated prior to the adoption of the Makai Area Plan;
3. The Kaka'ako District Increment 1 Improvement Program;
4. Amendments to the Kaka'ako Plan and Rules; and
5. Unresolved issues identified in the Final EIS of August 1983.

A. THE KAKA'AKO MAKAI AREA PLAN

1. Background and Setting

Act 153, Session Laws of Hawaii (SLH) 1976 (codified as Chapter 206E, Hawaii Revised Statutes), established HCDA as a public corporation for the purpose of long-range community planning and development. Having the authority to implement its own plan, HCDA assumes a unique position to confront problems of urban blight, underutilization of land resources, lack of coordinated planning, cumbersome government regulations, and unmet community needs.

Kaka'ako became the first Community Development District designated for improvement by the Legislature. Private redevelopment of Kaka'ako has been hindered for years by inadequate infrastructure (i.e., roads, storm drains, and sewers), high interest rates, and government permit requirements. Selection of the area for redevelopment and renewal was due to its strategic location in Central Honolulu, the high demand for commercial, industrial and residential space, and the underdeveloped condition of the area's resources as compared to the adjacent Central Business District, State Capitol District, Ala Moana Shopping Center and Waikiki. It was also believed that Honolulu's need for more affordable housing and parks and open space could be efficiently served by redevelopment of Kaka'ako.

The original Kaka'ako District boundaries (henceforth the "mauka area", with mauka meaning towards the mountains) were designated by King Street, Punchbowl Street, Piikoi Street, and Ala Moana Boulevard. Beginning in 1977 and continuing through 1982, HCDA pursued a methodical approach to planning for the 450-acre district. The Kaka'ako Plan and corresponding Rules for the mauka area were adopted in February of 1982.

In April of 1982, the Eleventh Legislature passed H.B. No. 3143-82, H.D. 2, S.D. 1, C.D. 1. This bill, which became Act 228, SLH

1982, amended the District boundaries to include approximately 133 acres of land makai (towards the sea) of Ala Moana Boulevard between Ala Moana Park and Pier 4 in Honolulu Harbor. This area, hereafter referred to as the "makai area", was assigned to HCDA for planning and implementation of improvements to public facilities in accordance with its powers and responsibilities and the development policies established under Chapter 206E, HRS. Figure II-1 illustrates the expanded District boundaries. Figure II-2 illustrates the District limits along with prominent landmarks.

2. The Planning Process

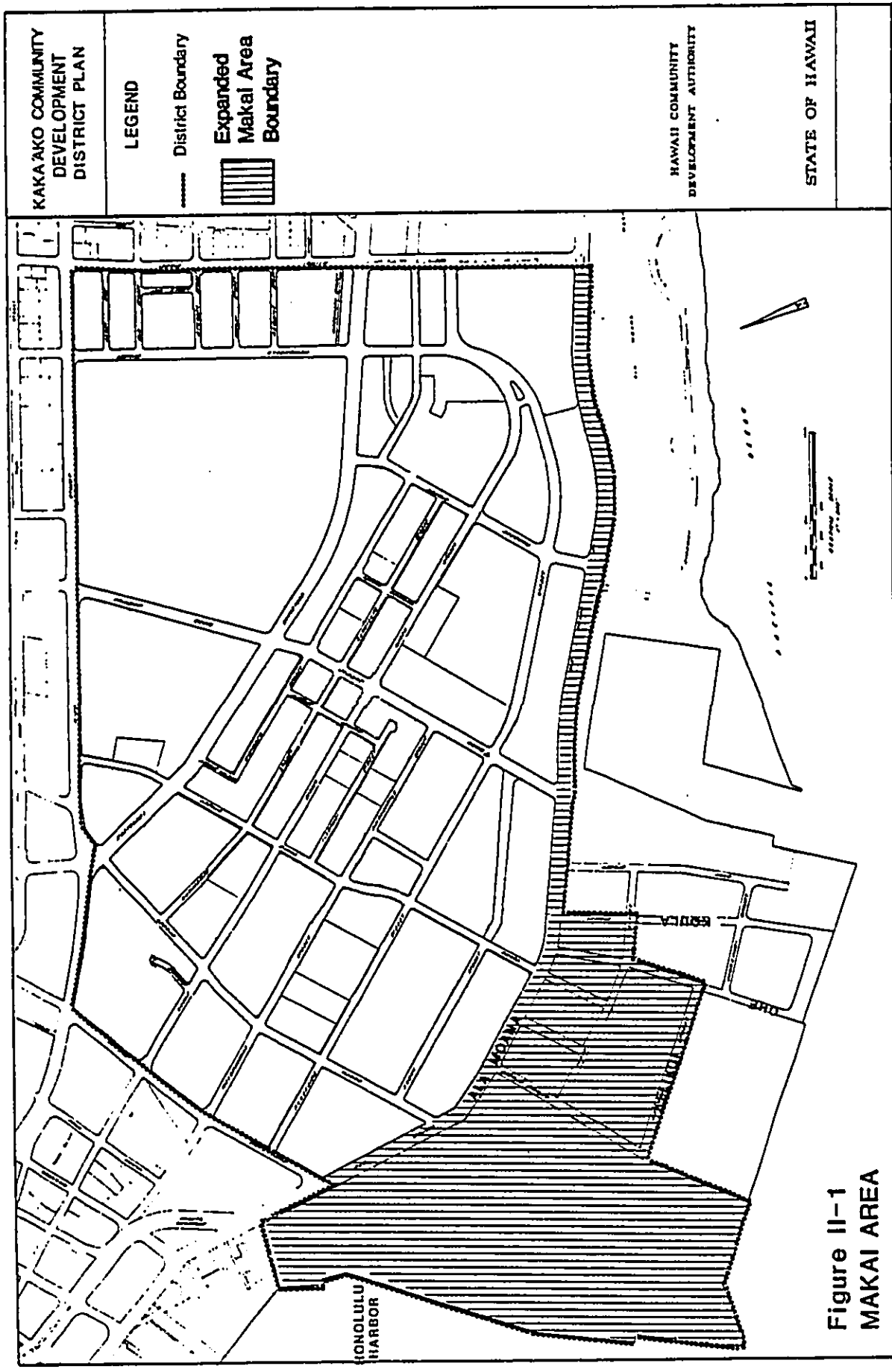
The HCDA began planning for Kaka'ako during fiscal year 1977-78. After development of the initial planning strategy, the Authority conducted research covering the physical, cultural, and economic resources and systems of both the mauka and makai areas of Kaka'ako. Work conducted during the earlier years resulted in the District Plan for the mauka area, and baseline data and recommendations for development of the Makai Area Plan.

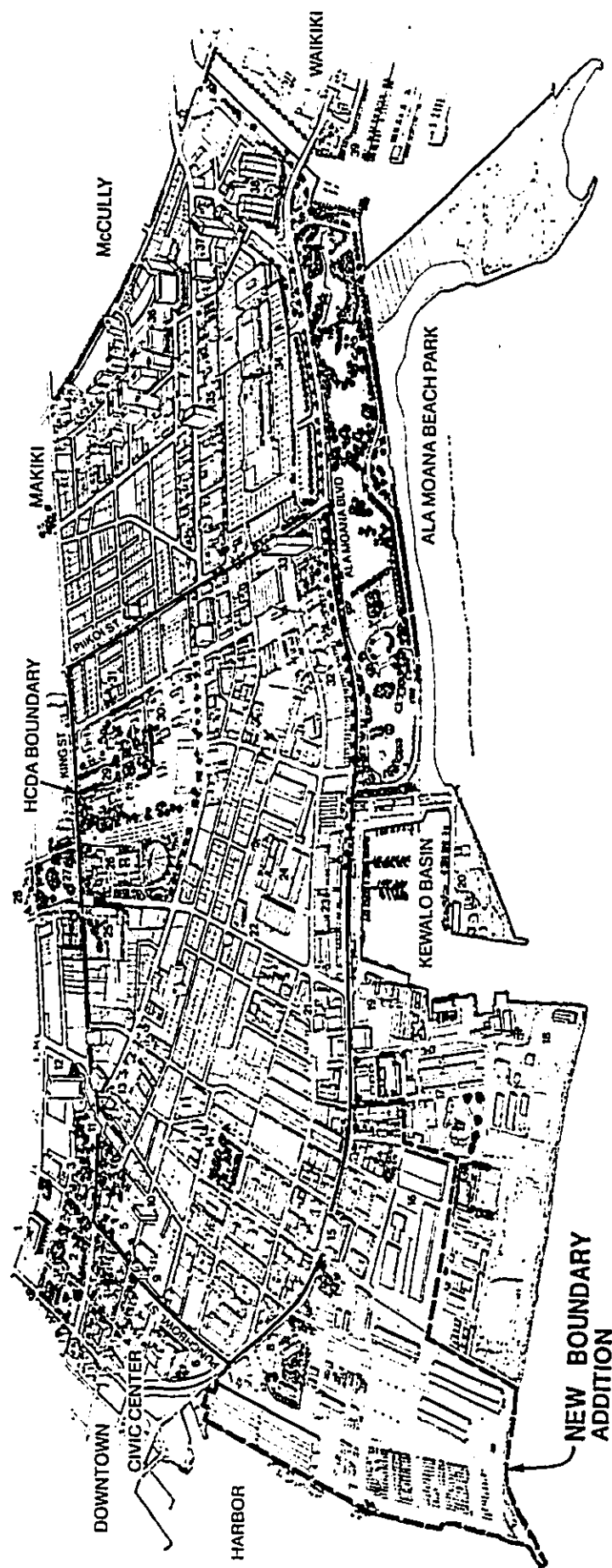
Subsequent to the 1982 District boundary amendment, the HCDA developed a detailed work program, compiled a review of background data, information, studies, and public policy documents, and identified problems and issues involved in developing a plan for the makai area. Further detailed analysis provided for the identification of a range of solutions and objectives for the Kaka'ako District Makai Area Plan.[1]

HCDA developed three Plan Variations (alternatives) to determine a range of possible development opportunities and choices for the makai area. The major distinction among the three Variations was the extent to which provisions were made to address the development guidance policies under Chapter 206E, HRS, as well as the problems and concerns identified during earlier tasks.[2] The primary concern of one Variation was implementation of the development policies under Chapter 206E, HRS. A second Variation emphasized the uniqueness of the makai area. The third Variation presented a "middle ground" approach, addressing the guidance policies of Chapter 206E, HRS, to the extent possible and appropriate, while recognizing the conditions specific to the makai area.[3]

Features common to each of the three Variations include:

- a. provisions to maintain and support the harbor-related industrial activities at Fort Armstrong;
- b. provisions to limit building heights to a maximum of 150 feet or lower;
- c. provisions to ensure the viability and effectiveness of the proposed Waterfront Park;
- d. preservation of historic sites including the U. S. Immigration Station, the Department of Health building, and the Ala Moana Sewage Pumping Station; and





- | | | | | | | | | | |
|---|---|----|--|----|--|----|--------------------------------|----|--------------------------------|
| 1 | Hawaii State Capitol Building | 7 | Malson Container Terminal | 17 | City Corporation yards and incinerator | 26 | Neal Blaisdell Center | 34 | Ala Moana shopping center |
| 2 | Iolani Palace | 8 | U.S. Immigration and Naturalization Service Building | 18 | University of Hawaii Oceanic Research Laboratories | 27 | Thomas Square | 35 | Office Building 1441 Kapiolani |
| 3 | Honolulu Hale, City Hall | 9 | State Department of Transportation | 19 | Fish cannery and restaurant | 28 | Honolulu Academy of Arts | 36 | Holiday Mart shopping center |
| 4 | State Office Buildings | 10 | Royal Brewery Building | 20 | NMFS Laboratory | 29 | McKinley High School | 37 | Ala Moana Americana Hotel |
| 5 | Kawaiahao Church and Cemetery | 11 | Kawaiahao Plaza Office Building | 21 | Ward Plaza | 30 | Kapiolani Community College | 38 | Yacht Harbor Towers Apartments |
| 6 | Prince Jonah Kuhio Kalanianaʻole Federal Building | | | 22 | Gem Department Store | 31 | Makiki Christian Church | 39 | Ala Wai Boat Harbor |
| | | | | 12 | Honolulu Municipal Building | 32 | IBM Building | | |
| | | | | 13 | The News Building | 33 | Apartment Building | | |
| | | | | 14 | Pohukaina Elementary School | | | | |
| | | | | 15 | Gold Bond Building | | | | |
| | | | | 16 | Food Distribution Center | | | | |
| | | | | | | 23 | Ward Warehouse shopping center | | |
| | | | | | | 24 | Ala Moana Farmers Market | | |
| | | | | | | 25 | Hawaiian Electric Company | | |

- e. a total developable land area of approximately 4.4 million square feet or 102 acres (excluding roads, public rights-of-way, and historic sites). [2]

The Authority analyzed the alternatives and developed a single draft plan in May, 1983. [3] A public hearing was conducted to solicit citizen input. After consideration of the comments received, the draft plan was refined and finalized as the Makai Area Plan. The Makai Area Plan was put into effect in October, 1983. [4]

3. Description of the Makai Area Plan

This section presents a description of the various features of the Makai Area Plan. Any discrepancy between the following description and the Kaka'ako Makai Area Plan document should be viewed in favor of the Plan document.

a. Objectives. The Makai Area Plan includes sufficient detail to proceed into design and construction of specific development projects and infrastructure improvements. The Authority's objective while developing this plan was to create a truly high quality community that complements the community envisioned in the Kaka'ako Plan for the mauka area of the District.

The development guidance policies provided in Chapter 206E, HRS, as amended, gave direction to the Authority during the formulation of the plan. These policies provide for:

- o A mixture of land uses, particularly existing and future industrial uses in appropriate locations.
- o The establishment of urban design policies which shall preserve major view planes, view corridors, and other environmental elements.
- o The preservation of historic and culturally significant settings, facilities and sites.
- o Primary reliance on public transportation and pedestrian facilities for circulation within the District.
- o A mixture of densities, building types and configurations for residents of varying incomes, ages, and family groups.
- o The development of public facilities to support the redevelopment and revitalization policies for the District.

In addition to the above guidance policies, the Authority considered problems, concerns, and requirements unique to the makai area, including the following:

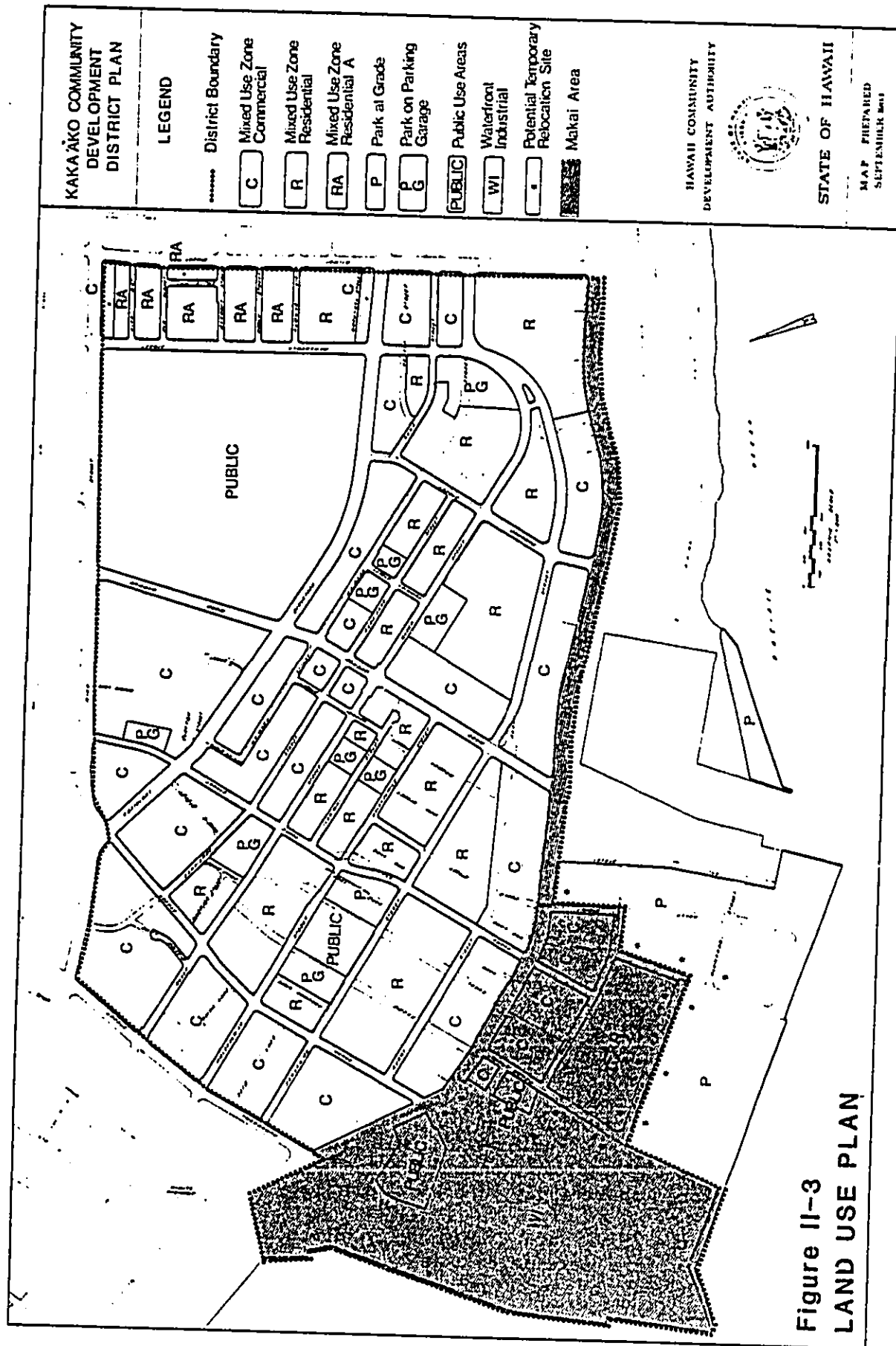
- o The need to retain existing waterfront terminal and harbor-related uses and activities along the waterfront in the Fort Armstrong area.

- o The high noise exposure which inhibits residential use. High noise sources include aircraft noise, heavy truck traffic, and noise-intensive industrial activity.
- o The need to limit building heights in order to enhance views through the area. The preservation of views in the makai area is a concern expressed in public policy, and is particularly important because of the area's proximity to the shoreline and its location relative to major scenic vantage points in surrounding areas (e.g., Kaka'ako, Ala Moana Park, Downtown, Punchbowl, the proposed Waterfront Park, Sand Island Park, etc.).
- o The large parcels with existing uses which can be expected to remain unchanged for many years due to long-term leases or commitments on these parcels.
- o A proposed Waterfront Park intended to serve regional needs is located adjacent to the makai area.
- o The significant historic sites including the U.S. Immigration Station, the Department of Health Building, and the Ala Moana Sewage Pumping Station.
- o The makai area's potential to help fulfill needs for temporary relocation of displaced Kaka'ako businesses.

Replacement of the existing community characteristics in Kaka'ako, exemplified largely by aged one and two-story structures and an inadequate infrastructure system, with a new mixed-use community will benefit most, if not all, of the people living within the City and County of Honolulu. Examples of future benefits include a potential decrease in development pressures which cause urban sprawl and encroachment upon agricultural lands, increased housing in proximity to employment opportunities, more open space and parks, improved efficiency in energy consumption, increased tax revenues, lessening of overall public operating and maintenance expenses for infrastructure and services by reducing the need to service new development in outlying areas, and an overall improvement to the aesthetic environment of metropolitan Honolulu.

b. Land Use. The land use pattern envisioned for the makai area was developed in order to meet community needs in an efficient and economical manner and to provide consistency with utility and transportation systems, open spaces, and public facilities. Similar to the future envisioned for the mauka area, the arrangement of land use zones in the makai area is intended to create a mixture of commercial, industrial, and residential uses in a common location. Consequently, the primary task of the Land Use Plan is the allocation of 4.4 million square feet of land area among these major land uses.

Figure II-3, Makai Area Land Use Plan, shows how this task is carried out. The Plan establishes three primary land use zones within the makai area: a Mixed-Use Zone-Residential (MUZ-R), a Mixed-Use Zone-Commercial (MUZ-C), and a single-use Waterfront Industrial (WI)



zone. In addition, two Public (P) designated areas are proposed within the Fort Armstrong area. Table II-1 shows the land area allocation for each zone. The 4.4 million square feet of developable land area does not include Public designated lands which comprise a total of approximately 4.4 acres.

TABLE II-1
MAKAI AREA DEVELOPABLE LAND AREA ALLOCATION

<u>Land Use Zone</u>	<u>Land Area (sq. ft.)</u>	<u>Percent</u>
MUZ-R	685,918	16
MUZ-C	491,510	11
WI	<u>3,250,059</u>	<u>73</u>
Total	4,427,487	100

Characteristics unique to the Makai Area Plan are the accommodation of existing harbor-related industrial uses and designations of possible temporary relocation sites for displaced businesses. It is the intent of both the mauka and makai Kaka'ako Plans to help maintain business activity within the Kaka'ako area. Toward this end, the Land Use Plan map identifies "Potential Temporary Relocation Sites". HCDA efforts in making temporary relocation sites available are described in Section E, Unresolved Issues.

Approximately 60 acres along the shoreline are designated for park use. Planning for this park along the Kaka'ako shoreline is under the jurisdiction of the Department of Land and Natural Resources.

A vertical mixture of land use activities allows people to live, work, and shop within the same building complex and has been a valuable tool in other areas for revitalizing urban environments. [5] The Kaka'ako mauka and makai area Plans and Rules will insure an equitable mix of land uses. A key element of the Makai Area Plan is to maintain sufficient space for the continuation and expansion of harbor-related industrial activities. The remaining areas will predominantly allow for a mixture of commercial and residential uses, while preserving light and service industrial uses, by "requiring" industrial uses at no less than a floor area ratio (FAR) of 0.3. To ensure compatibility between uses in the various zones, the performance standards adopted for the mauka area shall apply to the makai area.

The land use zones are individually discussed in the following paragraphs. Specific permitted uses within each zone and the rules governing development are provided in the Rules (Subchapter 11) of the Makai Area Plan. [4]

(1) Mixed-use Zone-Residential (MUZ-R). This zone permits a mixture of multi-family residential, commercial, and light and service industrial land uses while emphasizing residential use. Bounded by Ilalo, Ohe, Kelikoi, and Keawe Streets, the makai area MUZ-R zone comprises approximately 16 acres of State-owned land. Such a zoning designation takes note of the site's relationship to the proposed Waterfront Park and provides the opportunity for the State to utilize this land resource for future development of affordable housing in the makai area.

To ensure that space for light and service industrial activities will be provided in this zone, each development shall include light and service industrial floor space at no less than 0.3 FAR as a condition for commercial or residential use on any size lot. The maximum permitted FAR for developments utilizing Planned Development provisions in this zone is 2.5. If a development does not utilize the Planned Development process, the maximum FAR is 1.5.

The MUZ-R zone may provide relocation sites for permitted uses that have been displaced. The MUZ-R designation does not necessarily preclude the current utilization of the area for light and service industrial uses.

(2) Mixed-use Zone-Commercial (MUZ-C). This zone permits a mixture of multi-family residential, commercial, and light and service industrial land uses while emphasizing commercial use. The zone is designated for the four blocks of privately owned land fronting Ala Moana Boulevard and the historic Ala Moana Sewage Pumping Station. Total area is approximately 11 acres. Requirements for light and service industrial uses and maximum permitted FARs for development in this zone are the same as the MUZ-R zone.

(3) Waterfront Industrial (WI). This zone permits a range of facilities necessary for the efficient operation, continuation, and expansion of harbor-related activities. The zone encompasses approximately 75 acres at Fort Armstrong. Because of the State's dependence on these activities, the WI zone will ensure that maritime transportation and Foreign Trade Zone activities will continue. Potential relocation sites for permitted uses are designated in this zone. No Planned Development projects will be allowed in this zone. The maximum permitted FAR for developments is 1.5.

(4) Public (P). Two Public designated areas totaling approximately 4.4 acres are in the Fort Armstrong area. These areas have been set aside for such public requirements as open space, preservation of historic resources, and utility substations. Allowed uses for this zone include public uses and structures, including accessory activities conducted by private lessees under supervision of a public agency.

Certain other land uses may be located in all zones. These uses are specified in the rules.

Table II-2 shows the aggregate floor area allocation for each of the three major land uses at maximum development. The makai area currently has a total floor area of approximately 1.4 million square feet (msf) and an overall FAR of 0.3. [6] The Plan would increase the total potential floor area of about 7.8 msf, with an average FAR of 1.8 for the developable land area.

TABLE II-2
MAKAI AREA FLOOR AREA ALLOCATION

<u>Land Use</u>	<u>Floor Area (sq. ft.)</u>	<u>Percent</u>
Commercial	1,224,000	16
Industrial	5,228,000	67
Residential	<u>1,366,000</u>	<u>17</u>
TOTAL	7,818,000	100

Any public or private development in the makai area requires approval from HCDA. Property within any makai area zone may be developed to a maximum height of 45 feet and a maximum floor area ratio of 1.5. Developments exceeding these maximums are allowed only in the mixed-use zones under the Planned Development provisions of the rules. Structures and equipment directly related to waterfront activities (e.g., roll-on roll-off container equipment) would be allowed to exceed the height limit in the Waterfront Industrial zone.

For Planned Development projects within the MUZ-R zone, up to 1.2 FAR will be allowed for commercial use. For Planned Development projects within the MUZ-C zone, no more than sixty percent of the total floor area will be allowed for commercial use. Also, Planned Development projects in either zone on lots of at least 20,000 square feet must provide at least 20 percent of the total number of dwelling units in the development to be "reserved housing units". Maximum floor area ratios, building heights, and tower footprints for Planned Development projects which provide reserved housing units shall be as shown in Table II-3.

TABLE II-3
MAXIMUM DEVELOPMENT HEIGHTS, BULK, AND TOWER FOOTPRINTS
ALLOWED FOR PLANNED DEVELOPMENT PROJECTS
IN MUZ-R and MUZ-C ZONES

Lot Size (sq. ft.)	Tower Height (feet)	FAR	Tower Footprint (sq. ft.)
10,000	65	1.8	5,000
20,000	75	2.0	8,000
40,000	100	2.2	14,000
60,000	125	2.35	15,000
80,000 or More	150	2.5	16,000

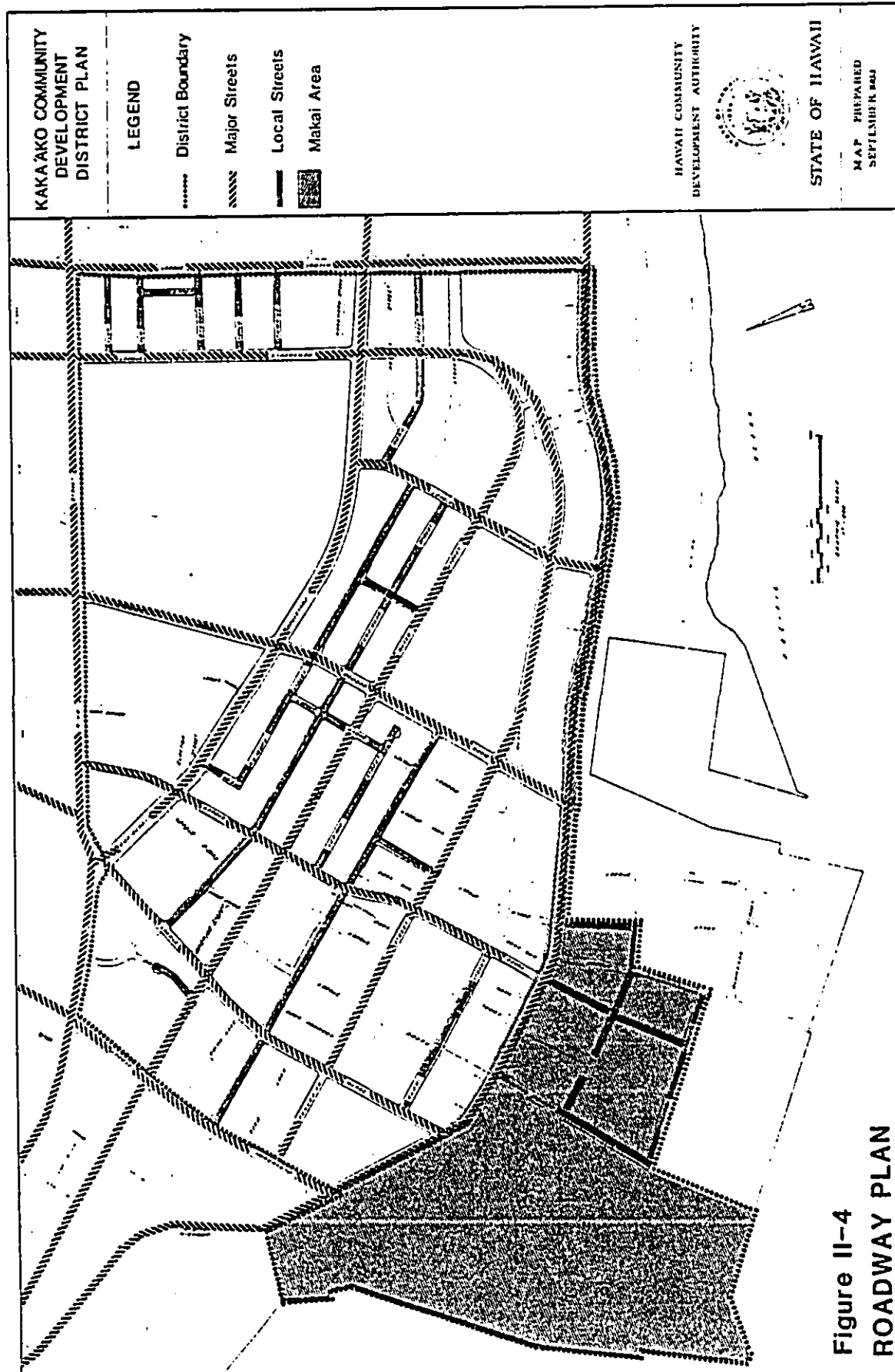
For a development lot between 10,000 and 19,000 square feet, the maximum structure height is 65 feet, while the maximum floor area ratio and tower footprint are proportional to the parameters enumerated in Table II-3. For a development lot between 20,000, 40,000, 60,000, and 80,000 square feet, the maximum building height, floor area ratio and tower footprint are proportional to the parameters of the lots enumerated in Table II-3.

During the design and review process, HCDA will establish building heights and floor area ratios for Planned Development projects based on the size of the development lot, and the inclusion of housing, community facilities, and other improvements which meet the objectives and requirements of the Plan.

In order to enhance the economic utility of lands fronting Ala Moana, certain existing streets may be closed, allowing for the formation of superblocks. HCDA may allow this land to be used as private streets or pedestrianways within the superblock and over which development may take place. The land could also become developable land. Figure II-3 shows potential superblock areas.

c. Transportation. The Transportation Plan for the makai area consists of improvements to streets and roadways, provisions for parking, development of pedestrianways and bikeways, and public transportation which services the area. The goal is to provide a multi-modal system designed to move people and goods safely and efficiently, and to service the demands of the proposed land use activities.

(1) Streets and Roadways. Streets and roadways in the makai area will be upgraded to meet or exceed City and County standards. This would entail street widths between 50 and 60 feet. As shown in Figure II-4, the Plan includes two categories of streets, major



and local, within Kaka'ako. Major streets are for traffic moving within and through the District, while local streets provide access to abutting properties and are for movement within smaller areas. Except for the possible closure of Coral and Ohe Streets between Ala Moana and Ilalo Street, the existing circulation pattern in the makai area is to be maintained.

Ala Moana Boulevard, the only major street within the makai area, is to be improved and widened between Punchbowl Street and Ward Avenue. These improvements would include minor realignments on the mauka side near Ohe Lane and between Keawe and South Streets. In addition, approximately eight feet of additional right-of-way would be obtained to provide for wider travel lanes. These improvements should occur in conjunction with adjacent redevelopment activities. Additional street improvements may involve the realignment of Keawe Street to more directly connect with Keawe mauka of Ala Moana and the possible extension of Cooke Street to the Waterfront Park if additional access is needed. At present, Koula Street is to provide the primary access to the Park and Ohe Street secondary access.

(2) Parking. On-street parking in the makai area will be controlled in the future so as to eliminate existing problems caused by unregulated haphazard street parking. On-street parking may be permitted on Coral Street (if it remains open) and on one side of Keawe Street due to the existing 60-foot right-of-way. In all other areas, parking will be provided on-site.

Within the MUZ-C and MUZ-R zones, on-site parking would be required according to the parking standards of the mauka area Kaka'ako Plan. The general requirements for off-street parking and loading requirements for new developments are summarized in Table II-4. In general, the HCDA Rules require about 10% fewer parking stalls than the County Comprehensive Zoning Code (CZC), but use CZC loading requirements. Although details have not been worked out, the Plan will permit reduction of on-site parking for developers who purchase stalls in proposed public parking garages. This will enhance the development potential of small lots.

In addition, parking structures must contain a roof and walls on three sides. Parking structures having parking at the top level must have plant material or architectural embellishments which cover the parking spaces. In MUZ developments, parking at grade may be left uncovered, provided that the area is landscaped or has incorporated architectural embellishments.

Within the WI zone, one on-site parking space for every two employees or one space per 1,000 square feet of floor area, whichever is greater, shall be provided. Parking areas need not be located in a structure within the WI zone.

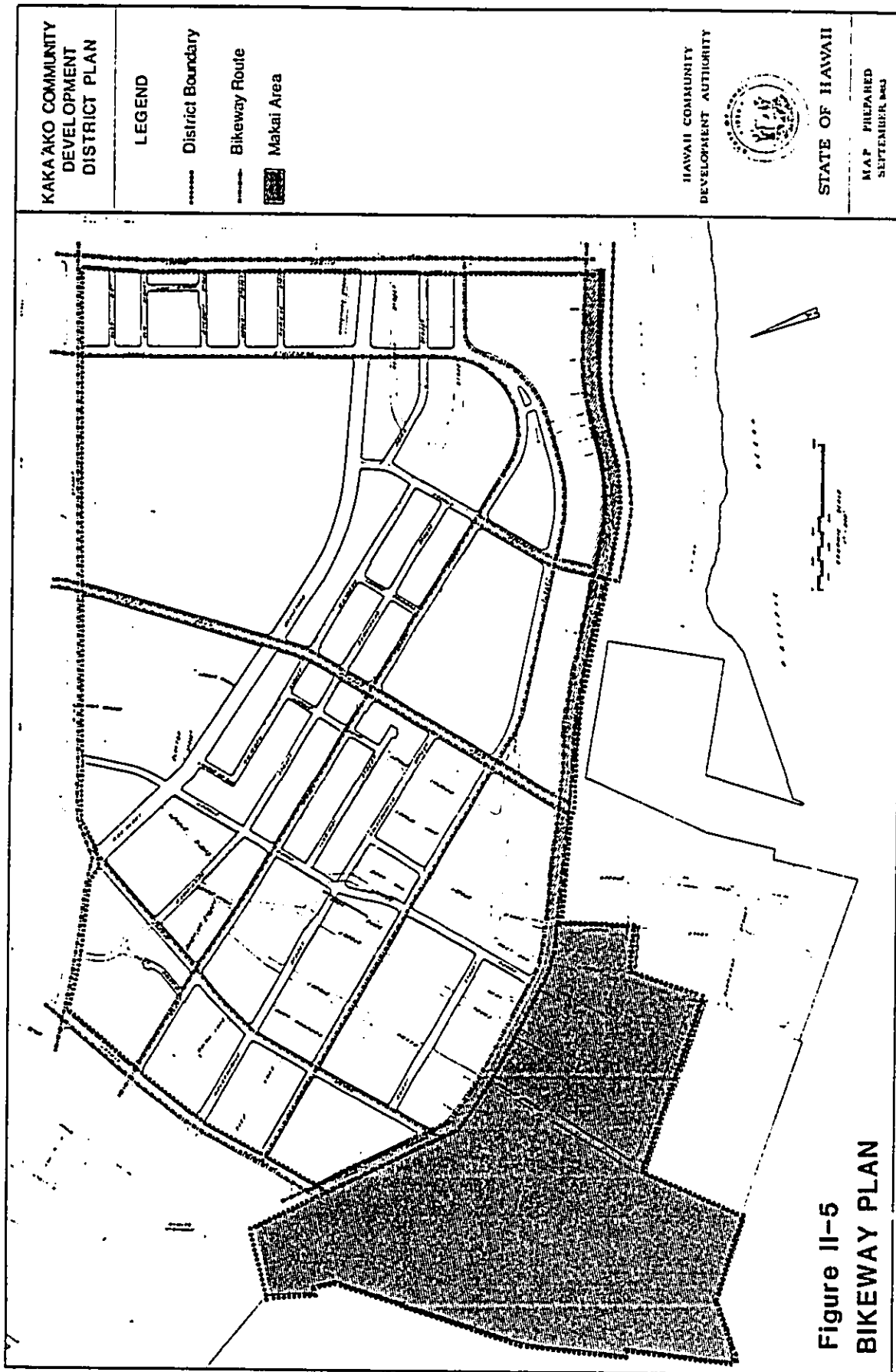
TABLE II-4
MAKAI AREA GENERAL PARKING REQUIREMENTS

Land Use	Standard
Multi-family dwellings:	
600 sq. ft. or less	0.9 spaces
more than 600 but less than 800 sf	1.13 space
800 sq. ft. and over	1.35 space
Industrial uses	1 space per 889 sq. ft.
Commercial uses	1 space per 444 sq. ft.
Churches and theaters	.9 spaces per 5 fixed seats
Nursing, convalescent, aged, disabled, and handicapped homes	.9 spaces per 4 patient beds, dwelling units, or lodging units

(3) Pedestrianways. Improvements to the pedestrian circulation system would be much the same as proposed for the mauka area. Sidewalks will be required along all improved public streets. The proposed minimum ground-level sidewalk width would be eight feet. Narrower sidewalks may be allowed only in conjunction with the provision of street trees, additional landscaping, seating, and other pedestrian amenities. Sidewalk widths may not be less than six feet, which is the existing minimum City and County standard for high density zones. Clearly marked 10-foot wide crosswalks and curb ramps for the handicapped would be required at all intersections.

Other possible improvements that may be required as demand increases include pedestrian malls and "mid-block" pedestrianways and an above-grade pedestrianway crossing over Ala Moana at Cooke Street. This would link the makai area with the mauka area elevated pedestrianway, providing safe and efficient pedestrian crossing at the 45-foot level.

(4) Bikeways. The Plan allows for the possibility of bike lanes along Ala Moana. Figure II-5 shows the designated bike lanes and their relationship to the mauka area bikeway system. Six-foot wide lanes would be possible along Ala Moana if the car lane widths are reduced from 12 feet to 11 feet and the two-foot wide gutter section is also utilized. The development of the Ala Moana bike lane through Kaka'ako will be dependent on the implementation of the bike lanes beyond the District and redevelopment activities that will allow for the acquisition of the needed additional right-of-way.



(5) Public Transportation. Public transportation for the makai area would be provided by the City and County bus system. The existing route along Ala Moana would remain unchanged unless additional service is required. Shelters and benches would be required at all bus stops.

d. Urban Design. Urban design concerns the arrangement and three-dimensional form of buildings, the physical relationship of these buildings, the landscaping along streets, and the design guidelines for street furniture, signs, lighting, and ingress and egress points.

(1) Building Bulk. The Makai Area Plan envisions a diverse urban form in the area with mid-rise structures up to 150 feet interspersed throughout the MUZ-R and MUZ-C zones, and low-rise structures up to 45 feet in the WI zone. Planned Development projects in the makai area would be similar to those in the mauka area with platforms, heavily landscaped decks, and towers on top of or abutting the platforms. The building bulk requirements and guidelines for the makai area are summarized as follows:

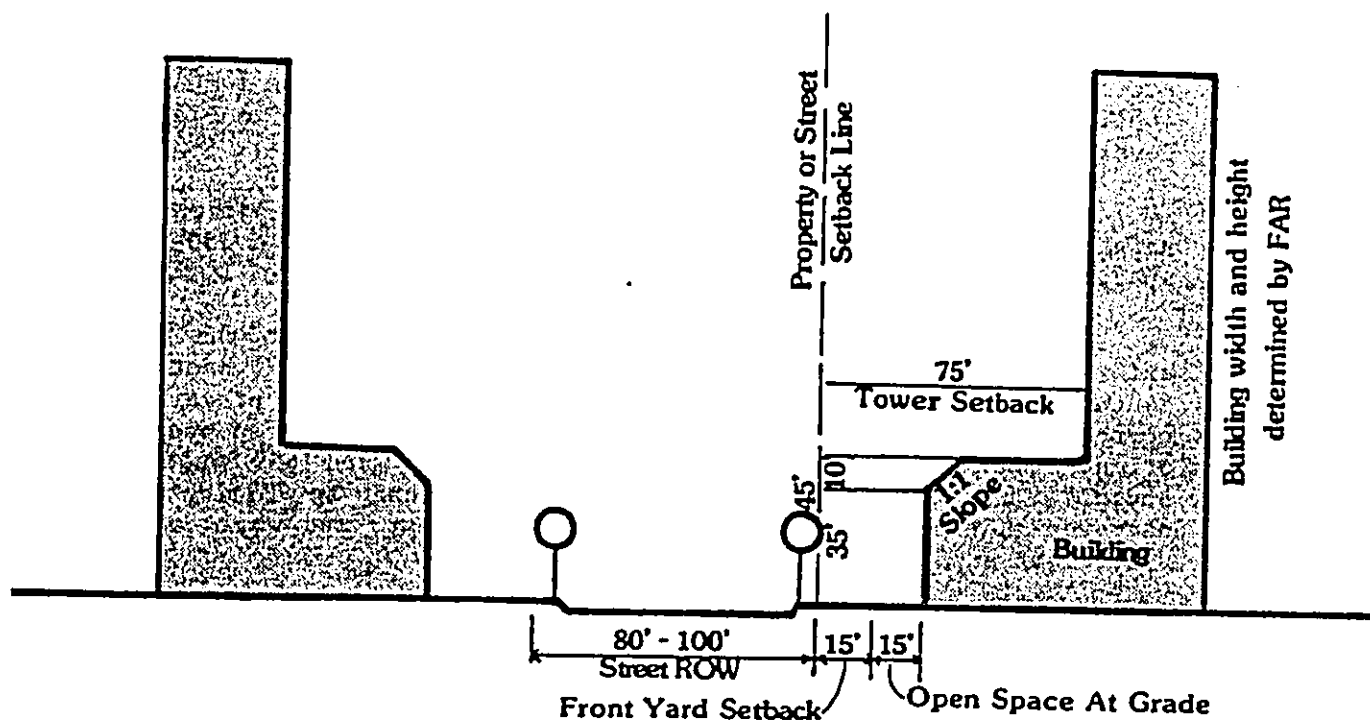
At-Grade Open Space: Required only in the mixed use zones in order to provide sufficient light and air at ground level, sufficient areas for pedestrian circulation and other amenities, landscaping and recreational space. A minimum of ten percent of a development lot, exclusive of building setbacks and parking areas, is the required open space at grade. For Planned Development projects, the minimum is thirty percent with ten percent at grade and the remainder at any elevation up to and including the platform deck level.

Building Setbacks: Required front-yard setback is fifteen feet along all public roadways in the makai area. The minimum side and rear-yard setback is ten feet for structures containing windows or openings facing side or rear property lines. For structures without windows or openings facing side or rear property lines, no side or rear yard would be required. Yard areas would not be allowed to be used for parking garages, or other accessory building, and all required yards must be maintained in landscaping.

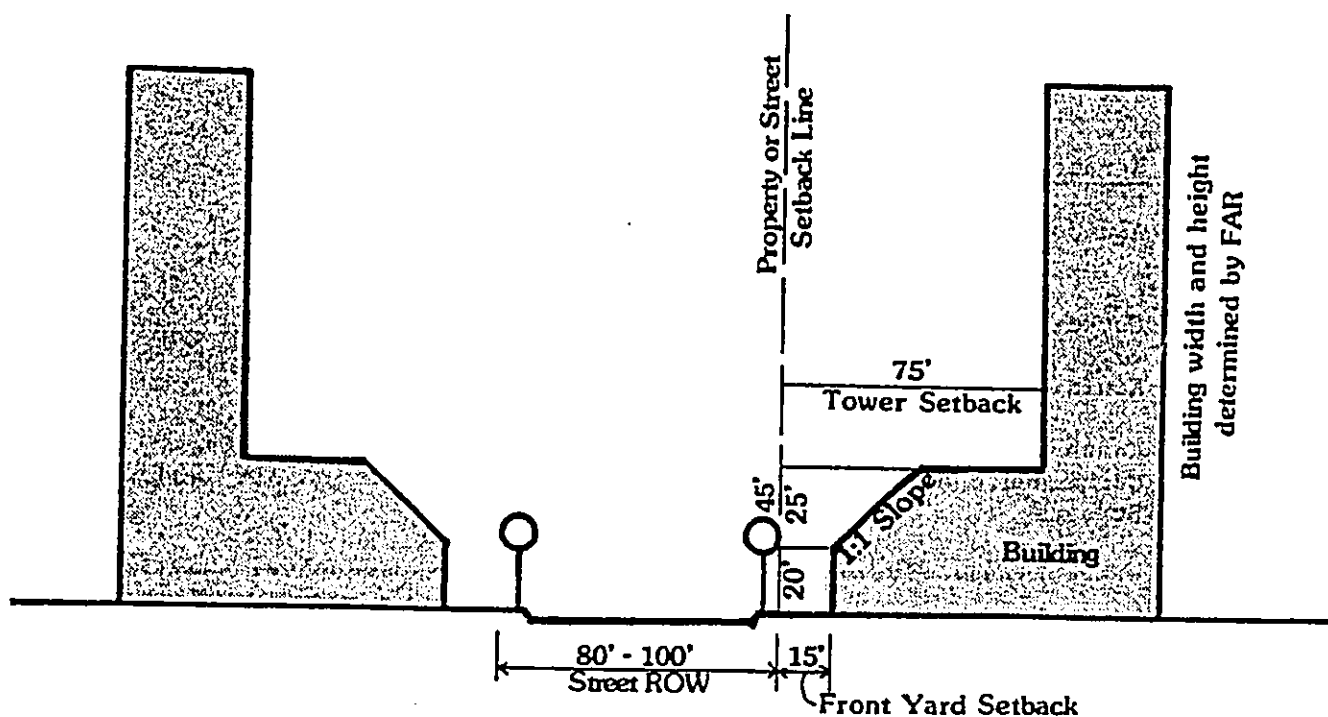
View Corridor Setbacks: Provide for the preservation of mauka-makai and Ewa-Diamond Head views along designated streets. Ala Moana Boulevard and Cooke Street are designated view corridors in the makai area. The view corridor along Cooke Street will be extended to the Waterfront Park. The same mauka area view corridor building setback requirements will apply. See Figure II-6, Makai Area View Corridor Setbacks.

Tower Coverage: These requirements are intended to minimize the bulk of large-scale, high-rise complexes, to permit views between adjacent high-rise structures, and to provide open space at upper levels. The maximum tower coverage for Planned Development projects in the mixed-use zones is shown in Table II-3.

Figure II-6
VIEW CORRIDOR SETBACKS



Planned Development Projects With At-Grade Open Space
Along View Corridor Streets



Planned Development Projects Along View Corridor Streets

Number and Height of Towers: One tower will be permitted for each Planned Development project on a lot between 10,000 and 80,000 square feet. The height and size of any tower will vary according to the size of the parcel and proposals toward meeting public policy objectives. The maximum tower heights for Planned Development projects are shown in Table II-3.

Tower Spacing Guidelines: The long parallel sides of neighboring towers should be no closer than 200 feet. A 150-foot spacing between the short side of towers is recommended.

Building Orientation: Recommended orientation for the long axis of low-rise buildings is between 25° and 55° east of south. This direction is optimal for catching the prevailing northeast tradewinds. For high-rise buildings the recommended orientation for the long axis is between 35° and 65° west of south. This direction would minimize heatload by facing the narrower side of the building to direct sunlight, and would allow sufficient exposure to prevailing breezes.

(2) Landscaping Along Streets. Guidelines for street landscaping cover the use of plant material or surface treatment for ground cover, shrubs planted in the ground or in planters, trees, and architectural features such as an art work. A variety of tree species are designated along selected streets to provide shade and visual continuity throughout the District. Tree species and spacing along streets in the makai area are presented in Table II-5, Street Tree Requirements.

TABLE II-5
STREET TREE REQUIREMENTS

<u>Street</u>	<u>Tree Species</u>	<u>Guidelines</u>
Ala Moana	1 Monkeypod and 3 Coconut Palm	Per 100 ft. of street frontage
Cooke	Yellow Poinciana	25 ft. o.c.
Koula	Monkeypod	80 ft. o.c.
Keawe, Ilalo, Coral and Ohe Streets	Subject to the approval of the Executive Director in consultation with the City and County of Honolulu	

(3) Additional Urban Design Features. Street furniture is to be provided for customer and pedestrian convenience along the public rights-of-way. This may include benches, bus shelters, kiosks, and trash receptacles.

Informational and regulatory signs and graphics are to be provided as needed and will be regulated by the City and County of Honolulu.

Sufficient lighting should be available to provide for safe vehicular traffic and pedestrian movement. Lighting will also be required to provide illumination for safe ingress to and egress from all establishments. Street lights will be provided on all streets as proposed in the utility section. Area lights should also be provided at grade within planted areas as appropriate.

Guidelines for ingress and egress shall generally follow current City and County Building Codes. Parcel location, size, and types of activities will govern actual design. The safe and unobstructed movement of vehicles and pedestrians will be maintained.

(4) Urban Design Review. Besides the foregoing requirements and guidelines, there are aesthetic considerations which may range from addressing the architectural design of a large-scale Planned Development project to detailed design elements such as the exterior surface texture of a single building. Consideration would also be given to the heights of platforms and decks so that platforms of approximately equal height might be linked to one another. In all cases, the concern is with the aesthetics of the project relative to its immediate surroundings as well as its relationship to the community.

While it is desirable to have some degree of control over aesthetic and design considerations, it is certainly undesirable to establish rigid parameters which would stifle creativity of design in Kaka'ako. Therefore, the Authority will consider matters of aesthetics and design in its process of design review of development projects.

e. Open Space and Recreation. The major open space components within the makai area include the grounds of the U.S. Immigration Station and Department of Health building, and private on-site areas as required by HCDA. The proposed Waterfront Park adjacent to the makai area will provide additional open space.

Private on-site open space requirements apply only to the mixed-use zones. A minimum of ten percent of any development, exclusive of building setbacks, shall be devoted to open space. Planned Development projects would provide thirty percent open space, with ten percent at grade and the remainder at any elevation up to and including the platform deck level.

There are presently no public recreation facilities proposed within the makai area boundaries. The proposed Waterfront Park, adjacent to the makai area, will serve the needs of Kaka'ako residents as well as those in the greater Honolulu area for active and passive recreation.

While the responsibility for final design and development of the park rests with the Department of Land and Natural Resources, HCDA has prepared a Waterfront Park Study [7] in conjunction with its planning activities for the District. The study provides a range of site development alternatives and park design variations, and includes estimates of cost for each. Schematic designs show possibilities for active, passive, and combined active-passive recreational opportunities. Active recreation facilities include a pool, gym, and field areas for such sports as football, softball, baseball, soccer, and tennis. Separate body and board surfing areas would increase safety for surfers. Passive areas would provide opportunities for picnicking, open field play, fishing, strolling, and other activities.

As with open space guidelines, private recreation space is required for all new development within the MUZ-C and MUZ-R zones and is exclusive of required yards, setback areas, or parking areas. A total of approximately three acres of recreation space would be provided in private developments within the makai area at full development. The required amount of on-site recreation space, identical to the requirements for the mauka area, is as follows:

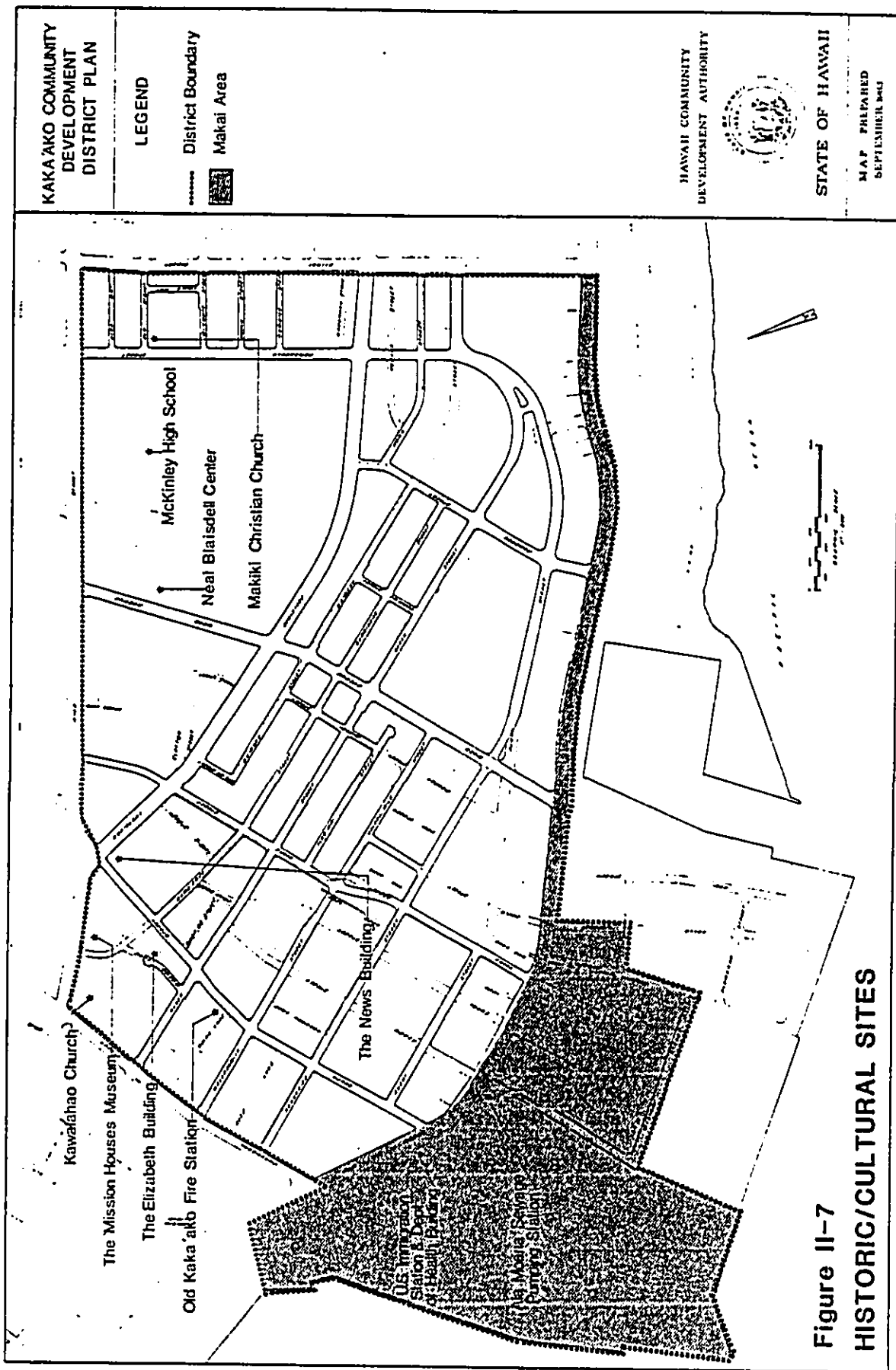
- (1) For industrial use, 25 square feet per each 1,000 square feet of floor area devoted to industrial use.
- (2) For commercial use, 37.5 square feet per each 1,000 square feet of floor area devoted to commercial use.
- (3) For residential use, 55 square feet of recreation space per dwelling unit.

The required on-site recreation space may be used to satisfy a portion of the required open space. No private recreation space is required in the Waterfront Industrial zone.

f. Historic Structures. The preservation of historic sites and culturally significant facilities, settings, or locations in Kaka'ako is an objective of the planning process. HCDA has determined there are no significant cultural resources in the makai area. Significant historic resources which merit preservation include the U.S. Immigration Station, the Department of Health building, and the Ala Moana Sewage Pumping Station (the Hering and the old Ala Moana pumping station components only). The location of these sites is shown in Figure II-7 Historic/Cultural Sites.

All three sites are listed on the National Register of Historic Places. The Pumping Station is also listed on the Hawaii Register. The proposed method of preserving these sites is to follow the provisions of the Kaka'ako Rules adopted for the mauka area. To summarize, the Rules require property owners to obtain a Certificate of Appropriateness from HCDA before demolishing, altering, or improving any historic property listed in the Kaka'ako Plan or listed on the Hawaii or National Register of Historic Places.

HCDA must grant an application for a Certificate of Appropriateness if (a) the proposed action will not hinder the protection and use



of the historic property; (b) the property as it exists is totally inadequate for the owner and/or lessee's legitimate needs; or (c) the owner or lessee is unable to earn a reasonable return unless the proposed project is undertaken. [Rules Section 15-17-182 (g)] The Rules also authorize HCDA to provide grants-in-aid and/or suggest alternatives to proposed projects in order to encourage property owners to protect historic properties. The Authority may also acquire the property by eminent domain.

In situations where a Federal action may impact a historic site listed or eligible for listing on the National Register of Historic Places, a "Determination of Effect" must be made. The regulations of the Advisory Council on Historic Preservation (36 CFR Part 800) specify the procedures that Federal agencies must follow to comply with the National Historic Preservation Act of 1966, as amended.

Due to the potential for adverse effects on makai area historic resources from adjacent industrial use areas, design guidelines are included in the Makai Area Plan for transition areas to enhance the integrity of the resource.

g. Housing and Housing Support Facilities. Plans formulated by HCDA will create a community in Kaka'ako in which housing will be a more integral feature than at present. Approximately 1,366,000 square feet of floor area (roughly 17 percent of the total maximum floor area) is projected for housing in the makai area. Based on a average minimum dwelling unit size of 883 square feet (gross area), approximately 1,547 dwelling units could be built.

There are various household income categories for which housing may be allocated. This includes the very low income group, the low and low-moderate income group, the "Hula Mae" group, the Unserved group, and the Unassisted group.

Households in the very low, low, low-moderate, and Hula Mae income groups qualify for some form of existing government assistance, determined in part by family income adjusted by size of household.

Using the 1981 U.S. Department of Health and Human Services' median household income of \$24,582, which is used by the Hula Mae Program, households in the very low income group have annual incomes of less than 50 percent of the median income, or \$12,291. The income of households in the low and low-moderate income groups range from 50 to 80 percent of the median income, or \$12,291 to \$19,666. The Hula Mae group's income ranges from 80 to 150 percent of the median income, or \$19,666 to \$29,498.*

* Section 356-206, HRS, allows the percentage rate of 150% to be increased by 4% for each 1/2% that the annual interest rate on the Hula Mae loan exceeds 10%. The Administrative Rules for the Hula Mae Program allow for further adjustment of the household income limit by family size. For the Hula Mae 1984 Series A Bond, the maximum income limits range from \$33,573 for a single-member household to \$39,823 for a four-member household to \$44,823 for a household of eight members.

The Unserviced household group generally earns income greater than the maximum allowed for Hula Mae assistance. However, high interest rates and increasing development costs are making this income insufficient to buy a new home in the open market without government assistance. Unassisted households are those whose income are such that they do not need government assistance. The income ranges of the Unserviced and Unassisted households fluctuates with changes in the prevailing mortgage interest rates.

At the time of the Kaka'ako Plan formulation for the mauka area, an analysis was done to assess the extent to which income groups on Oahu were in need of housing. It was found that 75 percent of these households cannot afford Hawaii's housing costs without some form of assistance.[8]

Efforts by HCDA to provide housing assistance will not duplicate the programs of existing housing agencies. The objective will be to assist the existing governmental and nonprofit agencies in finding housing sites, securing funding, and utilizing their program in Kaka'ako. Existing agencies have access to funding sources which could be utilized to deliver housing for the very low, low, and low-moderate income groups. Major Federal funding sources utilized in the past were the low-rent public housing program, Section 8 housing assistance, and Community Development Block Grants.

There are specific ways in which HCDA may facilitate affordable housing opportunities in Kaka'ako. First, State-owned land in the makai area could be utilized for long-term public housing after existing leases expire. Second, HCDA can exempt public projects from mixed-use requirements, allowing public-assisted housing to be built in single use regardless of zoning. Third, HCDA may act as sole or joint developer, resulting in lower prices on housing units. Fourth, through the use of revenue bonds, HCDA may provide financing for housing. This would increase the number of housing units available to the Hula Mae and Unserviced groups. And fifth, HCDA may explore the use of modified financing programs such as "Graduated" and "Shared Appreciation" mortgages.

The Unserviced and Hula Mae income groups may be provided additional housing units through the "reserved housing" provisions of the Kaka'ako Plan. Under these provisions, any Planned Development project on a 20,000 square foot lot or larger must have at least twenty percent of the total number of housing units in the development to be "reserved" units for sale or continuous rental to qualified persons as determined by the Authority.

Reserved housing would be required in order to obtain increases in floor area and height for Planned Development projects. Reserved housing units can be provided either on site or elsewhere within the Kaka'ako District. HCDA may also purchase the reserved housing units at cost, allow the payment of a fee if no reserved housing is provided, or combine the payment of fee with the provision of reserved housing units. All fees paid would be used to develop housing or provide rental or mortgage assistance for low or moderate income families in Kaka'ako.

It is anticipated that the State Hawaii Housing Authority (HHA) will be requested by private developers to provide assistance in the delivery of "reserved housing" through programs administered by HHA. This is expected to include interim financing of construction costs (or participation therein) through the dwelling unit revolving fund, waivers of the 4% General Excise Tax, rental assistance and other programs it may have available. "Hula Mae" permanent financing will also, in all likelihood, be made available on a project basis to reserved housing buyers.

Housing support facilities to serve residential needs in the makai area will be established according to recommendations set forth for the mauka area. At present, existing facilities in proximity to the makai area such as major health care services, elementary schools, a regional library, police and fire protection, and a post office are expected to serve the amount of housing proposed. Other health care facilities (e.g., medical and dental offices, health information services, and minor diagnostic centers, commercial businesses, and day care and community centers) can be provided by private developers within the mixed-use zones. Some of the cost of the day care and community center may be covered by the revenues collected by HCDA from dedication requirements.

h. Utility Systems. Utility systems throughout Kaka'ako will be improved to meet the demands of proposed land use activities and the demands of every parcel developed to its maximum potential. Since the utility systems which serve the makai area also serve the mauka area and the broader region, the utility proposals of the Kaka'ako Plan are incorporated by reference for the makai area. The overall planning, design, construction, and functioning of the makai area's utility systems will be coordinated within the context of the respective mauka area and regional systems.

All utilities will be designed in accordance with appropriate City and County and utility company standards and established engineering principles. To the extent practicable, improvements should be coordinated with roadway improvements. Total utility improvement costs for water, sewer, drainage and electrical and communication systems in the makai area are estimated to be about \$2.9 million, based on December 1980 unit cost figures and a 20 percent factor for planning, design, and contingency. Maps are on file at HCDA showing the location and sizing of proposed facilities.

The Makai Area Plan calls for approximately 3,100 feet of new and larger water lines to meet expected business and domestic water usage and fire flow requirements. Local improvements would include the installation of a 12-inch water line along Keawe Street and new 8-inch lines along the remaining streets. Additional improvements, include new fire hydrants, water valves, manholes, and other appurtenances. See additional discussion relating to water supply in Section F, Unresolved Issues.

The proposed sewer system improvements will require approximately 4,330 feet of new sewer lines. This would include replacing existing lines with larger ones to accommodate projected flows.

The proposed drainage system improvements for the makai area include new reinforced concrete pipes and box culverts, manholes, and catch basins and/or drainage inlets at appropriate points of the system. Approximately 650 feet of new local drain lines will be needed. The existing Keawe Street trunkline will continue to be utilized. New 12.5' x 9.0' and 12.0' x 10.0' major drain lines are proposed.

The Makai Area Plan does not propose a gas line layout. Gasco, Inc. is responsible for replacement of lines as necessary. With limited modifications, the present gas distribution system has been determined by Gasco to be able to meet future demands. Gasco will decide whether to construct service mains to new customers or provide them with containerized gas.

Approximately 5,300 additional feet of underground electrical ducts and telephone conduits are proposed for the makai area. Hawaiian Electric Company (HECO) and Hawaiian Telephone Company (HTCO) will be responsible for the design of systems which conform to their individual standards.

The street lighting system is owned and maintained by the City and County of Honolulu. In order to make Kaka'ako safe and attractive, street lights will be installed as part of all new and improved roadways.

Traffic signalizations in the makai area are presently located at street intersections along Ala Moana Boulevard. These facilities are owned and maintained by the State of Hawaii. Signal systems will be added or modified as required by improvements and approved by the appropriate State or County agency.

i. Social and Safety. A major goal of HCDA is to create a safe and socially desirable environment in Kaka'ako. Community support facilities provided by the Makai Area Plan will largely meet the social needs of the area. These facilities should be efficiently operated, financially self-sufficient, and accessible.

The mixed-use development concept, as used throughout the District, will help promote a safe and secure community. Such an environment is possible through continuing human activity, as opposed to a single-use area where periods of little or no human activity and interaction may allow an area to be conducive to crime and vandalism.

Safety shall be an element of consideration in all urban design review of Planned Developments. Emphasis should be placed on assuring the installation of adequate lighting, installation of security equipment or the hiring of security personnel, and the isolation of hazardous areas and facilities from access by children or the handicapped.

j. Improvements Program. At full development, costs for building improvements, transportation, utilities, street furnitures/landscaping, and relocation may run as high as \$735.3 million (at 1980 prices) in

the makai area. However, the expected amount of development, measured by the amount of land development within a 25-to 30-year time frame, is more realistically assumed to be approximately 50 percent. The expected development cost in the makai area is therefore estimated at approximately \$372.9 million.

Private and public sources of funds will be necessary to finance the expected new development. The means of financing public facilities may include capital improvement program funds from government, bond revenues backed by private investment for improvement districts or other revenue producing development, and loans from financial institutions.

At 50 percent of maximum development, the private share of financing would be \$366.0 million, which includes \$364.6 million for building improvements and street furniture/landscaping and \$1.4 million in assessments for the improvements district. The public share of financing would be \$2.9 million for the improvement district and \$4.0 million for relocation assistance. See Table II-6 for a summary of expected costs at maximum development and at 50 percent of maximum development.

The programming of infrastructure improvements for the makai area will be incorporated in the Phasing Plan for the mauka portion of the District. Improvements will be made in increments which are large enough to be cost-effective. In order to minimize disruptions, construction of roadways will also include underground drainage and utility conduits. Because infrastructure will largely be financed with improvement districts, affected property owners in Kaka'ako will be consulted in accordance with HCDA's District-wide Improvement Program Rules, Chapter 19, Title 15. See section E, Unresolved Issues, for additional discussion relating to the Public Infrastructure Improvement Program.

TABLE II-6
MAKAI AREA PLAN SUMMARY OF COSTS AT
MAXIMUM DEVELOPMENT AND EXPECTED DEVELOPMENT
(million \$)

<u>Component</u>	<u>Maximum Development</u>	<u>Expected Development</u>
<u>Land Use</u>		
Building Improvements	\$724.7	\$362.3
<u>Transportation</u>		
Streets and Roadways	1.4	1.4
Pedestrianways (elevated)	0	0
<u>Utilities</u>		
Sewer	0.8	0.8
Water	0.4	0.4
Drainage	0.4	0.4
Electrical/Communication	1.3	1.3
Urban Design		
Street furniture/landscaping	2.3	2.3
<u>Relocation</u>		
Sites and Buildings	<u>4.0</u>	<u>4.0</u>
TOTAL	\$735.3	\$372.9

B. ALTERNATIVE PLANS FOR THE MAKAI AREA

This section summarizes the three Plan Variations (alternatives) formulated by HCDA in the planning process for the Makai Area Plan. The major distinction among the three variations is the extent to which provisions were made to address the development guidance policies under Chapter 206E, HRS. Additional details of the possibilities and rationale of the three Plan Variations are contained in the Makai Area Plan, Plan Variations, Work Item 4 report by the HCDA. A No Action Alternative, a scenario based on developing the makai area according to existing zoning and land use plans, is also discussed in this section.

1. Plan Variation A

Plan Variation A for the makai area, when compared with the other variations, represents the highest development intensity and is most similar to the mauka area in terms of the intensity, arrangement, mix of land uses, physical form, community amenities, and other features. However, Variation A does the least to address the problems and concerns unique to the makai area.

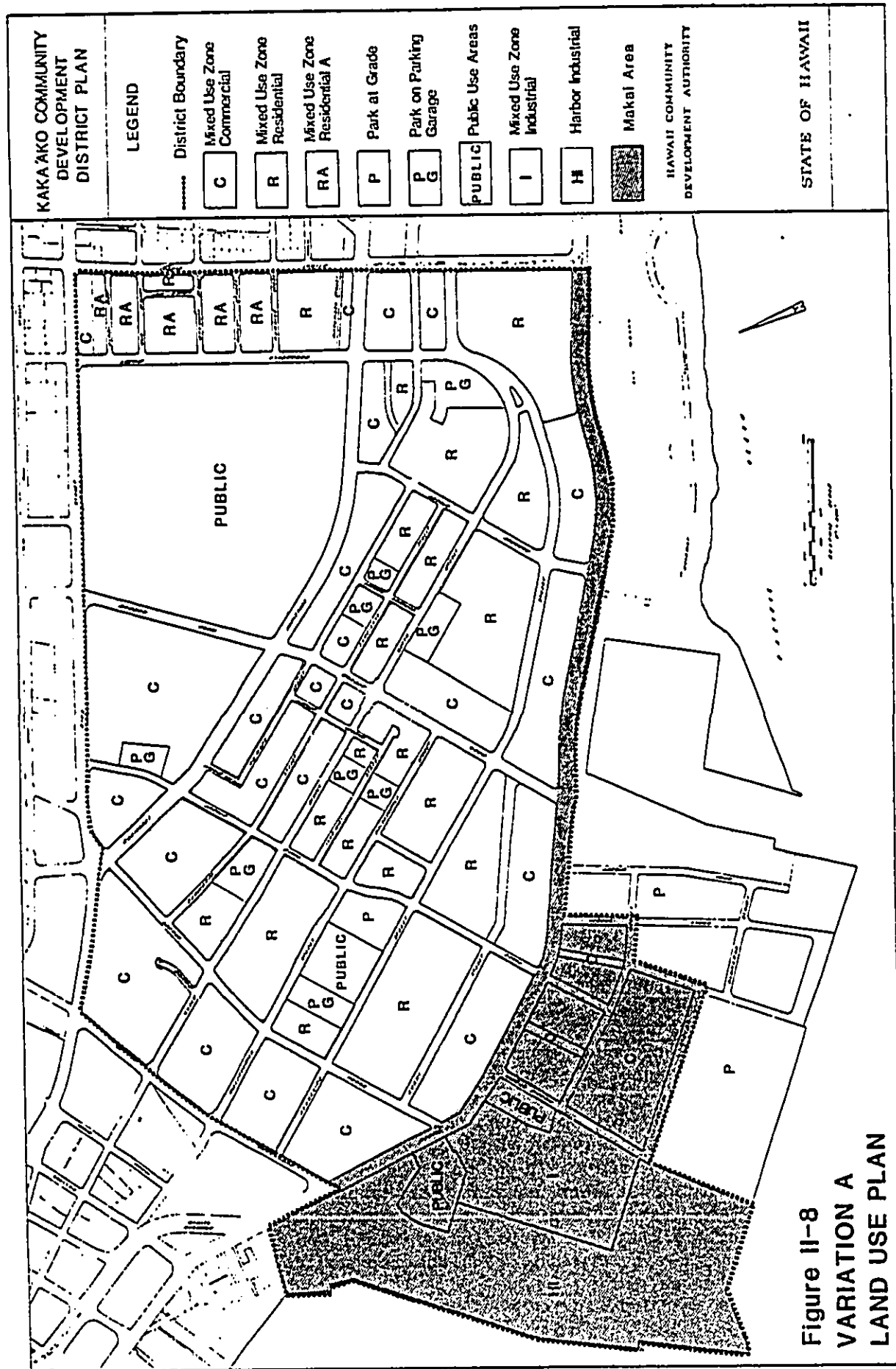
a. Land Use. The proposed land use districts in Variation A are based on the concept of expanding the mauka area arrangement of land use zones, while recognizing the need to reserve land for certain industrial uses. The result would be a physically unified mixed-use community as shown in Figure II-8. Variation A would differ from the Makai Area Plan in that it would provide a much greater emphasis on commercial activities, even allowing commercial and light industrial activities on portions of the Fort Armstrong area.

The following is a brief description of each land use category.

(1) Mixed-Use Zone Commercial (MUZ-C). This zone would permit a mixture of land uses while emphasizing commercial uses. Space would be provided for light and service industrial activities in this zone at no less than 0.3 FAR as a condition for commercial or residential use on any size lot. The maximum permitted FAR for developments in this zone would be 2.5.

(2) Mixed-Use Zone Industrial (MUZ-I). This zone would allow light and service industrial activities (e.g. wholesale, distribution centers, and commercial services) to meet the needs of central Honolulu. The zone would be composed of 19 acres in the Fort Armstrong area. A minimum of 0.6 FAR would be devoted to industrial use as a condition for commercial use on any sized lot. The maximum permitted FAR for developments in this zone would be 2.2.

(3) Harbor Industrial (HI). This zone would continue existing harbor-related activities and allow for their further expansion. Light and service industrial activities would also be permitted. This zone is proposed for most of the remainder of Fort Armstrong,



consisting of about 56 acres. The maximum permitted FAR for developments in this zone would be 1.5.

(4) Public (P). The purpose of this zone is to set aside public lands to meet public requirements for open space and preservation of historic resources. Allowable activities would include public uses and structures, including accessory activities conducted by private lessees under supervision of a public agency. Two sites, totaling approximately 5.1 acres, are proposed in Variation A.

(5) Other Land Use. Certain other uses such as utility substations and other public facilities could locate in any zone. To ensure compatibility between uses in the various zones, the performance standards adopted for the mauka area would apply to the makai area.

Variation A would provide a total development floor area of 8,383,000 square feet. Table II-7 shows the allocation of floor area to the major land uses and compares them with proposed figures from the Makai Area Plan. Space for commercial uses would be greatly increased under Variation A. Assuming a 50 percent level of maximum potential development, the employment and resident population in Variation A would be approximately 11,900, compared to 10,175 in the Makai Area Plan.

TABLE II-7
VARIATION A FLOOR AREA ALLOCATION
(square feet)

<u>Land Use</u>	<u>Variation A</u>	<u>Makai Area Plan</u>
Commercial	3,040,000	1,224,000
Industrial	4,499,000	5,228,000
Residential	844,000	1,366,000
TOTAL	8,383,000	7,818,000

b. Transportation. Similar to the Makai Area Plan, Variation A would provide a multi-modal transportation system designed to move people and goods safely and efficiently and to service the demands of the proposed land use activities. The transportation plan includes improvements and new facilities for streets and roadways, parking, public transportation, pedestrianways, and bikeways. The existing street circulation pattern in the area would be maintained except for the closure of Coral Street and Ohe Streets between Ala Moana and Ilalo Street. The Makai Area Plan also allows for the possible closure of these streets. On-street parking in Variation A would be prohibited on all public streets. On-site parking requirements would be the same as those for the Makai Area Plan.

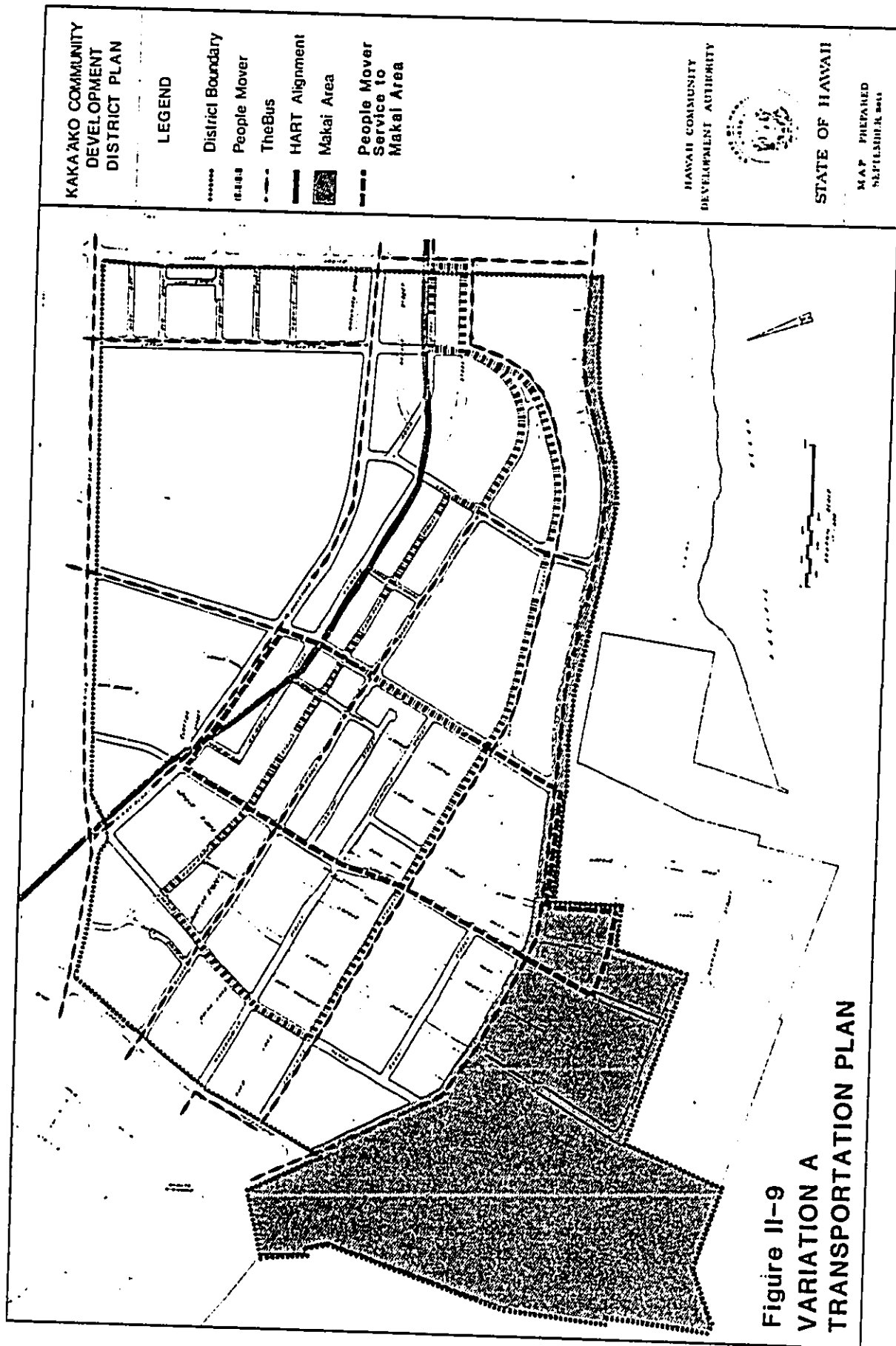
Variation A would differ from the Makai Area Plan in its provisions for public transportation and elevated pedestrianways. If internal transit demands were to increase, particularly for trips in a mauka-makai direction (i.e., from residential areas within Kaka'ako to the Waterfront Park), a shuttle bus system could be provided. The proposed route would be independent of any mauka shuttle system. It would run in a closed loop from Kapiolani Boulevard, down Ward Avenue, along Ala Moana, and then left onto Koula Street where it would by-pass the Waterfront Park. It would then run along Ilalo Street, turn right onto Cooke Street, and continue mauka on Cooke back to Kapiolani. See Figure II-9, Variation A Transportation Plan. Since this shuttle system would have great flexibility, the route could easily be shifted or augmented as demand develops.

The makai area upper-level pedestrianway system would basically be an extension of the mauka area pedestrianway system. The route would extend from the mauka area at Cooke Street, continue along Cooke Street, and extend the entire length of Ilalo Street. This upper-level pedestrian system would link activity and employment centers from the Waterfront Park, through the MUZ-C zone, and to the Fort Armstrong complex. Developments adjacent to the pedestrian system would be encouraged to connect their internal circulation system to the larger Kaka'ako system. Furthermore, developers of property along the pedestrianway route would be required to dedicate and improve an easement for the pedestrianway in the required upper-level setback. The area set aside for a pedestrianway could be counted as part of the required open space of any development.

c. Urban Design. Variation A would create an environment with an urban form in some respects similar to the proposed form under the Makai Area Plan. It would be diverse, with mid-rise structures up to 150 feet interspersed throughout the area. A significant difference would be the potential for Planned Development projects in the MUZ-I zone at Fort Armstrong up to 100 feet in height. This could dramatically change the 19-acre area from its existing condition. Landscaping in the setback areas would be required to screen buildings and paved areas from public view.

As previously noted, the urban form in Variation A would also be dominated by the presence of platforms, decks, and pedestrianways at the 45-foot level. On Planned Development projects, these areas would appear as landscaped open space that would be linked to other areas by the pedestrianways. Views from these areas would only be interrupted by building towers. The result would be an environment with two separate activity levels, with pedestrian oriented residential, commercial, social, and recreational activities at the 45-foot level and vehicular oriented industrial and commercial business traffic at the ground level.

Urban design criteria which formulated building bulk requirements in Variation A are the same as the Makai Area Plan except for guidelines on tower spacing. Variation A recommends that, if at all physically possible, the long parallel sides of neighboring towers should be no closer than 300 feet. A 200-foot spacing between the short side of



towers is recommended. Guidelines in the Makai Area Plan recommend 200 feet and 150 feet, respectively.

A final difference in the urban design under Variation A would be the absence of a Cooke Street view corridor from Ilalo Street to the proposed Waterfront Park.

d. Other Features. Development costs would be significantly higher under Variation A than under the Makai Area Plan. This would be due to the possibility for higher density projects within the Fort Armstrong area. Development in the MUZ-I zone would raise building development costs and require construction of higher capacity utility systems. Table II-8 compares the expected development costs at 50 percent of maximum development under Variation A and the Makai Area Plan.

Variation A would preserve the three identified historic resources in the makai area. The difference would be that the Ala Moana Sewage Pump Station would be zoned Public. The Makai Area Plan proposes a Commercial zoning for the site which would allow the resource to be preserved and used for commercial purposes.

TABLE II-8
VARIATION A SUMMARY OF COSTS AT 50% OF MAXIMUM DEVELOPMENT
(million \$)

<u>Component</u>	<u>Variation A</u>	<u>Makai Area Plan</u>
Building Improvements	\$409.0	\$362.3
Streets and Roadways	1.4	1.4
Elevated Pedestrianways	2.1	0
Sewer	3.4	0.8
Water	5.8	0.4
Drainage	6.8	0.4
Electrical/Communication	3.5	1.3
Street Furniture/Landscaping	2.3	2.3
Relocation: Sites/Buildings	<u>4.3</u>	<u>4.0</u>
TOTAL	438.6	372.9

2. Plan Variation B

Plan Variation B reflects an effort to place more emphasis on retaining the current harbor related and industrial activities of the makai area than on the application of features embodied in the Kaka'ako Plan for the mauka area. While this Variation is consistent with the development guidance policies under Chapter 206E, HRS, it does not address those policies that conflict with the conditions of the makai area. Consequently, the features of Variation B are unlike those adopted for the mauka area, and reflect the need to retain and encourage harbor-related industrial activities while excluding those uses which are incompatible and inappropriate in this area. Of the three Variations, Variation B has the lowest development intensity, provides for the greatest amount of industrial floor space, and minimizes the use of urban design amenities.

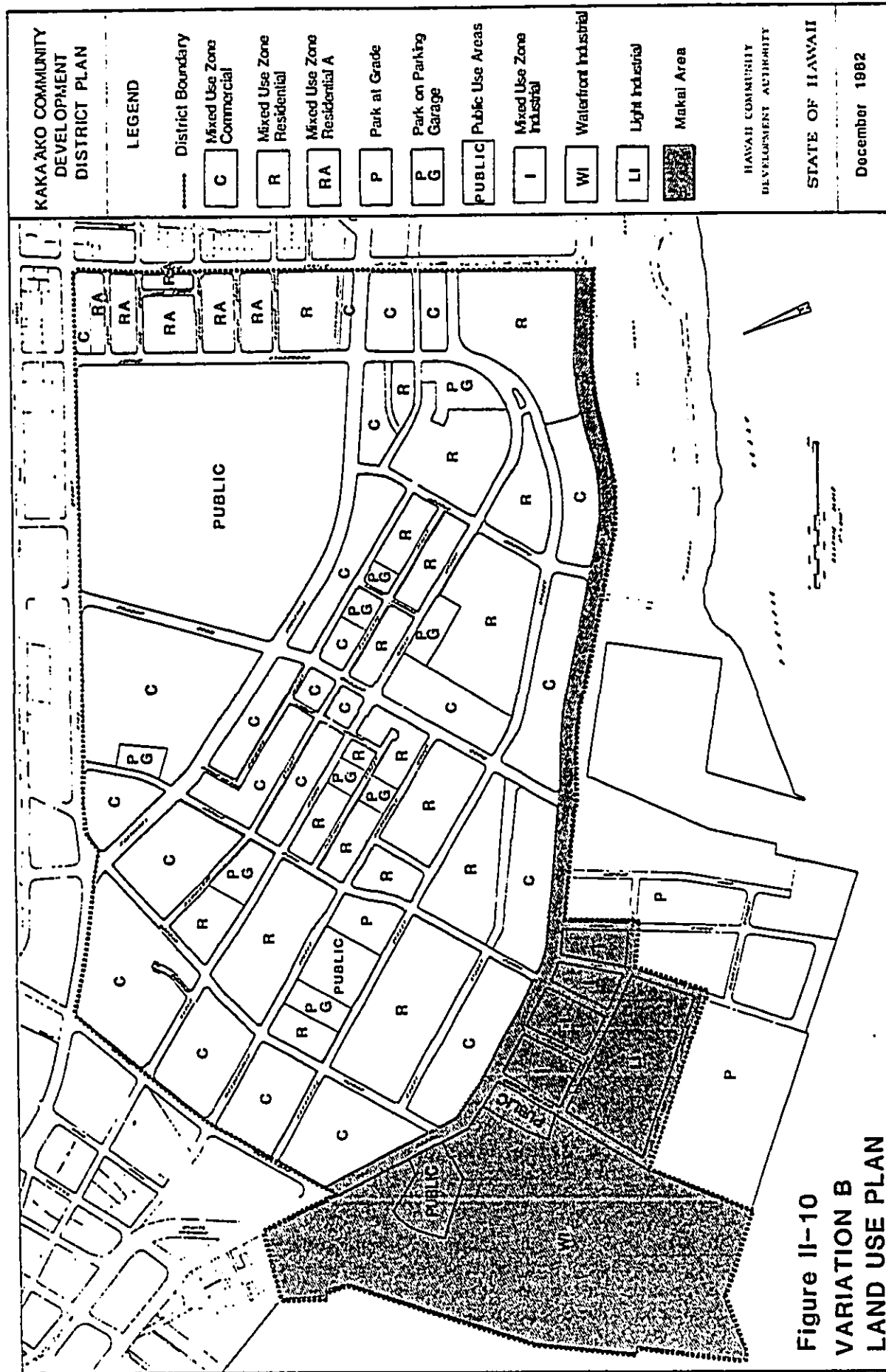
a. Land Use. The proposed land use districts in Variation B are based on the concept of a centralized and consolidated light, service and waterfront industrial area. Three industrial zones--a Mixed-Use Industrial Zone (MUZ-I), a Light Industrial Zone (LI), and a Waterfront Industrial Zone (WI) are proposed and shown in Figure II-10, Variation B Land Use Plan. In addition, two Public (P) designated areas are proposed. The following describes each land use category.

(1) Mixed-Use Industrial Zone (MUZ-I). This zone, proposed for the four blocks of privately-owned land fronting Ala Moana Boulevard, would retain and provide space for light and service industrial activities and commercial activities for servicing the needs of central Honolulu. The zone would allow excellent marketing visibility and accessibility. To ensure that space would be provided for light and service industrial activities, a minimum of 0.6 FAR would be devoted to industrial use as a condition for commercial use on any development lot. The maximum permitted FAR for developments in this zone would be 2.2.

(2) Light Industrial (LI). This zone would ensure that a range of light and service industrial activities are retained and encouraged in the makai area in keeping with public policy. It is especially intended to reserve land for industrial services that are convenient to, and help meet the needs of, central Honolulu. The maximum permitted FAR for developments in this zone would be 1.5.

(3) Waterfront Industrial (WI). The purpose of the Waterfront Industrial zone is to ensure that harbor-related industrial uses are continued and encouraged in the Fort Armstrong area. The area would consist of about 75 acres. The maximum permitted FAR for development would be 1.5.

(4) Public (P). The purpose of this zone is to set aside lands to meet public requirements for open space and preservation of historic resources. Allowed uses would include public uses and structures, including accessory activities conducted by private



lessees under supervision of a public agency. Two sites, totaling approximately 5.1 acres, are proposed in Variation B.

(5) Other Land Use. Certain other uses such as utility substations and other public facilities could locate in any zone. To ensure compatibility between uses in the various zones, the performance standards adopted for the mauka area would apply to the makai area.

Variation B would allow a total development floor area of 6,967,000 square feet. As shown in Table II-9, Variation B Floor Area Allocation, this figure is considerably less than that allowed by the Makai Area Plan. In addition, Variation B significantly differs from the Makai Area Plan in that it does not provide for any residential floor space, and it decreases the amount of commercial space that could be made available. Assuming a 50 percent level of maximum potential development, the employment population in Variation B would be approximately 8,350 compared to 8,240 under the Makai Area Plan.

TABLE II-9
VARIATION B FLOOR AREA ALLOCATION
(square feet)

<u>Land Use</u>	<u>Variation B</u>	<u>Makai Area Plan</u>
Commercial	745,000	1,224,000
Industrial	6,222,000	5,228,000
Residential	0	1,366,000
TOTAL	6,967,000	7,818,000

b. Transportation. The transportation plan in Variation B includes upgrading all roadways to City and County standards. The existing circulation pattern would remain unchanged. Variation B differs from the Makai Area Plan in that it makes no provision for street closures to allow for the creation of superblocks. Also, on-street parking would be prohibited on all streets.

Under Variation B, no bike path or designated bike lanes would be proposed within the makai area and bicyclists would be encouraged to use the street system to get onto the mauka area bikeway system.

c. Urban Design. As previously noted, Variation B has the lowest development intensity and minimizes the use of urban design amenities. This would create an urban form very different from the mauka area, as well as the urban form proposed under the Makai Area Plan. A prominent

difference in Variation B would be the lower building heights allowed. Towers in Planned Development projects would be limited to 100 feet in height, with an FAR of 2.2. Planned Development projects would be required to have a minimum of 0.6 FAR of industrial floor space and would be allowed only in the MUZ-I Zone fronting Ala Moana Boulevard. The 16 acres of State land which comprise the Light Industrial Zone would have a height limit of 45 feet, compared to a potential 150 feet for the same area in the Makai Area Plan.

d. Other Features. Overall development costs in Variation B would be significantly lower than under the Makai Area Plan. The estimated cost at 50 percent of maximum development would be approximately \$310.2 million. The lower figure is the result of less building improvements. Variation B would, however, involve more extensive development to utility systems, resulting in higher overall costs for these items. Table II-10 compares the expected development costs at 50 percent of maximum development under Variation B and the Makai Area Plan.

TABLE II-10
VARIATION B SUMMARY OF COSTS AT 50% OF MAXIMUM DEVELOPMENT
(million \$)

<u>Component</u>	<u>Variation B</u>	<u>Makai Area Plan</u>
Building Improvements	\$286.9	\$362.3
Streets and Roadways	1.6	1.4
Elevated Pedestrianways	0.1	0
Sewer	2.8	0.8
Water	5.8	0.4
Drainage	7.0	0.4
Electrical/Communication	3.7	1.3
Street Furniture/Landscaping	2.3	2.3
Relocation: Sites/Buildings	<u>.0</u>	<u>4.0</u>
TOTAL	310.2	372.9

Variation B contains open space and recreation requirements that are largely the same as in the Makai Area Plan. The primary difference is that they would apply only to the MUZ-I zone. On-site recreation space and/or open space would not be required in the Light Industrial Zone.

3. Plan Variation C

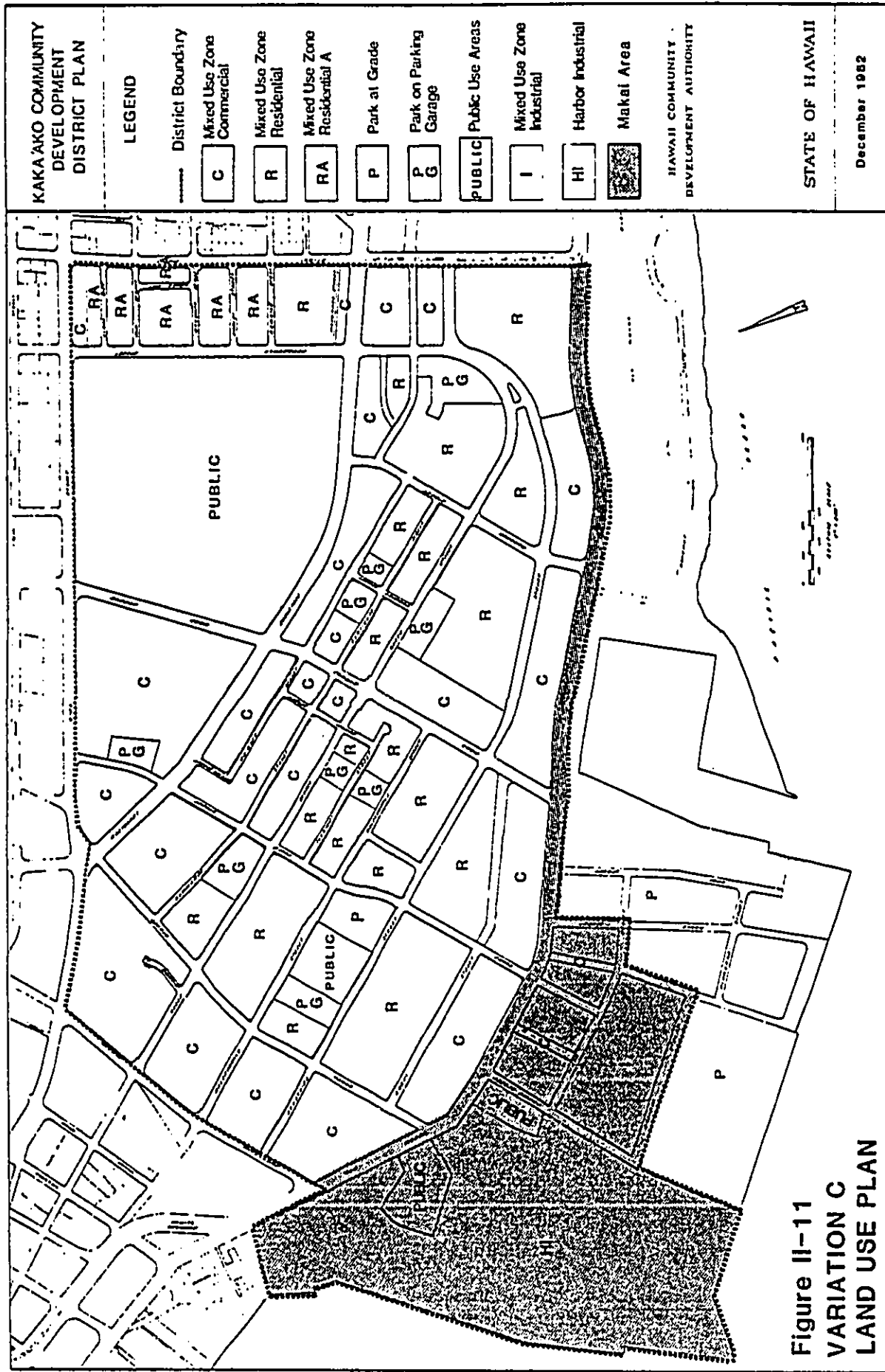
Plan Variation C is based on the concept of applying as many features of the mauka area Kaka'ako Plan as possible, while addressing the problems and concerns of the makai area. Among the major features of the Plan adopted for the mauka area that are appropriate for the makai area are the arrangement and mix of land use activities, urban design requirements, pedestrian amenities, and transportation and streetscape improvements. These features were incorporated while recognizing such makai area conditions as the need to permit the continuation of the waterfront activities at Fort Armstrong, the long-term leases on the parcels occupied by the Food Distribution Center facilities, and high noise exposure from aircraft, truck traffic, and industrial operations.

a. Land Use. The proposed land use districts in Variation C, as shown in Figure II-11, are based on the concept of encouraging limited mixed uses, while accommodating existing harbor-related industrial activities. Three distinct land use zones are proposed—a Mixed-Use Commercial Zone (MUZ-C), a Mixed-Use Industrial Zone (MUZ-I), and a single use Harbor Industrial Zone (HI). In addition, two Public (P) designated areas are proposed within the Fort Armstrong area.

(1) Mixed-Use Zone Commercial (MUZ-C). The purpose of this zone is to permit a mixture of multi-family residential, commercial, light and service industrial land uses, while emphasizing commercial uses. This zone is proposed for the four blocks of privately-owned land fronting Ala Moana which provide excellent marketing visibility and accessibility. So as to ensure that space will be provided for light and service industrial activities in this zone, each development would include light and service industrial floor space at no less than 0.3 FAR as a condition for commercial or residential use on any size lot. The maximum permitted FAR for developments in this zone would be 2.5.

(2) Mixed-Use Zone Industrial (MUZ-I). This zone would provide people in central Honolulu with convenient access to light and service industrial activities and commercial uses. The area is designated on 16 acres of State-owned land makai of the MUZ-C zone, bounded by Ilalo, Ohe, Kelikoi, and Keawe Streets. No residential uses would be allowed. To ensure that industrial uses would be emphasized, a minimum of 0.6 FAR would be devoted to industrial use as a condition for commercial use on any development lot. Developments in this zone would not exceed an FAR of 2.2.

(3) Harbor Industrial (HI). This zone would allow for the continuation and further expansion of harbor-related activities vital to the performance of the port functions at Fort Armstrong. Light and service industrial activities would also be permitted to increase development opportunities in this zone. This zone is proposed for most of Fort Armstrong, consisting of about 75 acres. The maximum permitted FAR for development in this zone would be 1.5



(4) Public (P). The purpose of this zone is to set aside lands to meet public requirements for open space and preservation of historic resources. Allowed uses would include public uses and structures, including accessory activities conducted by private lessees under supervision of a public agency. Two sites, totaling approximately 5.1 acres, are proposed in Variation C.

(5) Other Land Use. Certain other uses such as utility substations and other public facilities could locate in any zone. To ensure compatability between uses in the various zones, the performance standards adopted for the mauka area would apply to the makai area.

Variation C would provide a total development floor area of 7,586,000 square feet. Table II-11 shows the allocation of floor area to the major land uses and compares them with proposed figures from the Makai Area Plan. The significant difference in Variation C is a much lower floor area devoted to residential use, with a subsequent increase in commercial and industrial floor areas. Assuming a 50 percent level of maximum potential development, the employment and resident population in Variation C would be approximately 10,120, compared to 10,175 in the Makai Area Plan.

TABLE II-11
VARIATION C FLOOR AREA ALLOCATION
(square feet)

<u>Land Use</u>	<u>Variation C</u>	<u>Makai Area Plan</u>
Commercial	1,780,000	1,224,000
Industrial	5,465,000	5,228,000
Residential	<u>341,000</u>	<u>1,366,000</u>
TOTAL	7,586,000	7,818,000

b. Transportation. The Variation C transportation plan is similar to the Makai Area Plan by proposing the closure of Coral and Ohe Streets between Ala Moana and Ilalo Street with all remaining streets planned to City standards. Variation C, however, prohibits all on-street parking, allows for a potential shuttle bus system if demand requires, requires an upper-level pedestrianway system connecting the mauka area with the makai area to the proposed Waterfront Park, and includes only one bike path along Ala Moana.

c. Urban Design. The urban form under Variation C would be diverse, with mid-rise structures up to 150 feet interspersed throughout the

MUZ-C Zone. Variation C differs from the Makai Area Plan by limiting structures to 100 feet on the 16 acres of State-owned land zoned MUZ-I. The standard height limit of 45 feet could only be exceeded in the MUZ-I Zone on lots of 40,000 square feet or more. Guidelines in Variation C covering tower spacing are identical to those in Variation A. All other urban design guidelines and requirements under Variation C are similar to those of the Makai Area Plan.

d. Other Features. Development costs under Variation C, as shown in Table II-12, would be very similar to those in the Makai Area Plan. Due to a lower overall development intensity, building improvement costs would be lower. However, Variation C would bring about greater expansion to utility systems, making the overall development cost similar to the Makai Area Plan. Variation C would preserve the three identified historic resources in the makai area. The difference would be that the Ala Moana Sewage Pump Station would be zoned Public. The Makai Area Plan proposes a commercial zoning for the site and would allow the resource to be preserved and used for commercial purposes.

TABLE II-12
VARIATION C SUMMARY OF COSTS AT 50% OF MAXIMUM DEVELOPMENT
(million \$)

<u>Component</u>	<u>Variation C</u>	<u>Makai Area Plan</u>
Building Improvements	\$340.3	\$362.3
Streets and Roadways	1.4	1.4
Elevated Pedestrianways	1.8	0
Sewer	3.4	0.8
Water	5.8	0.4
Drainage	6.8	0.4
Electrical/Communication	3.5	1.3
Street Furniture/Landscaping	2.3	2.3
Relocation: Sites/Buildings	3.8	4.0
TOTAL	369.1	372.9

4. No Action Alternative

The No Action Alternative described in this section considers redevelopment of the makai area based on existing county zoning and land use plans. County zoning for the makai area is set forth in the Kaka'ako Special Design District (KSDD) Ordinance (Ordinance 80-85 as amended). County land use plans for the area are contained in the Development Plan (DP) Ordinance for the Primary Urban Center of the City and County of Honolulu (Ordinance 81-79 as amended).

In describing the No Action Alternative, the Final EIS for the mauka area assumed changes to the KSDD based on changes to the DP. In the makai area, the current DP would also require some changes to the

existing land use. However, since a similar assumption in the makai area would only involve increased densities on State-owned land, the same assumption will not be made in this section. The proposed land use scenario will therefore follow the existing KSDD zoning for the makai area.

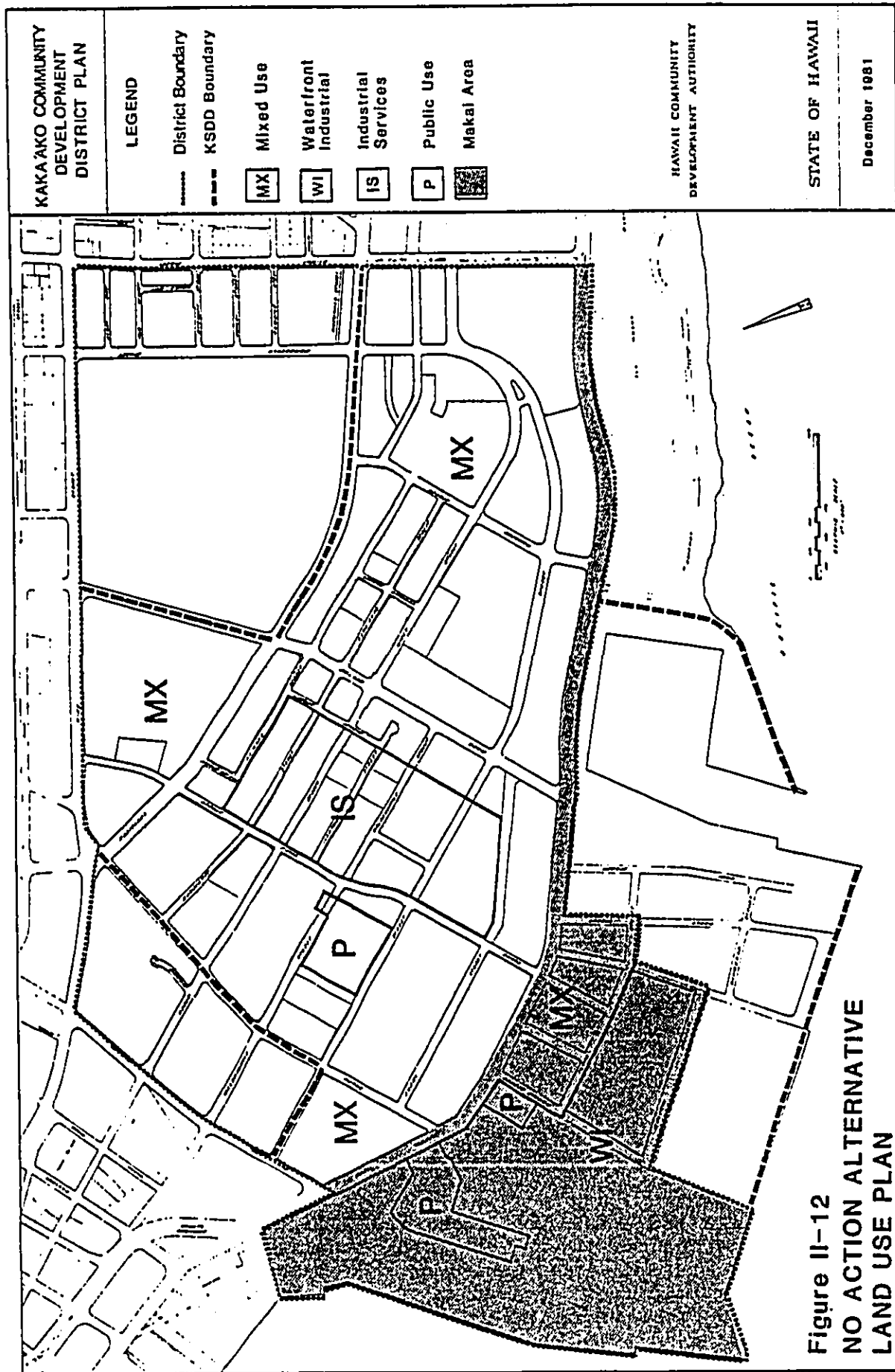
a. Land Use. The KSDD ordinance encourages the continuation and expansion of harbor-related activities in areas where these activities currently exist, and a mixture of commercial and residential uses along Ala Moana Boulevard. Figure II-12, No Action Alternative Land Use Plan, shows KSDD zoning for the makai area. Unlike the Makai Area Plan, State-owned lands bounded by Kelikoi, Keawe, Ilalo, and Ohe Streets would be strictly for harbor-related activities and would not allow other industrial, commercial, or residential uses. The mixed-use area fronting Ala Moana would have an emphasis on commercial uses similar to the Makai Area Plan. However, County zoning does not require a minimum amount of industrial floor area for developments in this zone as in the case of the Makai Area Plan.

(1) Waterfront Industrial Precinct (WI). This zone is for the purpose of reserving lands for harbor-related activities only, and excludes those activities which are inappropriate to the precinct and which can be located elsewhere. Waterfront terminal facilities, wholesale and distribution establishments, and public uses are allowed in this precinct. Development would be allowed at a maximum FAR of 2.5.

(2) Mixed-Use Precinct (Mx). The purpose of the Mixed-Use Precinct is to permit a harmonious mixture of business, apartment, community, and regional commercial service uses. Public, commercial, residential, and limited service industrial uses are permitted. Regardless of lot size, development without multi-family dwellings in the precinct is allowed a maximum FAR of 2.5. A mixed-use development is allowed a maximum FAR of 3.5 provided that multiple-family dwellings make up between 1.0 and 2.5 FAR. However, because of street setback requirements, lot coverage limits, and height limits, only development on large lots could achieve maximum FAR.

(3) Public Use Precinct (P). The purpose of this zone is to set aside lands to meet public requirements, including recreation and open space. Only public uses are permitted. The Ala Moana Sewage Pump Station, the Department of Health Building and the U.S. Immigration Station are in the Public Use Precinct. The maximum FAR for these lands is 2.5.

Development under the KSDD zoning could create a potential floor area of 10,597,636 square feet (this excludes land in the Public Use Precinct). This would be nearly 2.8 million square feet more than the allowable floor area proposed in the Makai Area Plan. The reason for this is higher floor area ratios in the Mixed-Use and Waterfront Industrial Precincts. Table II-13 compares the floor area allocation of major land uses for both scenarios. The figures for the No Action Alternative were calculated assuming the maximum developable floor area



for commercial uses. The employment and resident population in the No Action Alternative would be approximately 12,878 at a 50 percent level of maximum potential development.

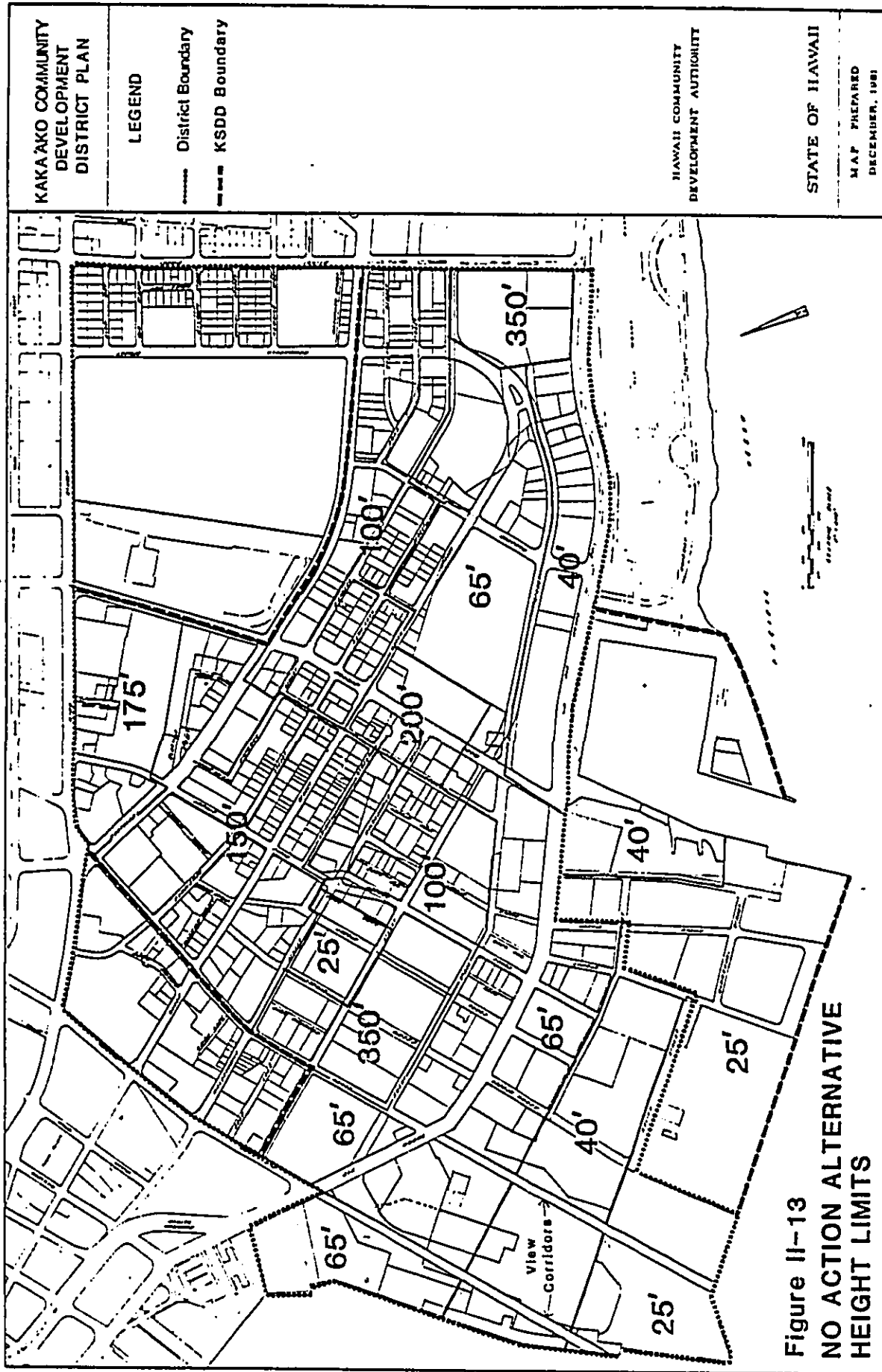
TABLE II-13
NO ACTION ALTERNATIVE FLOOR AREA ALLOCATION
ASSUMING MAXIMUM COMMERCIAL USE
(square feet)

<u>Land Use</u>	<u>No Action Alternative</u>	<u>Makai Area Plan</u>
Commercial	1,163,645	1,224,000
Industrial	8,968,533	5,228,000
Residential	<u>465,458</u>	<u>1,366,000</u>
TOTAL	10,597,636	7,818,000

b. Transportation. There would be only minor differences in the transportation system and parking in the makai area between the No Action Alternative and Makai Area Plan. The circulation pattern would be unchanged. Street closures would be possible with the No Action Alternative, as with the Makai Area Plan, although details would have to be worked out at a latter date. On-street parking may be allowed on any of the minor streets by the No Action Alternative, and on-site parking would be required at a slightly higher density. Unlike the Makai Area Plan, the No Action Alternative would likely not provide for bikelanes along Ala Moana. Additionally, the No Action Alternative would not include a pedestrian crossing at the 45-foot level over Ala Moana. Both the KSDD and Makai Area Plan feature mid-block pedestrianways.

c. Urban Design. The urban form which could potentially be realized under the No Action Alternative would be very different from that proposed in the Makai Area Plan. Whereas the Plan would create a diverse environment with mid-rise structures up to 150 feet interspersed throughout the central makai area, the No Action Alternative would allow lower building heights, higher densities, and less diversity in types of activity. As shown in Figure II-13, building height limits increase with distance from the coastline. The result would be a stairway effect leading to high-rise development in the mauka area.

Unlike the Makai Area Plan, the KSDD would allow a relatively substantial change in the existing character of the Fort Armstrong area. The Makai Area Plan generally maintains existing building heights (a maximum of 45 feet is allowed) but would accommodate more buildings. The maximum FAR is 1.5. In contrast, the KSDD allows for



three different building height limits, with lands adjacent to Ala Moana able to accommodate structures up to 65 feet. The FAR for the entire area would be 2.5. Also in the Fort Armstrong area, the KSDD would require two view corridors where structures would not be allowed. These corridors would extend from Punchbowl and South Streets to the ocean.

The privately-owned lands along Ala Moana and the State-owned lands makai of them would also be developed very differently under the No Action Alternative. The State land would remain generally the same as it is today under the KSDD, although more structures would likely be accommodated. Under the Makai Area Plan, however, the land may be used primarily for residential purposes, along with commercial and some service industrial activities. Planned Development projects would include structures up to 150 feet under the Makai Area Plan.

Similar to the Makai Area Plan, the private lands along Ala Moana would provide for a mixture of commercial and residential activities, although no industrial uses would be allowed. Structures however, would be limited to 65 feet, as opposed to a potential 150 feet under the Plan. Since Planned Development projects, or a variation thereof, are not provided for under the KSDD, landscaped platforms and decks above grade would not be part of the urban form under the No Action Alternative.

The KSDD requires a minimum of 30 percent of each lot in all precincts, exclusive of required yards and setbacks, to be devoted to open space. This open space may be provided on another lot within a short distance, preferably in conjunction with other open spaces, as long as the open space is dedicated in fee and accepted by the City and County. In the mixed-use zones under the Makai Area Plan, 10 percent of a development lot would be required for open space at grade, exclusive of other requirements. An additional 20 percent would be required for Planned Development projects, which could be supplied at grade or at any elevation up to and including the platform deck level. No on-site open space is required in the Waterfront Industrial zone under the Makai Area Plan.

Under the KSDD, Ala Moana Boulevard is the only makai area roadway considered as a view corridor. The Cooke Street view corridor ends at the mauka side of Ala Moana. The building height limit on both the mauka and makai sides of Ala Moana is 65 feet. According to the KSDD, structures along Ala Moana shall be set back at a 1:1 slope from the 40-foot height level, at the 15-foot building setback line. Any portion over 40 feet must not exceed 25 percent of the lot area.

All other streets in the makai area are classified as local streets under the KSDD. Buildings along these streets shall be set back 5 feet from the building setback line. Additional setback above 40 feet is not required. Any portion over 40 feet must not exceed 25 percent of the lot area.

The Makai Area Plan requires a minimum front-yard setback of 15 feet along all public roadways in the makai area.

d. Other Features. Unlike the Makai Area Plan, the No Action Alternative would not require that a development on a 20,000 square foot lot or larger reserve at least 20 percent of the total dwelling units for sale or continuous rental to qualified persons as determined by HCDA. It is not possible to determine whether housing programs of the State Hawaii Housing Authority or County Department of Housing and Community Development would be different under the No Action Alternative than with the Makai Area Plan.

Like the Makai Area Plan, no public recreational facilities would be provided within the makai area under the No Action Alternative. Both would rely on the Waterfront Park to supply these activities. The No Action Alternative would require private on-site recreational space only in the Mixed Use Precinct where multi-family dwellings exist. By comparison, the Makai Area Plan would require (in varying degree) on-site recreation space for all types of activities or uses throughout the mixed-use zones.

Under the No Action Alternative, government relocation services and payments would only be provided to persons and businesses directly displaced by government actions. Monetary payments to residents and businesses displaced by State or County actions would be limited to fixed amounts established in 1970 by Chapter 111, HRS. By comparison, relocation assistance under the Makai Area Plan would include payments to displacees of government actions and services to displacees of private actions. HCDA would also undertake efforts to make temporary relocation facilities available. If Federal actions are involved in displacements of residents or businesses, then the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 would apply. [9]

Under the "no action" alternative, improvements to the area would be made as new developments are planned and developed.

C. KAKA'AKO DISTRICT-WIDE INCREMENTAL IMPROVEMENT PROGRAM

1. Introduction

The Kaka'ako Community Development District Plan's District-Wide Improvement Program, outlines a phasing plan for infrastructure improvements such as: realignment and widening of existing streets; providing sidewalks, curbs, gutters, and driveways; developing new and improving existing drainage and sewerage systems; increasing the capacity of water mains for adequate fire protection and services; and increasing the capacities of and providing underground telephone and electrical lines. The construction of these improvements will be phased to ensure that adequate public facilities and utilities are available to support private developments at the time they occur. In determining the area and sequence for infrastructure improvements, the following factors are considered:

a. Redevelopment Readiness. The areas ready for redevelopment should be improved first. This is determined by the interest of landowners or developers to redevelop.

b. Availability of Funds. Since the amount of the improvement costs that can be assessed against landowners is limited to the extent of the "special benefits" realized, government must provide the remaining funds needed for the "general cost" of any improvement district. The amount of funds which government makes available to HCDA will dictate the size of phases that can be implemented.

c. Functionality. The functional aspects of the improvements must be considered. For example, improvements to gravity utility lines for drainage and sewerage facilities will start at the downstream end of the lines.

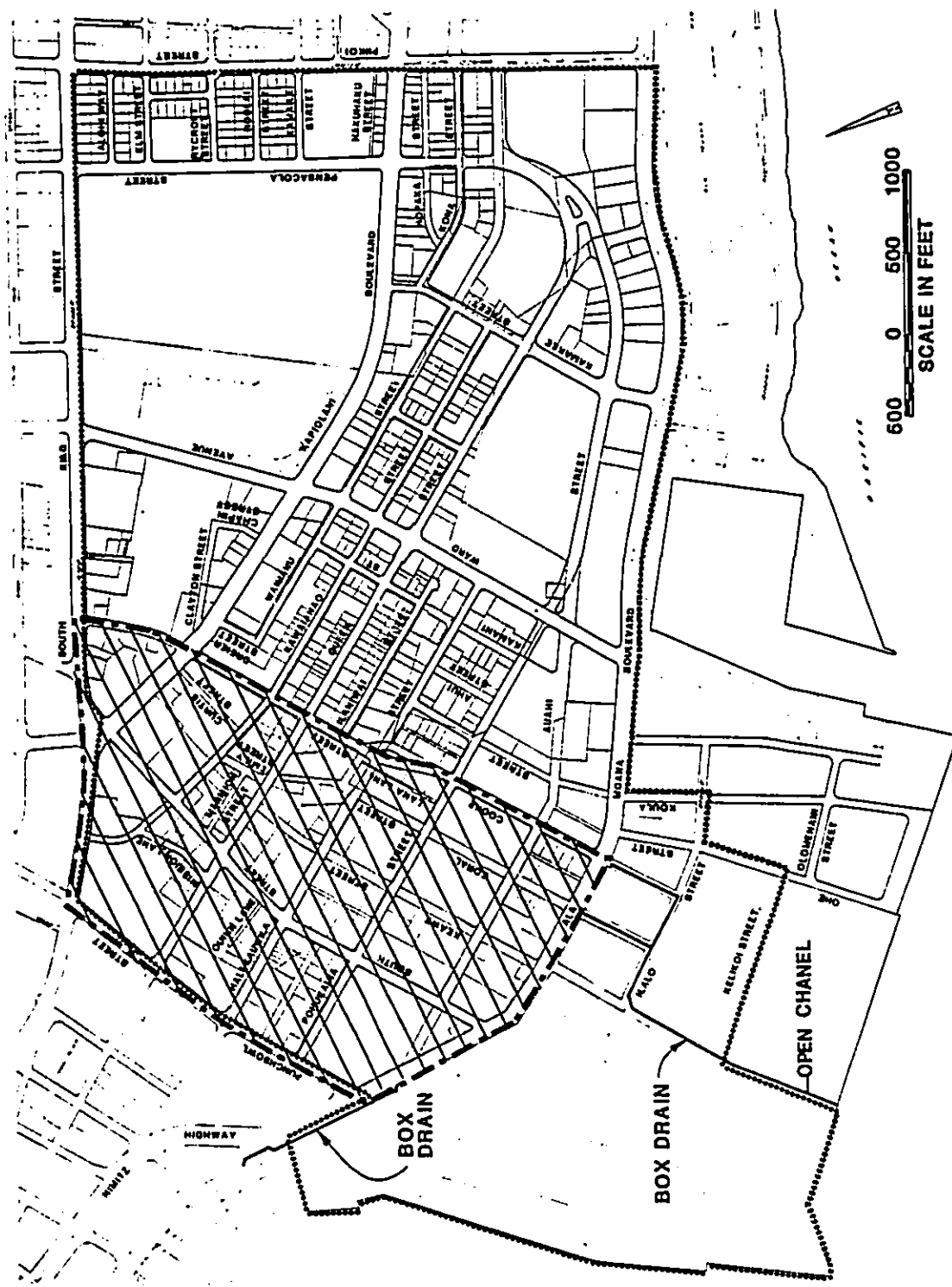
d. Construction Duplication. Where feasible, all improvements within the roadway should be constructed at the same time. This avoids "tearing" up the roadway more than once and the consequent disruption to adjacent activities and public inconveniences. This also avoids assessing property owners in more than one construction phase.

2. Increment I Improvement Area

Based on the above factors, a Kaka'ako District Increment I area for infrastructure improvements was selected for the initial implementation of the Kaka'ako District-Wide Improvement Program. This is a 138-acre area in Figure II-14 and is generally bounded by Punchbowl Street, King Street, Cooke Street and Ala Moana Boulevard. From this area, two box drains extend to the shoreline as noted. This Increment I area was further divided into two proposed construction phases shown in Figure II-15. Construction costs for each of the construction phases are shown in Table II-14.

LEGEND:

INCREMENT I



II-49

Figure II-14

JULY, 1984

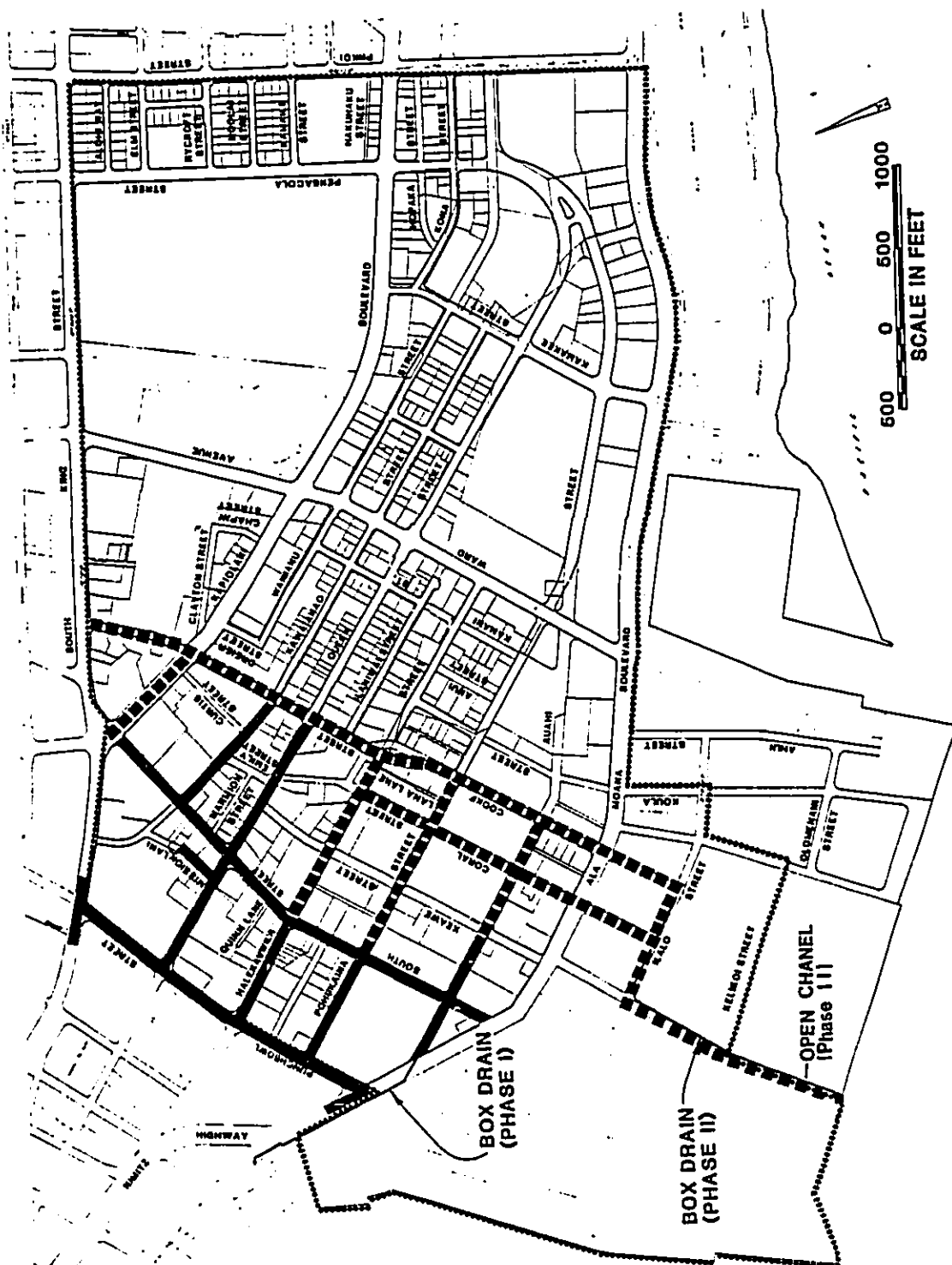
**INCREMENT I
CONSTRUCTION
PHASES**

LEGEND:

- PHASE I
PHASE II

Figure II-15

JULY, 1984



Phase I of the Increment I infrastructure work involves the Ewa-most side of the Kaka'ako, bounded by Punchbowl Street, King Street, Kapiolani Boulevard, Queen Street, South Street, and Ala Moana Boulevard. This area, which is ready to be redeveloped and has exhibited a need for public improvements, was selected as the first phase primarily because it would immediately maximize the benefits of the improvements. It is estimated that the first construction phase may begin in late 1985 or early 1986 time frame and will take approximately 18 months to complete.

TABLE II-14

*CONSTRUCTION COST ESTIMATE

	COST (In Millions of Dollars)		
	Phase 1	Phase 2	Total
ROADWAY	5.08	2.41	7.49
SEWER	2.00	1.10	3.10
DRAINAGE	8.50	17.50	26.00
WATER	1.05	1.25	2.30
ELECTRIC/TELEPHONE	5.55	6.90	12.45
RIGHT-OF-WAY ACQUISITION	2.43	5.80	8.23
BUILDING ADJUSTMENT (CUTTING & REPLACEMENT)	<u>0.74</u>	<u>1.86</u>	<u>2.60</u>
SUBTOTAL	25.35	36.82	71.49
CONST. CONTINGENCY(15%)	<u>3.80</u>	<u>5.52</u>	<u>9.32</u>
SUBTOTAL	29.15	42.34	71.49
COST IN 1986 DOLLARS	<u>32.14</u>	<u>46.68</u>	<u>78.82</u>
ADMIN. & ENGINEERING			<u>2.99</u>
TOTAL			81.81

*All estimates are in 1984 dollars, unless noted otherwise.

3. Increment I Improvements

The engineering design of infrastructure improvements for the Increment I area is scheduled for completion in February 1985. A description of the existing conditions and improvements for Increment I are discussed below.

a. Roads. Except for the major streets of Kapiolani Boulevard, Ala Moana Boulevard, King Street, South Street and Punchbowl Street, the roads within Increment I are in fair to poor condition. Some interior streets, such as Queen, Halekauwila and Pohukaina, are fairly improved for short segments but many are narrow, two-lane roadways with no sidewalks, curbs and gutters.

Sight distances (for driving purposes) are inadequate because of buildings constructed up against property corners and the haphazard on-street parking along the street shoulders. Although there are sidewalks on portions of some streets, such as Halekauwila, Queen and Pohukaina Streets, these sidewalks are not uniform in appearance because of piecemeal construction over the years. Finally, existing curbs are generally lava rocks. Where improvements have been made in recent years, the lava curbs have been replaced with concrete curbs.

Kapiolani Boulevard, King Street, Punchbowl Street and Ala Moana Boulevard are considered adequate. Therefore, no improvements other than new utilities are proposed within the right-of-way of these streets. Existing streets which may ultimately be closed with the creation of "superblocks" include Coral, Keawe, Curtis, Marmion, Emily and a portion of Auahi and Kawaiahao Streets. All other roadways will require either total or partial street improvements because of road widening, or improvements to drainage or other substandard conditions. Areas requiring road improvements are shown on Figure II-16. Curbs, gutters and sidewalks will be provided where none exists. Existing curbs, gutters, sidewalks and driveways may be reconstructed where substandard or due to road widening, realignments or changes in elevations. Where an 8-foot sidewalk width is not achievable because of existing building encroachment into the road right-of-way, minimum widths of 6 feet will be permitted in the interim until such time as the property is redeveloped.

Road improvements will be constructed to the dimensions shown on Figures II-17 through II-19. The existing and proposed right-of-way and curb-to-curb dimensions are summarized as follows:

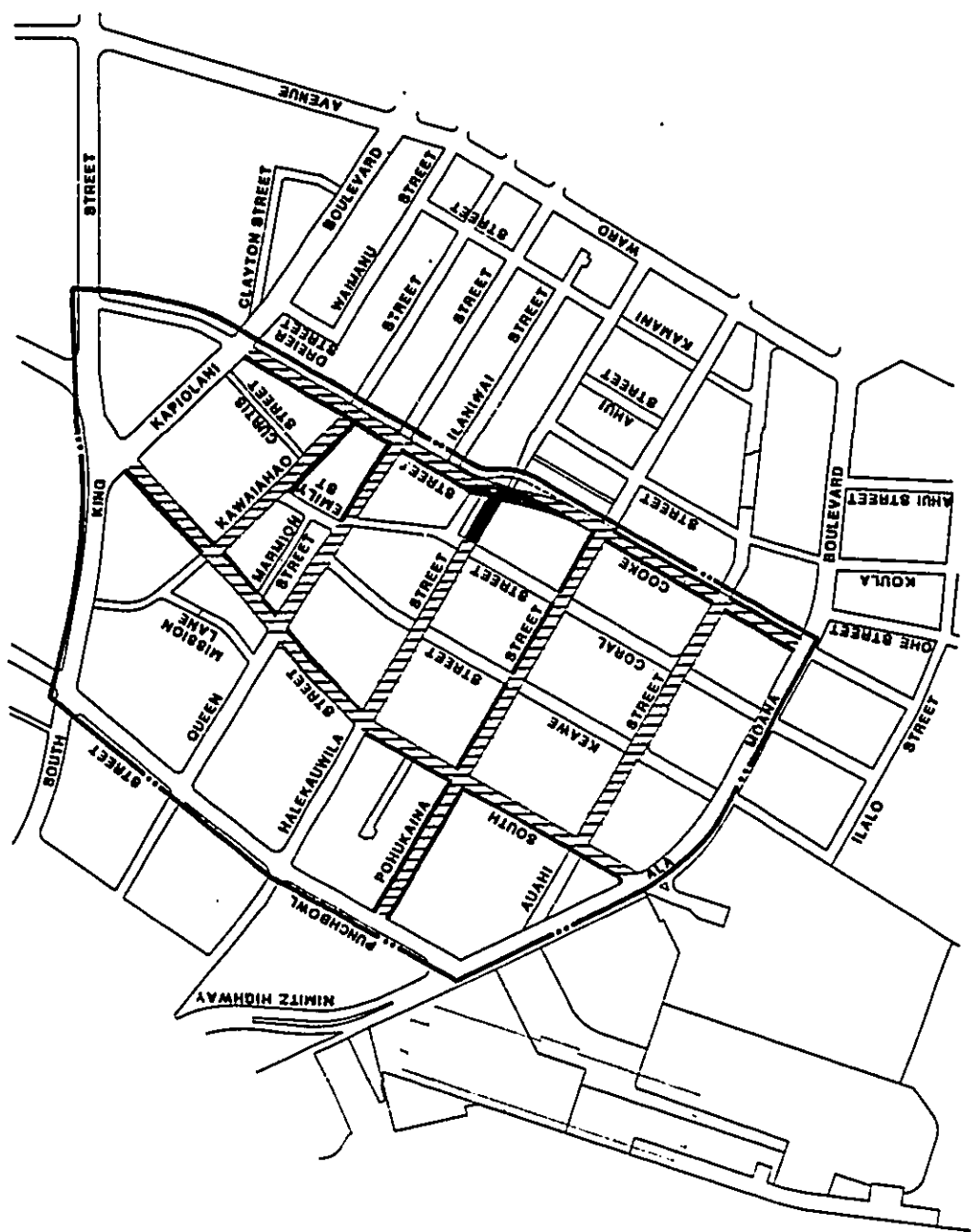
**PROPOSED
ROADWAY
IMPROVEMENTS**

LEGEND:

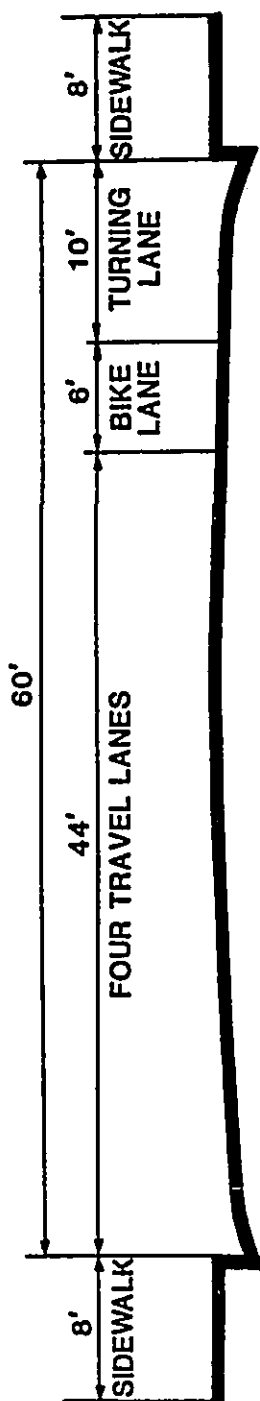
- APPROXIMATE
BOUNDARY
INCREMENT 1
- ▨ ROADWAY
IMPROVEMENTS
- RIGHT OF WAY
ACQUISITION

Figure II-16

JULY, 1984



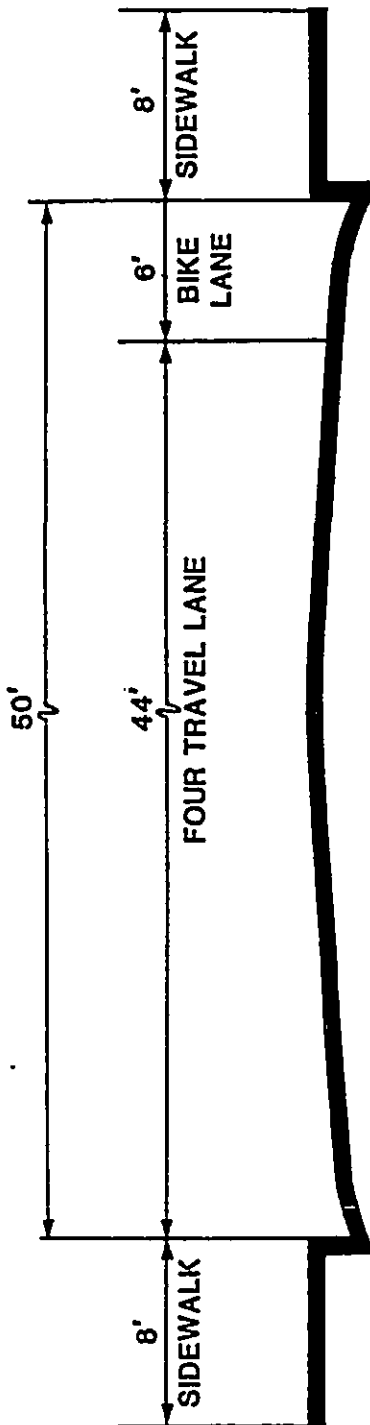
ROADWAY
CROSS
SECTIONS



SOUTH STREET
(Between Kapiolani Boulevard & Queen Street)

(Right of Way: 76')

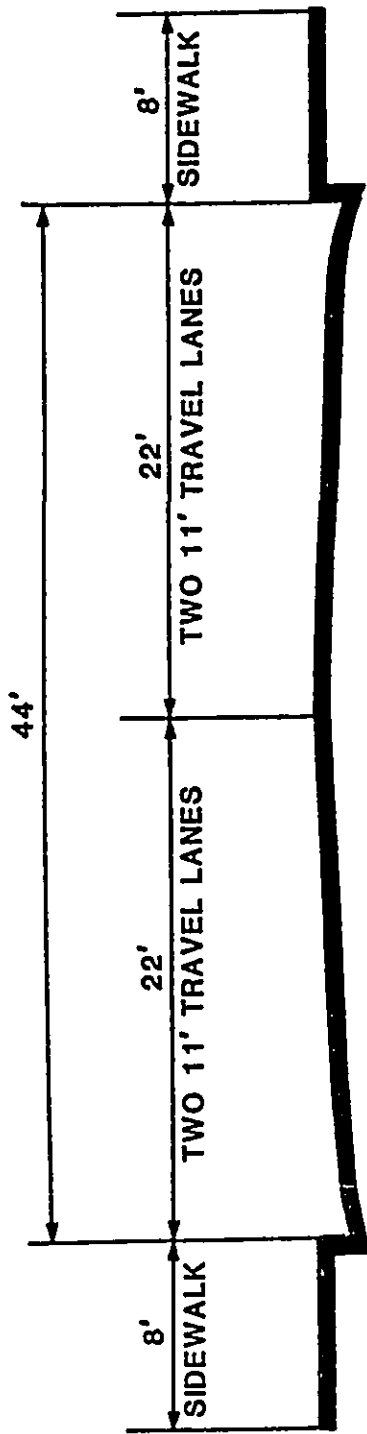
II-54



SOUTH STREET
(Between Queen Street and Ala Moana Boulevard)

(Right of Way: 66')

**ROADWAY
CROSS
SECTIONS**



QUEEN STREET

(Between South Street & Cooke Street)

COOKE STREET

(Between Kapiolani Boulevard & Ala Moana Boulevard)

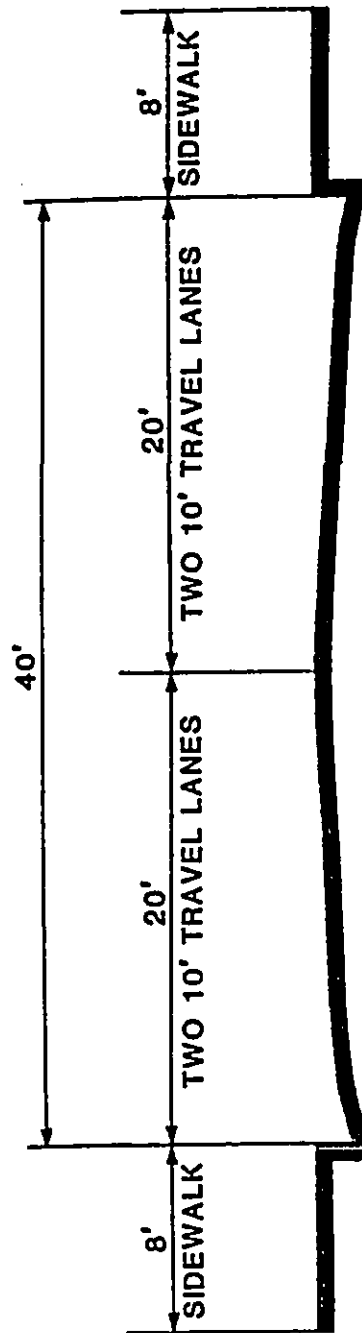
AUAHI STREET

(Between South Street & Cooke Street)

POHUKAINA STREET

(Between Punchbowl Street & Cooke Street)

(Right of Way: 60')



QUEEN STREET

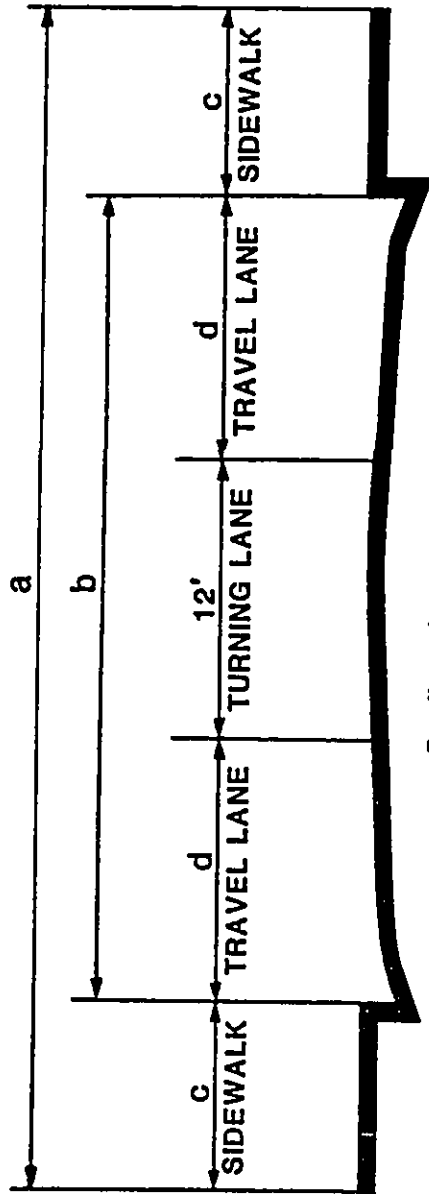
(Between Punchbowl Street & South Street)

(Right of Way: 56')

Figure II-18

JULY, 1984

**ROADWAY
CROSS
SECTIONS**



For dimensions, see Table.

HALEKAUWILA & KAWAIAHAO STREET

COOKE STREET

(Between King Street & Kapiolani Boulevard)

Table

a	60' Halekauwila St. (Between Punchbowl and South St.) 50' Kawaiahao St., Cooke St. (Between King St. and Kapiolani Blvd.) and Halekauwila St. (Between South and Cooke St.)
b	40' Halekauwila St. (Between Punchbowl and South St.) 36' Kawaiahao St., Cooke St. (Between King St. and Kapiolani Blvd.) and Halekauwila St. (Between South and Cooke St.)
c	10' Halekauwila St. (Between Punchbowl and South St.) 7' Kawaiahao St., Cooke St. (Between King St. and Kapiolani Blvd.) and Halekauwila St. (Between South and Cooke St.)
d	14' Halekauwila St. (Between Punchbowl and South St.) 12' Kawaiahao St., Cooke St. (Between King St. and Kapiolani Blvd.) and Halekauwila St. (Between South and Cooke St.)

Figure II-19

JULY, 1984

Street	Existing		Proposed	
	R/W	Curb to Curb	R/W	Curb to Curb
Cooke Street				
(King to Kapiolani)	50'	36'	50'	36'
(Kapiolani to Ala Moana)	50'	38'	60'	44'
Halekauwila	60'	--	60'/50'	36'
Queen				
(South to Cooke)	56'	--	60'	44'
(Punchbowl to South)	56	40'	56'	40'
South				
(Kapiolani to Queen)	60'	44'	76'	60'
(Queen to Ala Moana)	60'	44'	66'	50'
Auahi	60'	--	60'	44'
Kawaiahao	40'	--	50'	36'
Mission Lane	40'	24'	40'	24'
Pohukaina	50'	--	60'	44'

b. Sewer. There are several major sewers carrying tributary flows through the Increment I area. A 32-inch sewer line enters the Increment I area from the Ewa direction along Ala Moana Boulevard. The line increases to 34-inch and 36-inch pipes approaching the Ala Moana Sewage Pump Station. Connecting to this line at South Street is another trunk sewer line. It consists of 24-inch and 18-inch pipes which run along South Street from King Street to Ala Moana Boulevard.

A 78-inch sewer line also enters the Increment I area from the Diamond Head direction along Auahi Street, continuing along Auahi and turning toward the makai side on Keawe Street to the Ala Moana Sewage Pump Station. This trunk line intercepts another major line which runs along Cooke Street from King Street. The line size ranges from 18 to 24 inches in diameter.

Sewer improvements are shown in Figure II-20. The existing trunk sewer line running mauka to makai along Cooke Street will remain. Improvements include realignment of a portion of this line between Halekauwila and Pohukaina Street. This is to conform to the roadway improvements to Cooke Street.

LEGEND:

-



500 0 500 1000
SCALE IN FEET

Figure II-20

JULY, 1984

A new trunk sewer line ranging in size from 10 to 30 inches will be installed along Kapiolani Boulevard, South Street and Auahi Street. This line connects to the existing 78-inch line located at the intersection of Keawe and Auahi Streets. Smaller branch lines ranging in size from 8 to 12 inches will be installed along Kawaiahao, Queen, Halekauwila, Pohukaina, Cooke and Auahi Streets to convey sewage into the trunk line along South Street and Cooke Street.

All existing sewer laterals along the new sewer mains will be replaced and new lines from the mains to the road right-of-way will be installed. Until such time that "superblocks" are created, the existing sewer lines within roads to be ultimately abandoned, such as Coral and Keawe Streets, will be kept serviceable. The existing lines located on these roads will be connected to the new system.

c. Water. The main water distribution lines servicing the Increment I area are located along Kapiolani Boulevard, King Street and Ala Moana Boulevard. Most of the existing lines were installed in the 1930's or earlier. Portions of the existing water lines within Auahi Street, Pohukaina Street, Queen Street, Kawaiahao Street, Punchbowl Street and Cooke Street do not meet the present Board of Water Supply (BWS) minimum 8-inch size requirement for distribution mains. Fire hydrants in the area are generally spaced far apart and do not meet the BWS minimum spacing requirement of 250 feet.

Water line improvements for Increment I are shown on Figure II-21. New 12-inch water mains will be installed along Punchbowl Street and Cooke Street from King Street to Ala Moana Boulevard and Kapiolani Boulevard to Ala Moana Boulevard, respectively. Interconnecting these lines will be a 12-inch main installed along Queen Street from Cooke to Punchbowl Street. New 8-inch lines will be installed along Auahi Street, Mission Lane, and portions of Pohukaina, Halekauwila and Kawaiahao Streets.

Existing water lines within the roadways to be abandoned will be left undisturbed, except where relocation is necessary for installation of drainage lines. The existing water system in these roadways will be connected to the new system for continued service to the existing facilities. These lines will remain active until the "superblocks" are created.

All existing water laterals along the alignment of the new main will be replaced with new laterals. All existing laterals off the existing water mains, which are to remain, will not be replaced. These laterals, however, may require extension where road widening will occur. Similarly, all existing fire hydrants within the project area will be replaced with new hydrants or relocated. Additional hydrants will be installed at 250-foot spacings.

LEGEND:

NEW:

WATER LINE

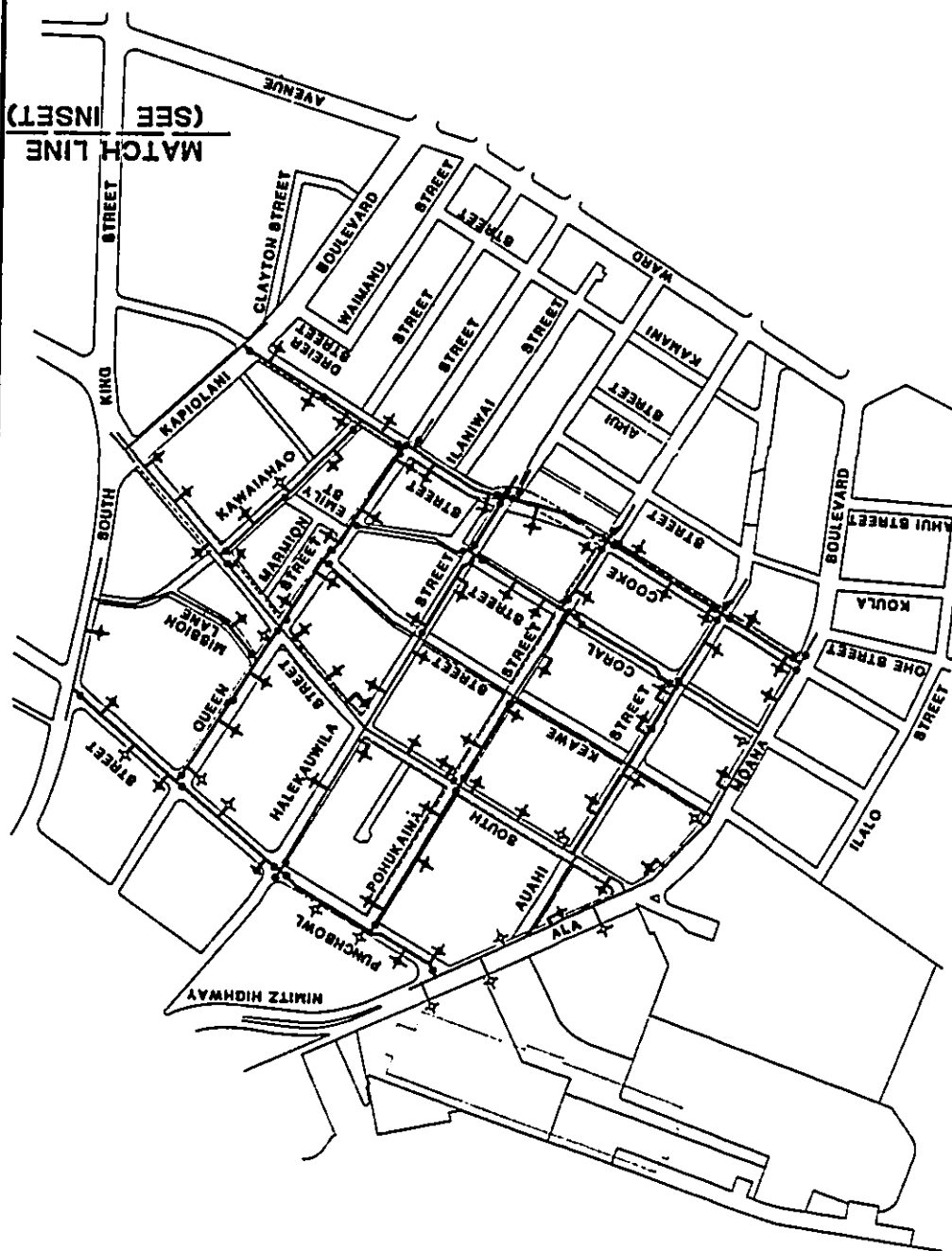
FIRE HYDRANT

GATE VALVES

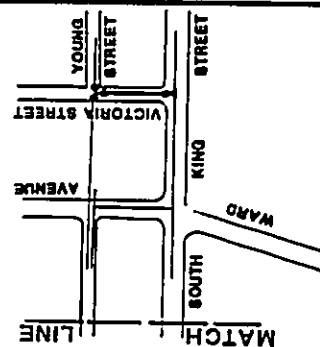
EXISTING:

WATER LINE

FIRE HYDRANT.



II-60



INSET

500 0 500 1000
SCALE IN FEET

Figure II-21

JULY, 1984

d. Drains. Storm water runoff from the mauka area, outside of the district, flows through the Increment I area. Existing drain lines are located within the right-of-way of each major mauka-makai street in the Increment I area. A 3' x 1.25' box drain runs along Cooke Street; a 5' x 2' box drain runs along Coral Street; a 7.5' x 4' box drain runs along Keawe Street; a 7' x 3.5' box drain runs along South Street; and a 2.5' x 1.25' box drain runs along Punchbowl Street. These box drains outlet into the ocean through an open channel at the end of Keawe Street into Kewalo Basin and into Honolulu Harbor at Pier 4 and Pier 2. Existing catch basins are generally substandard, measuring approximately 4' x 4' with limited inlet capacity. The existing drain pipes are minimal in size (generally 12, 18 and 24 inches in diameter).

The flatness of the area, coupled with the inadequate drainage system, results in a constant threat of flooding during heavy rain storms. Frequent flood prone areas include the intersection of Kapiolani Boulevard and Cooke Street; South Street from King Street to Halekauwila and Kawaihāo Streets; and the Diamond Head side of South Street.

Drainage improvements proposed for Increment I are shown on Figure II-22. Two major drainage systems are proposed for the Kaka'ako Increment I area. One system will convey storm runoff from the mauka areas outside the District and the Ewa portion of Increment I while another system will dispose of flows from the mauka areas outside the District and the Diamond Head portion of the project site. The main drain line of the system on the Ewa portion will have its upstream end near the intersection of Punchbowl Street and King Street, running makai along Punchbowl Street, turning Diamond Head on Queen Street to South Street, continuing makai along South Street to Auahi Street, turning Ewa along Auahi Street to Ala Moana Boulevard, and running along the shoulder of Ala Moana Boulevard to Honolulu Harbor at Pier 4. The main line will consist of box drains ranging in size from 8' x 5' to 10' x 9'. Drain pipes and smaller box drains will be connected to the main line to dispose of storm runoff from the adjacent areas.

The system proposed for the Diamond Head portion is a modification of the East Kaka'ako Relief Drain which was designed in 1974 by the City and County of Honolulu but was not constructed. The upstream end of the main box drain will receive flow from the Kapiolani Boulevard-Beretania Street Relief Drain which presently terminates near the end of South Street on the mauka side of King Street. From this connection the new box drain will continue Diamond Head along Kapiolani Boulevard to Cooke Street, turning makai on Cooke Street to the new extension of Halekauwila Street, continuing along the extension to Coral Street, turning makai on Coral to Ilalo Street, continuing along Ilalo to Keawe Street, and turning on Keawe to the existing open

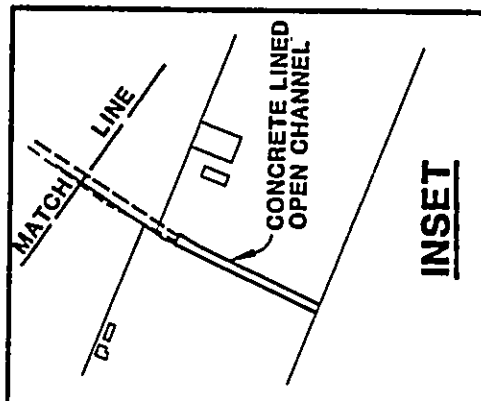
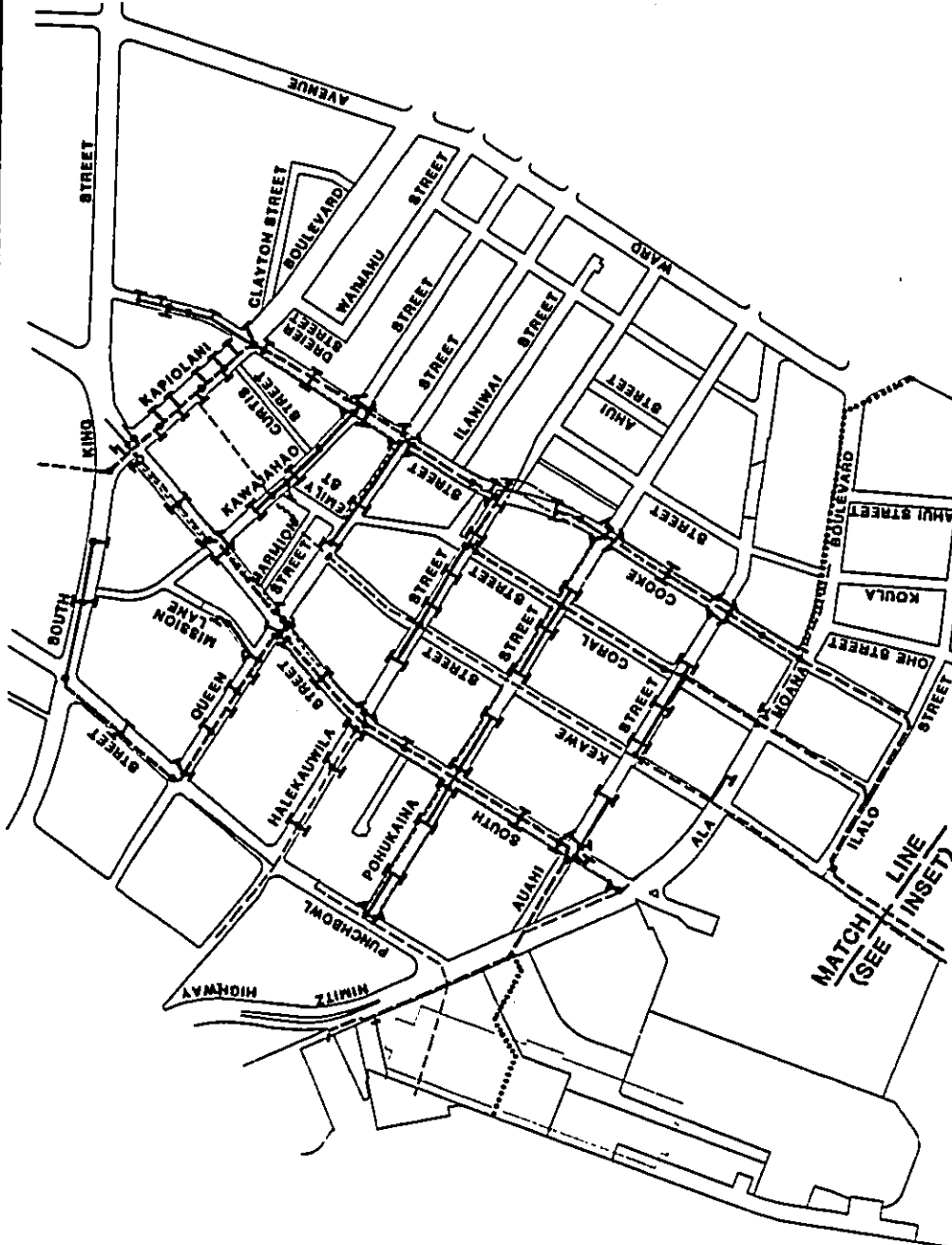
PROPOSED DRAINAGE SYSTEM

LEGEND:

- NEW:**
- DRAINAGE BOX
CULVERT
 - └─ CATCH BASIN
WITH DRAIN LINE
 - DRAIN MANHOLE
- EXISTING:**
- DRAINAGE BOX
CULVERT
 - └─ CATCH BASIN
WITH DRAIN LINE
 - DRAIN MANHOLE
 - ORIGINAL DRAIN
ALIGNMENT

Figure II-22

JULY, 1984



channel. This channel will be widened and lined. The main line will consist of box drains ranging in size from 10' x 8' to two 13' x 9'. Smaller box drains and drain pipes will be connected to the main line to dispose of storm runoff from the adjacent areas.

e. Electrical, Telephone, Cable Television (CATV) and Gas. All electrical, telephone, and cable television lines servicing the Increment I area will be placed underground and overhead power and telephone poles will be removed. Gas lines will be relocated where necessary when in conflict with the other infrastructure improvements.

4. Increment I Public Information Program

The Kaka'ako District-Wide Improvement Program allows HCDA to join forces with property owners and tenants to assist in implementing and paying for infrastructure improvements. The results of the improvements will be a significantly greater potential for maximum development of properties and increased property values. Because the Improvement Program will affect many of the District's landowners and lessees, the HCDA has developed a public information program to keep the affected parties informed.

The HCDA will inform public officials, property owners, developers, and recorded lessees affected by the first phase of infrastructure improvements through a series of informational meetings. These meetings are intended to provide a forum for explanation and discussion of the location of the improvements, type and cost of improvements, the basis for the assessment amounts, the estimated amounts property owners and lessees would be assessed for improvements in their areas, and proposed payment plans. The HCDA newsletter, Malama Kaka'ako, is also used to explain the improvement program activities. Affected parties were notified of the informational meetings through the Malama Kaka'ako and mailed notices.

HCDA will also conduct public hearings as part of the Improvement Program assessment area process. A public hearing will be held on preliminary assessment area rules which will define and establish the assessment area, define the extent and describe the proposed improvements, describe each parcel of real property to be acquired, declare the part or portion of the cost of improvements to be assumed by the HCDA and/or the County, declare the method of assessment, the portion of the cost of the improvements to be assessed against the owners of real property, and the assessment amount on each lot. Subsequent to this public hearing, HCDA will advertise for construction bids and conduct another hearing on final assessment area rules which would include the actual amounts individual property owners and lessees will be assessed.

HCDA will continue to be available to meet with affected parties individually to discuss matters relating to the Improvement Program.

D. KAKA'AKO DISTRICT PLAN AND RULE AMENDMENTS

The HCDA held a public hearing on March 7, 1984 to receive testimony on amendments to the Kaka'ako Plan and Rules. The amendments were made to increase development flexibility, clarify the approval process, and accommodate concerns of the City and County on key issues involving public facility improvements. No testimony was presented or received on the amendments. All of the amendments have been adopted by HCDA. The amendments are as follows:

1. Amendments to: Kaka'ako Plan, pages 28, 29, 31.

In the process of engineering reviews and discussions, the HCDA, its consultant, and the City and County Department of Transportation Services (DTS) have agreed to a set of right-of-way widths and street design sections for the streets of concern to the DTS.

The relevant information relating to the amended street sections is noted below:

<u>Street</u>	<u>Originally Adopted R/W Width and Street Section in Kaka'ako Plan</u>	<u>DTS's Original Request</u>	<u>Agreed Upon R/W and Street Section</u>
South (Kapiolani to Queen)	60' R/W, 44' curb to curb with 6' Bike Lane	80' R/W	76', 60' curb to curb with Bike route
South (Queen to Ala Moana)	60' R/W, 44' curb to curb with 6' Bike Lane	80' R/W	66', 50' curb to curb with Bike route
Queen (South to Kamakee)	56', 40' curb to curb with 6' Bike Lane	76' R/W	60', 44' curb to curb with Bike route
Queen (Punchbowl to South)	56', 40' curb to curb with 6' Bike Lane	76' R/W	56', 40' curb to curb with Bike route
Pohukaina (Punchbowl to Ward)	56', 40' curb to curb with 6' Bike Lane	76' R/W	60', 44' curb to curb with Bike route

2. Amendments to: Kaka'ako Plan, page 18, columns 1-3; Makai Area Plan, page 6, columns 1-2; Kaka'ako Rules, Sec. 15-17-93 (c), Sec. 15-17-97 (b), Sec. 15-17-98 (a)(b)(c), Sec. 15-17-99 (a)(b); Makai Rules, Sec. 15-17-209 (b)(c).

This group of amendments corrects an inequity in the maximum building height, floor area ratio (FAR) and tower footprint in Planned Development Projects.

The original provisions allow an increase in building height, FAR and tower footprint for larger lots. The increase was the same for all lots within a certain size category and was considered inequitable. For instance, lots of at least 40,000 but less than 80,000 square feet were granted a maximum of 2.5 FAR and 200 feet in building height. But a lot of 39,999 square feet could only achieve a 2.0 FAR and 100 feet.

The amendments rectify this situation by allowing increases in building height, FAR and tower footprint in proportion to increases in lot size. HCDA also adjusted formulas for mixtures of residential and commercial use to ensure equity and inclusion of residential units for Planned Development Projects especially in the MUZ-R zone.

HCDA also clarified the provision relating to parking for reserved housing units. Off-street parking required for each reserved housing unit was changed to one-half of the parking requirement per unit.

3. Amendment to: Kaka'ako Rules, Sec 15-17-15(d), Sec. 15-17-91, Sec. 15-17-102 (a)(b), Sec. 15-17-103.

These amendments clarify provisions relating to modification of Kaka'ako Plan and Rule requirements in Planned Developments, provided that a public hearing is held and certain conditions for modification are met.

Fees for variances and for modification of Plan and Rule requirements in Planned Developments were set at \$200 plus the cost of publication of notice. The prior provisions required a fee of \$100 for a variance. No fee was required for a modification.

4. Amendment to: Kaka'ako Rules, Sec. 15-17-17 (e).

This amendment clarifies a subsection on nonconforming uses and includes the public facilities dedication requirement when a nonconforming structure is enlarged. Development requirements for alterations and minor expansions, extent to which appendages may encroach into a yard, and increase in FAR through minor expansion were also clarified.

5. Amendment to: Kaka'ako Rules, Sec. 15-17-51 (c), Sec. 15-17-71 (c).

These amendments delete the requirements pertaining to the arrangement of industrial, commercial, residential and parking uses in MUZ-R and MUZ-RA zones.

6. Amendment to: Kaka'ako Rules, Sec. 15-17-119.

This amendment establishes allowable noise levels for the Waterfront Industrial zone. The Makai Area Plan and Rules inadvertently excluded noise regulations for the Waterfront Industrial zone.

7. Amendment to: Kaka'ako Rules, Sec. 15-17-141 (d)(e).

This amendment separates decision making actions on joint development. It requires the Authority to take action on Planned Development Projects, and the Executive Director to take action on MUZ permits. The original provisions required all actions on joint developments to be taken by the Authority.

8. Amendment to: Kaka'ako Plan, page 11, column 3; Kaka'ako Rules, Sec. 15-17-152 (a)(c)(d).

These amendments allow uncovered parking at grade for mixed-use developments and expansion of nonconforming uses. Landscaping regulations are also specified. The original provisions required all parking to be covered with a roof and walls at least 42 inches high.

In addition, an amendment now allows the top level of a parking structure to be covered with plant material or architectural embellishments where parking is located at the top level. HCDA believes that instead of requiring roofs for all parking structures, plant material or architectural embellishments can effectively screen parking areas from views above.

An amendment now requires parking off site in cases where variances are granted for on-site parking. Such off-site parking shall be provided by lease or purchase from the nearest private, State, or County parking facility.

9. Amendment to: Kaka'ako Rules, Sec. 15-17-153.

This amendment increases the allowable FAR of a temporary structure from 0.15 to 0.5 in a conditional use permit. It also clarifies uses permitted through a conditional use permit to include any use.

10. Amendment to: Rules of Practice and Procedure, Sec. 15-16-3.

This amendment deletes the Authority's office address from the Rules of Practice and Procedure. With the recent office move to 677 Ala Moana Boulevard, the old office address became outdated and HCDA did not believe the new office address would be needed in the Rules.

At the request of the HCDA, the State Office of Environmental Quality Control (OEQC) has determined that the proposed amendments do not warrant the preparation of a Supplemental EIS. Under Sub-Part K of the EIS Regulations, a Supplemental EIS is necessary any time there is a substantial change to an action for which an EIS was accepted. OEQC's determination essentially means that the Final EIS for the Kaka'ako Plan, accepted in August of 1983, is still valid with regard to the proposed amendments since they do not significantly change the overall intent of the Kaka'ako Plan, substantially increase the scope of actions contemplated under the Plan, nor result in environmental impacts that are significantly greater or different from those already addressed in the Final EIS.

Although a Supplemental EIS is not required for the amendments, they have been identified and described in this Supplemental EIS to update the information on the Kaka'ako Plan contained in the Final EIS of August 1983.

E. UNRESOLVED ISSUES

The Final EIS on the Kaka'ako Plan identified several issues that could not be resolved at the time the Final EIS was prepared. This section will present updated information in order to address these unresolved issues.

1. Relocation Assistance Program

HCDA's responsibilities for providing relocation assistance are set forth under Section 206E-10.5, HRS, which directs HCDA to adopt rules to insure relocation assistance to individuals, families, and businesses displaced by governmental action within the District. Act 21, SLH 1984, amends section 206E-10.5, HRS, by authorizing HCDA to provide relocation assistance to displacees of governmental and private development action, provided that assistance to displacees of private development action does not include direct monetary payments. Such assistance can be made available only to those displaced as a direct result of private development actions, as opposed to other private actions which may cause displacement.

Act 21, SLH 1984, also authorizes HCDA to make relocation facilities available to displacees on a temporary basis, provided that those displaced by government action are afforded priority to the use of such facilities. This is intended to help those who are unable to obtain suitable replacement locations when they are displaced, as well as those who desire to move into temporary facilities until permanent replacement accommodations become available within or outside the District.

On June 6, 1984, HCDA held a public hearing to receive testimony on Chapter 18, Title 15, Administrative Rules, entitled "Relocation Assistance to Displaced Persons". HCDA adopted the proposed relocation rules on August 3, 1984. These rules establish a relocation office within HCDA, and set forth policies, procedures, and other requirements for assuring relocation assistance to displacees of governmental and private development actions. The following discussion summarizes the major features of HCDA's relocation program.

a. Assistance to Displacees of Governmental Actions. Residents and businesses displaced by governmental action would be afforded relocation payments and services that are similar to the forms of assistance available under the State Relocation Law, Chapter 111, HRS. These include relocation payments for actual and reasonable moving expenses, supplemental payments for replacement housing, optional payments to residents for moving expenses, and optional fixed payments to businesses for losses suffered.

In addition, a displaced business may receive a payment for reimbursement of expenses in searching for a replacement business location, and a payment for actual direct losses of tangible personal property. These payments are not available under Chapter 111, HRS.

Advisory services will include assistance in obtaining suitable replacement housing and business space, referrals to government agencies for assistance in obtaining government loans, and advice on the forms of relocation assistance available.

If Federal actions are involved that require relocation of businesses or residents, then the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) would be applicable.

b. Assistance to Displacees of Private Development. Displacees of private development action will be entitled to relocation assistance, short of direct monetary payments. Such assistance will primarily be in terms of helping displacees find available replacement accommodations.

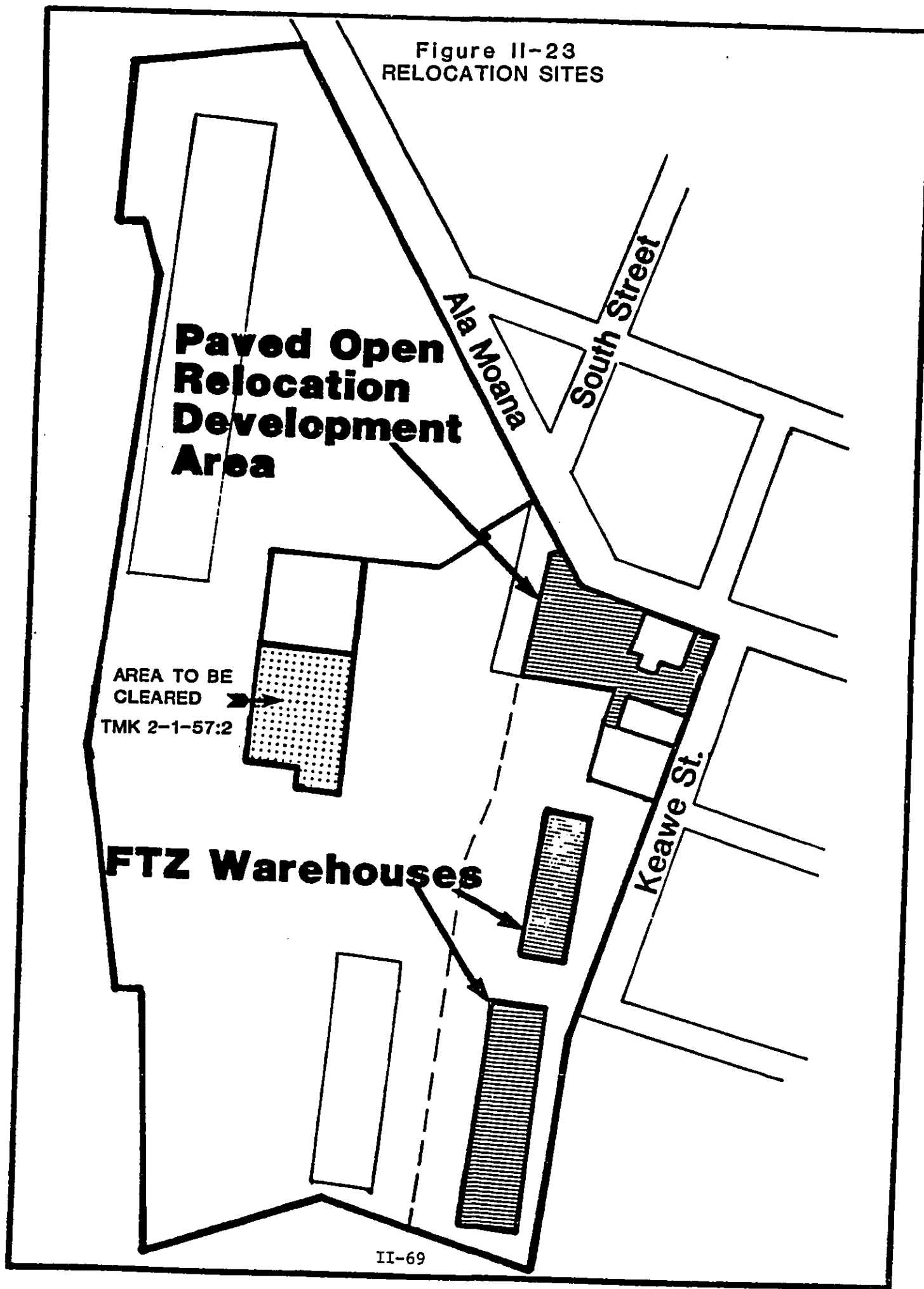
In this connection, HCDA has developed, in collaboration with commercial and industrial real estates brokers, an inventory of available commercial and industrial space within Honolulu. This inventory is being, and will continue to be, used for referring displacees to appropriate real estate brokers who have listings of available replacement space which suits the needs of displacees. In addition, HCDA has been assisting the Kaka'ako Business Association in determining the needs of several individual businesses, and seeking available replacement locations which match those needs. Finally, HCDA's monthly newsletter "Malama Kaka'ako", which is distributed free of charge to landowners, residents, and businesses within the Kaka'ako District, lists commercial and industrial space available on Oahu.

c. Temporary Relocation Facilities. Relocation facilities are proposed to be made available to displacees on a temporary basis, provided that those displaced by government action would be afforded priority to such facilities. HCDA has been cooperating with the State Departments of Planning and Economic Development, Transportation, and Land and Natural Resources and the Foreign-Trade Zone in making State land and facilities available for temporary relocation purposes. These State agencies have reached an agreement, with the Governor's approval, to make land and facilities available in two areas within the Fort Armstrong complex as shown in Figure II-23.

The first area is proposed to consist of the vacant portions of two warehouses presently set aside to the Foreign-Trade Zone. This area could provide approximately 100,000 square feet of covered warehouse space and approximately 280,000 square feet of open paved area. Improvements to this area would include interior alterations to accommodate tenants, fencing, and utilities.

The second area is approximately 1.4 acres of open area fronting Ala Moana adjacent to the historic Ala Moana Sewage Pumping Station. This site is intended to be developed into an industrial-type facility, consisting of a warehouse of approximately 40,000 square feet, a parking area, and necessary utilities and fencing.

Figure II-23
RELOCATION SITES



Under the inter-agency agreement, a nonprofit corporation called the Kaka'ako Relocation Corporation (KRC) will be authorized to improve and manage the State facilities at Fort Armstrong. The State will lease the facilities to the KRC for relocation use, and the KRC will obtain the financing for the improvements and administer the relocation facilities. The KRC will manage, operate, and maintain the facilities according to policies adopted by its board of directors.

The State will allow use of land and facilities by the KRC for relocation purposes according to a number of conditions, among which are the following:

- o Displacees of governmental action are to be afforded priority to the use of the facilities.
- o Displacees of private actions having the longest tenancy in the Kaka'ako District are to be afforded second priority.
- o The length of tenant occupancy in the facilities shall be strictly on a temporary basis.
- o Tenants of the facilities must be displaced as a direct result of development.
- o Tenant space within the facilities shall be made available at fair market rental.
- o The nonprofit corporation shall be required to clear the debris from, grade and pave, and install fencing for another parcel located in the central portion of Fort Armstrong (TMK: 2-1-57: 2), recently turned over to the State by the Federal government. This would allow the Harbors Division to use the cleared site for maritime activities.

d. HCDA Relocation Office. HCDA has established a relocation office for administration of its relocation program and rules. The relocation office will provide services to all families, individuals, businesses and nonprofit organizations to be displaced by public and private development actions within the Kaka'ako District.

The HCDA relocation office has two major functions. First, the office is responsible for planning and providing relocation services and payments in accordance with the relocation rules. Second, the HCDA relocation office will seek available facilities within and outside the Kaka'ako District for temporary relocation purposes.

The HCDA relocation office will inform displacees of the relocation program and the forms of assistance for which they would be eligible. This would be communicated through informal meetings, announcements in the "Malama Kaka'ako", and an informational brochure to be distributed to displacees.

2. Water Supply

The Final EIS for the Kaka'ako Plan left unresolved the issue concerning the availability of water to meet demands in the next 25 to 30 years, particularly in Leeward Oahu. Population and economic growth have begun to strain existing water sources, which in many cases are operating at near capacity. The availability of sufficient water on Oahu, however, is not so much the issue as is whether new water sources will be developed in time to meet the demand. [9] This section will discuss the potential for meeting expected future demand for water resources.

In 1980, total water withdrawal (including wells and shafts, tunnels and springs, caprock wells, surface water, and free flow) on Oahu averaged 462 million gallons per day (mgd). Of this total, 130 mgd or about 28 percent, was taken by the Board of Water Supply (BWS). Approximately 262 mgd, or 57 percent of the total water withdrawal, went to plantation agriculture, primarily irrigated sugarcane. The remainder of water withdrawals was used to satisfy military requirements, industrial needs, and other private uses. The BWS estimates it will need to produce 181 mgd, or an additional 51 mgd, by the year 2000. Much of this will be needed in the Ewa area, where demand is expected to triple from 7.85 mgd in 1980 to 22.6 mgd in 2000. Demand in metropolitan Honolulu is expected to increase from 74.3 mgd to 92.4 mgd. [10]

BWS had 72 separate ground water sources in 1980, comprised of wells, shafts, and tunnels. The sustainable capacity of these sources, defined as the water supply that may normally be withdrawn from a specific source at the maximum rate that will not unduly impair source utility, was 152 mgd as ascertained by BWS. [10] Subtraction of the 130 mgd that was actually taken means that the unused capacity of water sources in 1980 was 22 mgd. The municipal water supply and unused capacity by BWS water use districts is shown in Table II-15. Note the limitations of the two districts (i.e., Waianae and Ewa) in Leeward Oahu.

Table II-15
MUNICIPAL WATER SUPPLY AND UNUSED CAPACITY
1980, BY WATER USE DISTRICTS
(All units mgd)

District	Sustainable Capacity *	Water Supply **	Unused Capacity
Honolulu	41.45	35.96	5.49
Windward	19.55	17.62	1.93
Waialua-Kahuku	3.30	2.31	0.99
Wahiawa	8.00	3.09	4.91
Waianae	4.10	4.04	0.06
Ewa	0.0	0.0	0.0
Pearl Harbor	75.70	67.07	8.63
TOTAL	152.10	130.09	22.01

* As presently ascertained by BWS.

** Includes in-district use and inter-district exports.

Source: Oahu Water Plan, BWS, 1982.

Dwindling water reserves led to the passage of the Ground Water Use Act during the 1979 legislative session. The purpose of the legislation (Chapter 177, HRS) is to preserve the integrity of all water existing in its natural state within definitive ground water bodies or hydrologic areas. The Board of Land and Natural Resources (BLNR) regulates water resources under Chapter 177.

One of the first actions taken as a result of the Act was the establishment of the Pearl Harbor Ground Water Control Area (GWCA). Made up of the Pearl Harbor, Ewa, and Wahiawa water use districts, the Pearl Harbor GWCA supplies more than 50 percent of the island's municipal water demand. In 1981, the Honolulu and Waialua water use districts were also designated as water control areas by the BLNR.

Total allowable pumpage of water from any GWCA is regulated by the BLNR. The result of this regulation is a preserved amount (amount of allowed pumping) of water certified to the BWS for use. Preserved use amounts have been established based upon actual or average drafts by BWS. The effect of this has been to render 12.82 mgd of the 1980 water supply reserve of 22 mgd unavailable to BWS.

The Oahu Water Plan, published by BWS in 1982, establishes a framework for meeting water demands in Leeward Oahu and the rest of the island in the future. This framework is predicated on the optimal use of existing water supplies and the development of additional potable ground water. The BWS plan sets forth options which may cause optimal utilization of existing supplies. These options include:

- o Limit ground water use regulation to general sources;
- o Allow full use of existing sustainable capacity;
- o Reassess sustainable capacity of existing sources;
- o Improve system flexibility;
- o Adjust transfers between water use districts;
- o Convert potable industrial supplies to municipal use;
- o Convert potable sugarcane irrigation supplies to municipal use, with appropriate trade-offs;
- o Release municipal supplies for domestic consumption by developing nonpotable substitute supplies for landscape irrigation; and
- o Maintain or reduce domestic consumption per capita.

Options for the development of new potable ground water sources on Oahu to accommodate future demand include the following:

- o Develop additional basal wells;
- o Develop additional dike, perched, and caprock sources;
- o Reassess estimated capacity of planned Honolulu source projects;
- o Investigate other potential well sites in Honolulu; and
- o Develop additional basal spring sources.

At this point in time, several of the options listed above appear to have the highest potentials for supplying the water for future growth in Leeward Oahu. These options include the development of additional basal wells plus additional dike, perched, and caprock sources, and adjusting inter-district transfers of water. [11]

BWS and the DLNR Division of Water and Land Development (DOWALD) each have on going programs of exploratory well drilling. DOWALD has recently drilled four new sources in the Honolulu water district. One source, at Wailupe, has already been turned over to BWS. Two others, at Manoa and Waialae Nui, may be held in reserve to be used for specific projects in the Honolulu area. [12] BWS has exploratory wells in the Waianae district.

The most important sources of new water, however, are to be found in the Windward water district. The Oahu Water Plan list 18 preferred water sources in Windward Oahu. The development of these sources may produce an estimated supply of 19.8 mgd. A large majority of this water is expected to be transferred to the Honolulu water district. Added to the water from new sources from within the Honolulu district, this new water supply should be sufficient to satisfy the growth in demand in Honolulu by the year 2000 as well as lessen the amount of water transferred into the district from the Pearl Harbor area. (Estimates of the sustainable capacity in the Honolulu water district vary. The BWS estimate is shown in Table II-14. When the Honolulu GWCA was created, the BLNR determined that the area had a potential yield of 60 mgd. The preserved use certified to all users is 42.0 mgd. Thus, an additional 17.1 mgd might ultimately be withdrawn in the Honolulu district without impairing source utility). [10]

Preferred water sources in the Waianae water district have an estimated sustainable capacity of 5 mgd. Development of these sources is expected to make the district self-sufficient by 1990, eliminating the need for water transferred from the Pearl Harbor water district.

By the year 2000, water demand in the Ewa area is expected to increase source development and adjustments to inter-district transfers as described above. If the supply is insufficient, the BWS would most likely apply to the BLNR for permitted full use of sustainable capacity of its water sources.

For the longer-term period of 25 to 30 years, meeting the demand for water in Leeward Oahu will require the use of additional options or measures that were previously listed. The largest potential supply, estimated to be as high as 44 mgd, would be from the conversion of potable sugar cane irrigation supplies to municipal use. Another smaller supply, approximately 8 mgd, would be the use of potable water from Waiau Tunnel which is currently used by Hawaiian Electric Company (HECO).

Another potential water source that has been mentioned is the utilization of brackish and/or salt water through the processes of electrodialysis and reverse osmosis. The BWS is considering the location of this plant in the makai area, although an exact site still needs to be determined.

Average daily water consumption in the mauka area is estimated to be 5.5 mgd under maximum development.[13] Under a similar scenario, consumption in the makai area would be approximately 0.8 mgd. The makai area's water distribution system will be upgraded in order to

meet projected future water demands including fire flow. Approximately 3,100 feet of new public water lines will be required. Distribution lines will be 8 inches or larger to comply with BWS standards. Additional improvements such as new fire hydrants, water valves, manholes, and other appurtenances will be provided.

The availability of water for specific new development will be determined when building permit applications are submitted to the BWS for review and approval. Further, developers will be required to pay water development charges for source, reservoir, and transmission facilities.

3. Public Infrastructure Improvements

The infrastructure improvement program was left as an unresolved issue at the time the Final EIS was being finalized primarily because the method of assessments for improvement districts had not been determined.

In late 1983, proposed District-Wide Improvement Program Rules were drafted and reviewed by the Authority. On May 2, 1984, the Authority approved the holding of a public hearing on the proposed District-Wide Improvement Program Rules. This public hearing was held on June 6, 1984, and on August 3, 1984, the Authority adopted the proposed rules.

a. Determination of Assessment. The Authority, the County, and the County Board of Water Supply (BWS) are each empowered to construct or improve public facilities or utility systems in the District as the agencies deem necessary. Whenever, in the opinion of the Authority, it is desirable to construct or improve public facilities, certain costs involved shall be assessed against the real property that is specially benefited.

Calculation of the special benefits may be made by various methods including: 1) the frontage basis, 2) the area of the land, 3) a real property tax assessment on the value of the land and improvements thereon, 4) the floor area ratio permissible for the real property, or 5) any combination of the above methods.

Once the assessment amounts are determined by the Authority, the landowner or lessee may elect to make payment in full or may make installment payments over a term not to exceed twenty (20) years. All assessments shall be a lien until paid against each lot or parcel of land and shall have priority over all other liens except the lien of property tax.

b. Responsibility for Improvement Costs. Once the Authority decides on an action involving a public facility, it may pay for all costs involved in the planning and design stage, the printing and sale of bonds, or any other pre-construction cost. The Authority may also assume any part of other costs of the assessment area, or may assess the whole or any part of the cost against the real property as previously described. The City and

County may also assume all or any part of the cost of improvements in the assessment area. The amount and nature of such costs to be paid by the County shall be mutually agreed upon by the County and the Authority. If the improvement involves a utility system, the Authority will negotiate with the respective utility company in order to establish the amount and nature of costs to be paid by each.

c. Assessment Area Process. The initial step in the assessment area process involves an investigation and report by the Executive Director concerning preliminary data on proposed actions, the public facilities involved, the proposed boundary of the assessment area, the proportion of costs to be assumed by the Authority and the County and that specifically assessed against real property, and any other pertinent information concerning the assessment area.

After receipt of the Executive Director's report, the Authority may propose the making of an improvement (or improvements) and the creation of assessment areas based upon the information and data provided in the report. Assessment area rules shall also be drafted incorporating the latest available data. A public hearing on the assessment area rules may be held together with the hearing on the creation of the assessment area.

Notice of public hearing shall be published at least twenty (20) days in advance of the hearing and at least once in a daily newspaper of general circulation. Affected landowners and lessees on record at the County Department of Finance shall be notified by certified or registered mail.

Assessment area rules shall define and establish the assessment area or areas, define the extent and describe the general details of the proposed improvement or improvements, describe each parcel of real property to be acquired, declare the part or portion of the cost of improvements to be assumed by the Authority and/or the County, declare the method of assessment, the portion of the cost of improvements to be assessed against the owners of real property, and the assessment amount on each lot.

Upon adoption of the rules as heard or with modifications, the Executive Director shall prepare construction bid documents and advertise for bids. The lowest responsible bidder shall be awarded a conditional contract, subject to the holding of a public hearing on the final assessment area rules which shall incorporate data from the final assessment area report. Also prior to the award of the final construction contract will be a hearing on individual assessments concerning the equity in the application of the assessment formula to individual lots.

During the construction of improvements, the Authority may request the County to maintain an inspector over the work to see that the plans and specifications have been complied with. After the work has been accepted by the County, the public facilities

shall be a part of the County system, and shall at all times thereafter be used, operated, and maintained by the County. If the improvement involves the water system, the BWS may provide an inspector. All improvements would become part of the BWS system.

d. Financing of Infrastructure Improvements. The public improvements proposed for Kaka'ako are currently estimated to cost a total of \$430 million. HCDA has preliminarily structured three financial programs which involve the participation of the private sector/users. These programs are: 1) Improvement District Assessment Bonds; 2) Parking Garage Revenue Bonds; and 3) Public Facilities Dedication Fees. Based on current conditions, it is estimated that these programs can generate about \$230 million because of certain market, legal, and economic constraints. To make up the needed \$200 million, HCDA will have to request for participation from the State, the County, and the Federal government.

The infrastructure improvements for Increment I will involve total costs which are currently estimated at about \$85 million. Of this amount, it has been preliminarily determined that only an estimated \$25 million are "special benefit" costs which can be assessed against the property owners. The balance of \$60 million needed for Increment I are "general benefit" costs and must therefore be provided by government.

The proportion of assessable costs to total costs -- 29% (\$25 million of \$85 million) is somewhat low primarily because a considerable amount of the costs for the drainage, sewer, and roadway improvements are attributable to servicing areas that are exterior to Kaka'ako. Also, there are several parcels within Increment I which are owned by government or eleemosynary entities that are by law exempt from assessment.

4. Regional Traffic Impacts

The Oahu Metropolitan Planning Organization (OMPO) expressed reservations about the methodology used in the Final EIS to predict regional traffic impacts. Therefore, HCDA agreed to re-evaluate regional transportation impacts using OMPO's computer model which was not available at the time the Final EIS was prepared. The results of this evaluation are presented in Appendix B. The findings are discussed in Chapters 3 and 4.

5. Elevated Walkways

The issue of responsibility for the operation and maintenance of public facilities including elevated walkways, public stairways, etc. will be resolved prior to development of the facilities.

6. Elevated Parks

Design criteria, procedures, and other requirements relating to the dedication of these parks to the City and County for operation and

maintenance will be established in collaboration with the appropriate City agencies.

7. Financing of Public Housing Units

Participation of Federal, State, and County governments in providing public housing for low income households in the Kaka'ako District will be determined as housing projects are planned. HCDA, through its "reserved" housing provisions, will make housing units available to families with incomes from 80 to 150 percent of the median income used by the Hula Mae program, or \$19,666 to \$43,018. This income group falls within the Hula Mae and Unserved groups. The Authority will not duplicate efforts of other government agencies to provide housing for low income households.

It is likely that "reserved" housing provided by developers will receive some assistance from the Hawaii Housing Authority in the form of below market rate interim financing, General Excise Tax waivers, and other affordable housing programs that may be available to assist in the delivery of "reserve housing".

8. Government Funds

Unless otherwise discussed under HCDA's improvement program, the Federal, State and County government's involvement in specific programs and projects in the Kaka'ako area will be determined as projects are planned.

F. REFERENCES -- CHAPTER II

1. State of Hawaii, Hawaii Community Development Authority, Makai Area Plan, Work Item #3: Analysis. Honolulu, September, 1982.
2. State of Hawaii, Hawaii Community Development Authority, Makai Area Plan, Work Item #4: Plan Variations. Honolulu, March, 1983.
3. State of Hawaii, Hawaii Community Development Authority, Makai Area Plan, Work Item #5: Draft Makai Area Plan. Honolulu, May, 1983.
4. State of Hawaii, Hawaii Community Development Authority, Makai Area Plan, an addendum to the Kaka'ako Community Development District Plan. Honolulu, October, 1983.
5. State of Hawaii, Hawaii Community Development Authority, Final Environmental Impact Statement: Kaka'ako Community Development District Plan. Honolulu, June, 1983.
6. State of Hawaii, Hawaii Community Development Authority, Makai Area Plan, Work Item #2: Background Information. Honolulu, September, 1982.
7. State of Hawaii, Hawaii Community Development Authority, Conceptual Park Development Design Alternatives for a Kaka'ako Waterfront Park. Honolulu, February, 1982.
8. State of Hawaii, Hawaii Community Development Authority, Makai Area Plan, Work Item #5: Draft Makai Area Plan. Honolulu, May, 1983.
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10. City and County of Honolulu, Board of Water Supply, Oahu Water Plan. Fourth edition. Honolulu, July, 1982.
11. Personal communication, Burt Kuioka, City and County of Honolulu, Board of Water Supply. May, 1984.
12. Personal communication, James Yoshimoto, State of Hawaii, Department of Land and Natural Resources, Division of Land and Water Development. May, 1984.
13. State of Hawaii, Hawaii Community Development Authority, Final Environmental Impact Statement: Kaka'ako Community Development District Plan. Honolulu, June, 1983.

CHAPTER III

DESCRIPTION OF THE AFFECTED ENVIRONMENT*

A. PHYSICAL ENVIRONMENT

1. Physiography

The Kaka'ako makai area is located on the seaward edge of the Honolulu Coastal Plain (See Figure III-1). The entire area (and most of Kaka'ako) was at one time submerged lands. Over the last century, infilling of lands with dredged coral has raised the area to the existing elevation of four to five feet above sea level.

2. Geology and Soils

The geologic substrata underlying Kaka'ako are composed of coral reefs and sedimentary deposits formed during a time of relatively great fluctuations in sea level. Massive coral reefs were built during high stands of the sea, then eroded by coastal streams during low stands. A major buried stream channel, filled with soft alluvium to depths from 40 feet to over 180 feet, is known to exist in a roughly north to south direction below Ala Moana Boulevard between Keawe and Ohe Streets. [2] See Figure III-2.

The makai area is generally underlain by a coral layer between 5 and 20 feet below mean sea level. Soft mixtures of sand, silt, and clay extend from the top of the coral layer to about sea level. These soft lagoon deposits are covered by a 5- to 8-foot layer of dredged coral fill. [2]

The makai area substrata conditions are "Average" in all areas except in the general area of the buried stream channel where the substrata condition is "Poor". See Figure III-3. Areas described as "Average" would probably support structures of up to 22 feet without special foundations. These would be relatively light structures using continuous lightly loaded foundations of individual spread foundations with spans of less than 20 feet. "Poor" areas can only support lightly loaded single-story structures not sensitive to vertical movements unless more extensive and expensive foundation systems are utilized. [2]

*Description of the environment is limited to the makai area. Refer to the Final EIS for information relating to the mauka portion of the Kaka'ako Community Development District. [1]

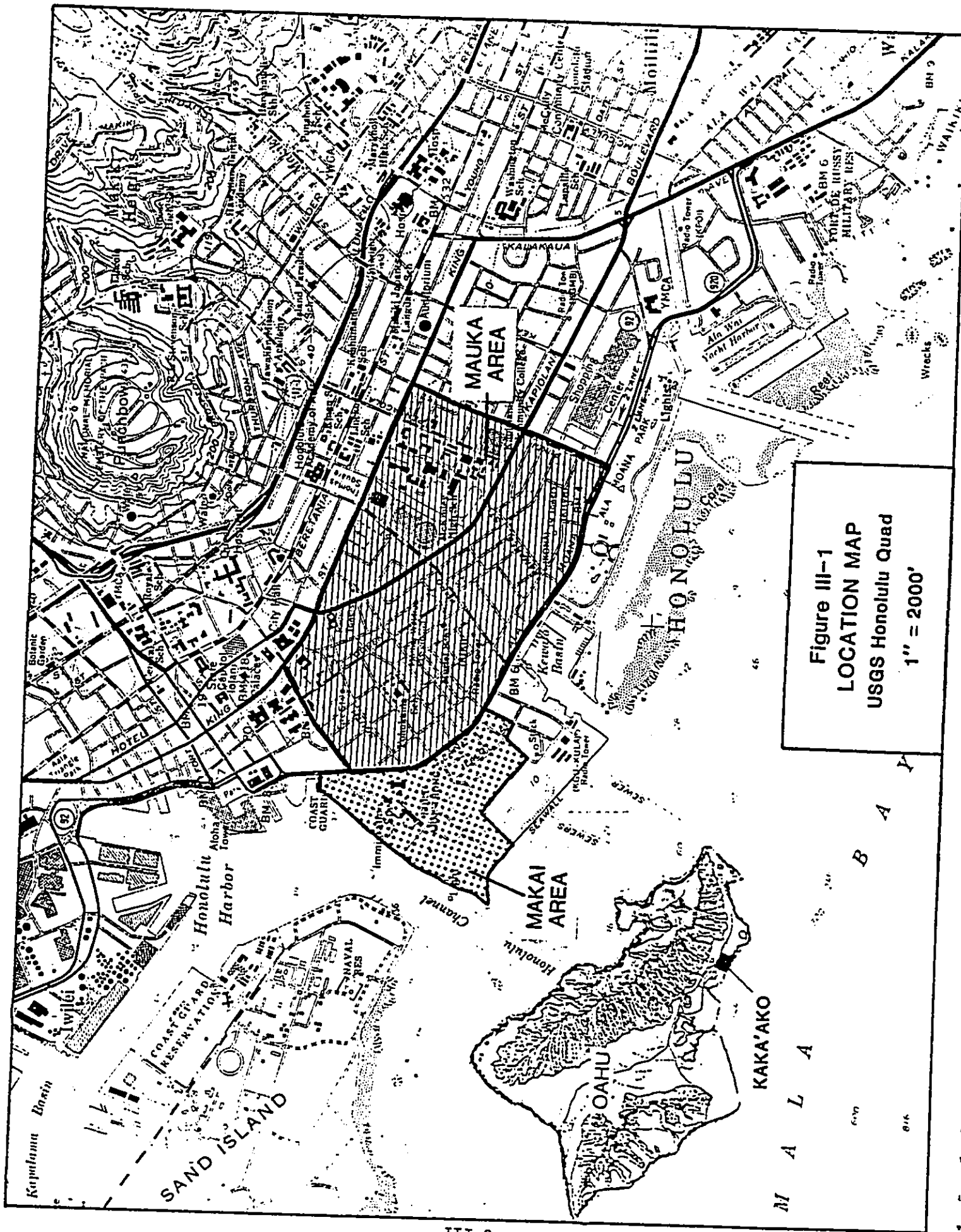
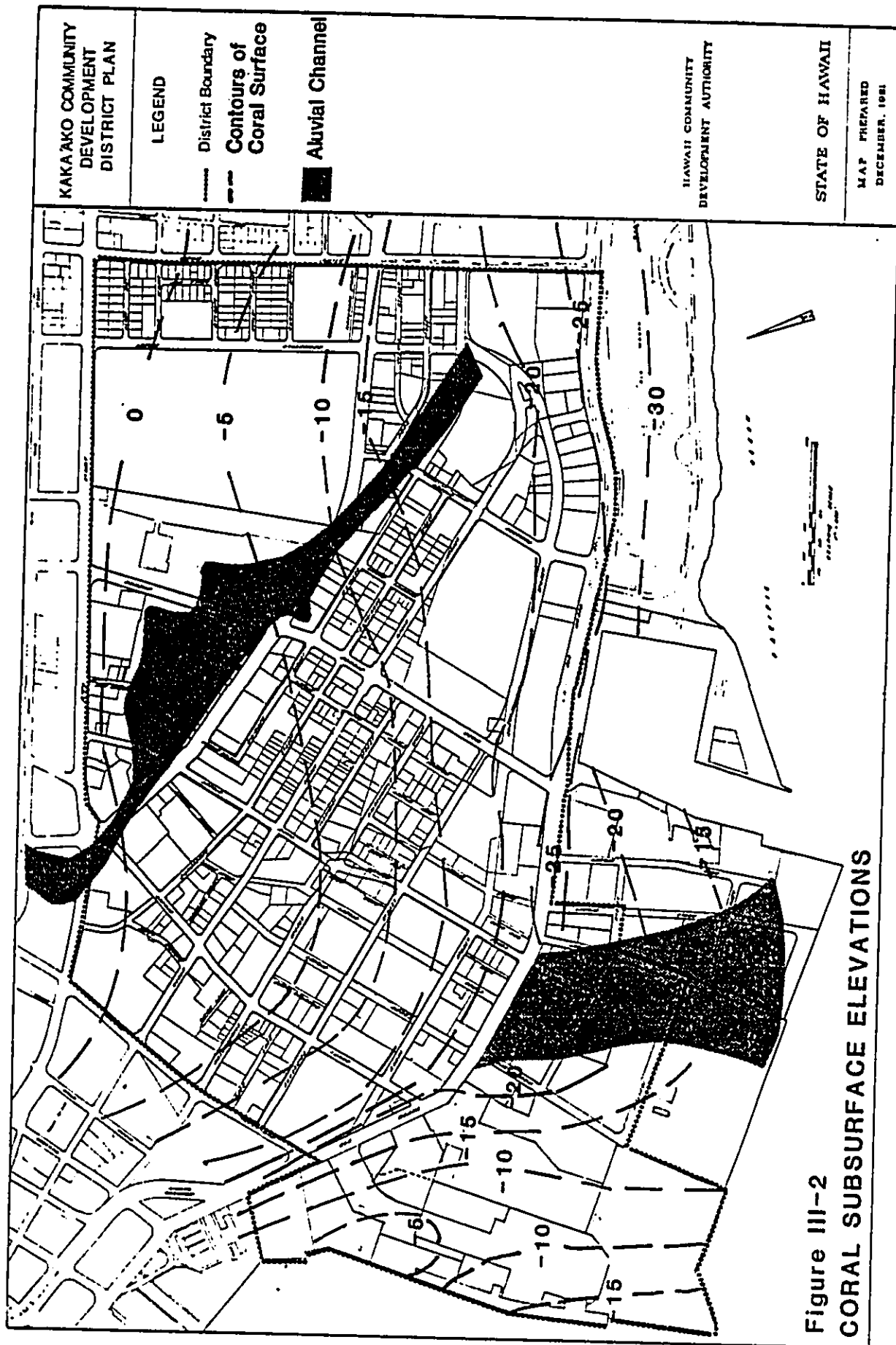
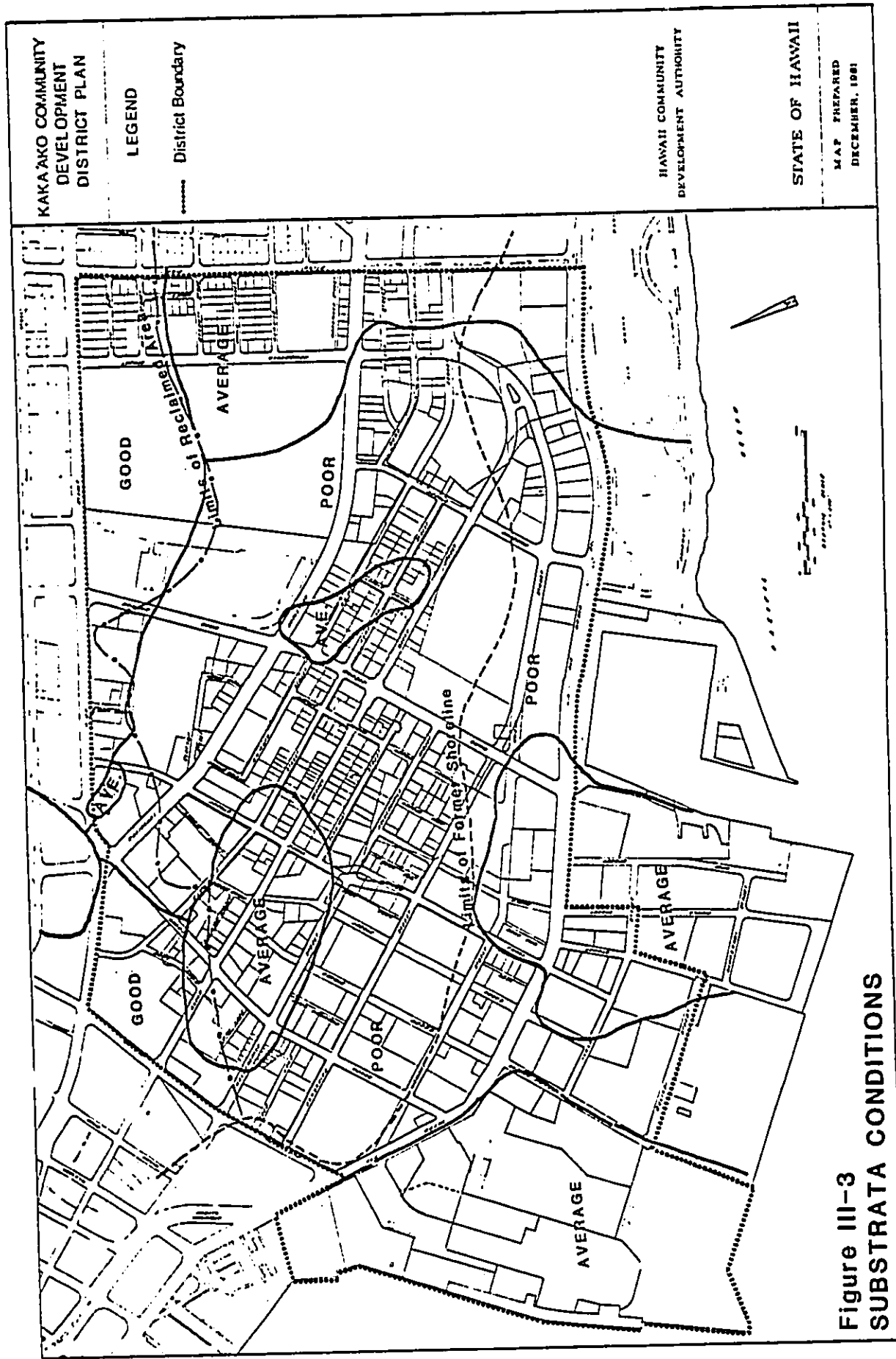


Figure III-1
LOCATION MAP
USGS Honolulu Quad
1" = 2000'





3. Meteorology

Average annual rainfall in the Kaka'ako area is less than 30 inches. The wet season is usually November to March and the dry season is usually May to September. However, rainfall may vary greatly from year to year.

4. Hydrology and Drainage

Sedimentary deposits underlying Kaka'ako restrict percolation of rainfall. These sediments are part of an extensive coastal "caprock" which confines basal ground water from moving seaward. There are no surface water bodies in the makai area.

Urbanization of the Kaka'ako District and development of storm drains have increased the rate at which surface runoff reaches nearshore coastal waters. However, much of Kaka'ako is still subject to shallow flooding because of its flat topography and inadequate drainage facilities. The runoff from the makai area flows into the ocean via the Keawe Street open channel and Honolulu Harbor (See Figure III-4). [3]

5. Natural Hazards

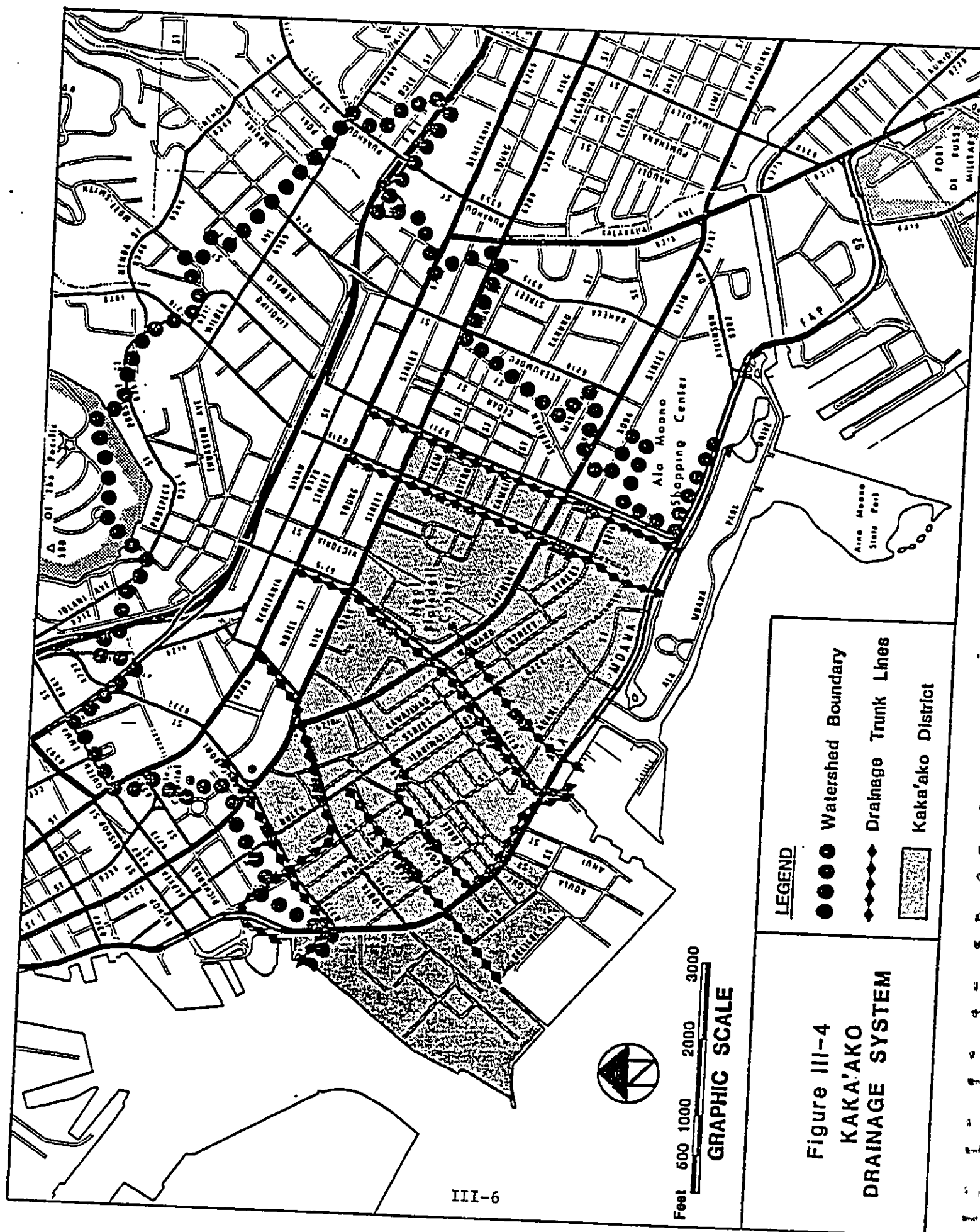
According to the Civil Defense Tsunami Inundation map for Oahu, most of the makai area is within the projected inundation zone. All areas, however, are sufficiently elevated above the 100-year tsunami. The greater portion of the shoreline is designated "C-Area of Minimal Flooding" according to the Federal Flood Hazard District Map. Areas inland of the shoreline are not within the flood hazard district. [1] A portion of the shoreline is designated A-4 and is subject to tsunami inundation according to the flood hazard map. See Figure III-5.

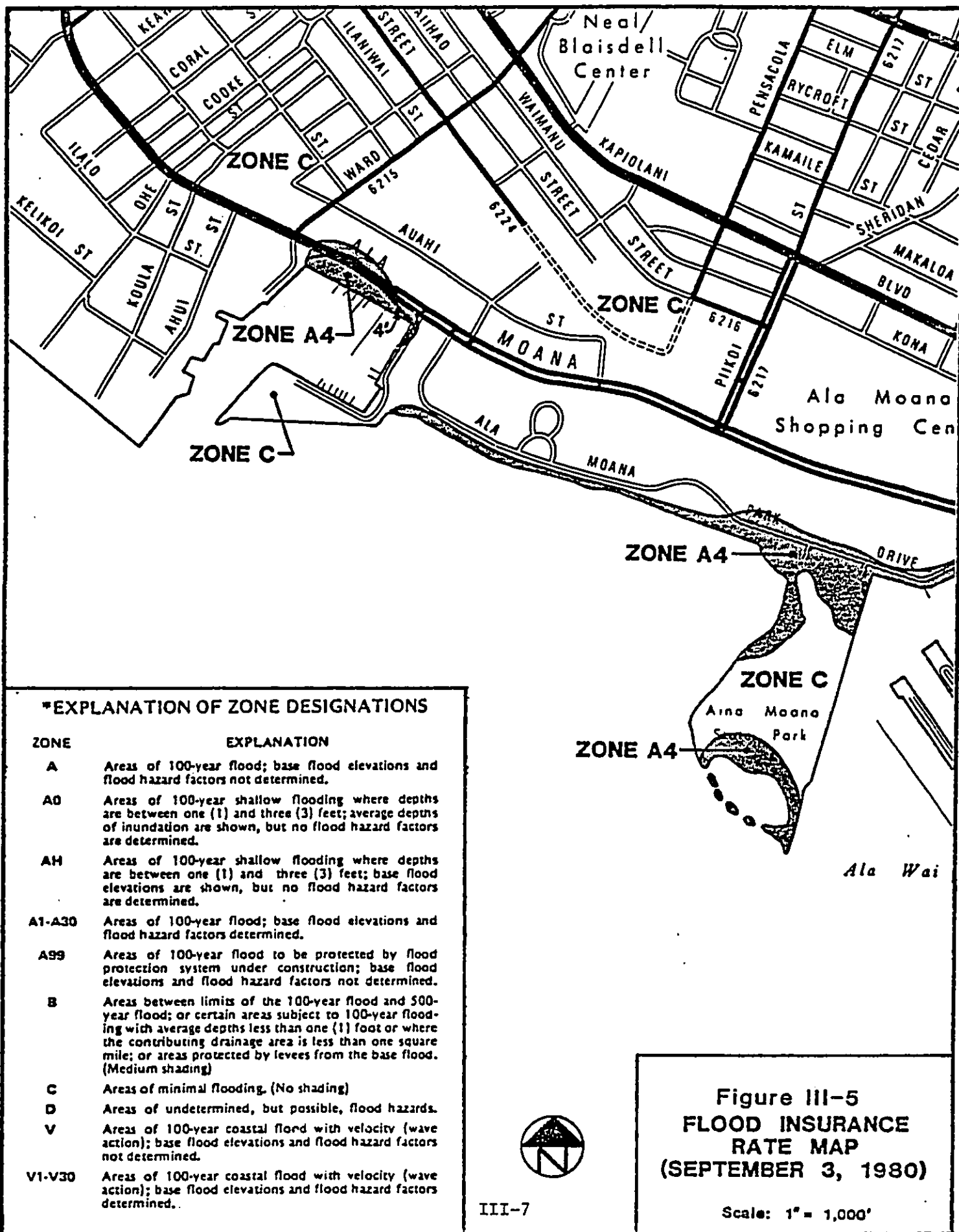
6. Oceanography

Offshore of the makai area, a shallow reef flat slopes gently to a depth of 30 to 40 feet. The 25-foot deep artificial Kewalo Basin entrance channel is the only significant break in bathymetry. Makai of the reef flat, a submerged cliff roughly parallels the shoreline. Nearshore currents are primarily in response to tidal forces. Currents generally flow parallel to shore to the west during flood tide and then reverse to the east and increase in velocity during ebb tide. The Mamala Bay area is subject to numerous small-scale current eddies which can occasionally override the general east-west flow pattern. Current velocities are normally less than 1/2 knot, but under conditions of unusual tidal forces, south swells, or strong local storms, velocities over two knots have been recorded. [1]

7. Water Quality

Nearshore coastal waters from Ala Moana Beach Park to the easterly entrance channel of Honolulu Harbor are designated "Class A" by the State Department of Health. Honolulu Harbor and Kewalo Basin are designated as "Class A" Embayments. [1]





Unlike Honolulu Harbor, Kewalo Basin has not required dredging since its construction in 1925. This is indicative of a low sediment load carried in Kewalo by storm water discharge. The water quality in Kewalo has generally been found to be adequate for bait fish stored in the holding tanks of commercial fishing boats. [1]

The Department of Health monitors bacterial concentrations at three stations along Ala Moana Park. During the period from 1973 to 1977, mean values did not exceed the U.S. Environmental Protection Agency limits for recreational waters. Significant point source discharges into nearby waters include 8.3 mgd of thermal and wash water effluent from the Dole and Del Monte canneries, 0.05 mgd of wash water from Bumble Bee Seafoods, and 1.87 mgd from the National Marine Fisheries Service Kewalo Basin Laboratory. [1]

8. Biology

The makai area is a highly altered urban environment. There are many species of trees present with the coconut being the most common. There are no endangered or threatened fauna or critical habitats within the area. [1]

Kewalo Basin is the major commercial fishing harbor for Oahu and is home port for over 60 fishing boats and many excursion and charter boats. The harbor was originally dredged in 1925 with the access channel running along the present Ala Moana Beach to the Ala Wai Harbor. In 1946, the present direct access channel was constructed and the original channel closed off. The former access channel now serves as the swimming area for the beach park. The silty bottom and water quality of Kewalo Basin favor those species which can survive both poor conditions and intermittent shocks of pollutants and fresh water during heavy storm runoff.

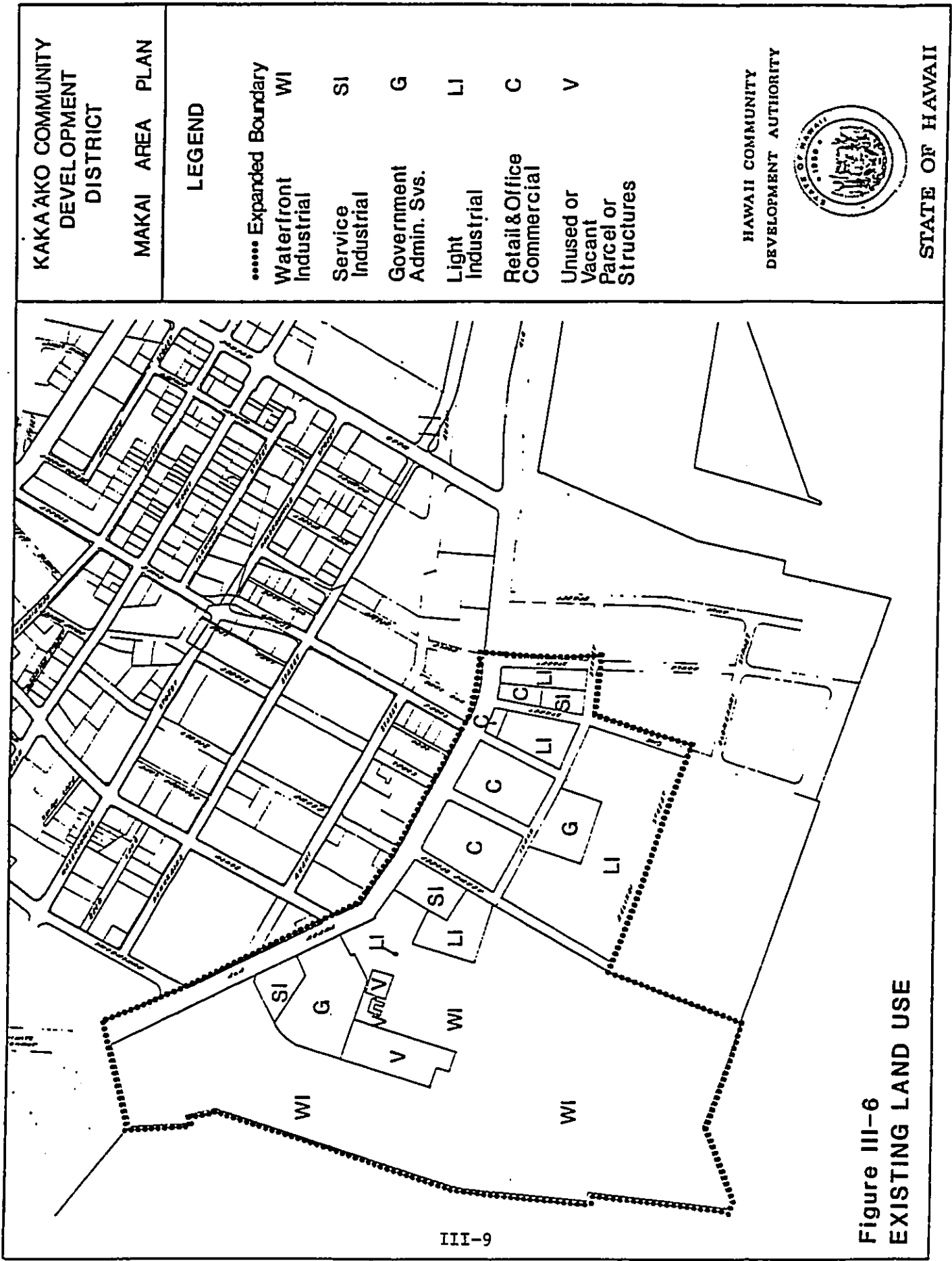
The reef flats and coastal waters off Fort Armstrong and Ala Moana Park support a large number of coastal recreational user groups. Sport diving, surfing, canoe paddling, fishing, shelling, and limu collecting are popular activities.

B. SOCIAL AND ECONOMIC SETTING

1. Land Use

The total land area of the makai area is roughly 133 acres. Excluding public road rights-of-way, there are about 107 acres of land (4.65 million square feet), which are subdivided into 52 separate land parcels. See Table III-1.

In the makai area, Waterfront Industrial uses occupy the greatest amount of land area (66%), followed by Light Industrial (17%), Retail and Office Commercial (7%), Government Administrative Services (5%), and Service Industrial (3%). [4] See Figure III-6.



2. Land Ownership and Leases

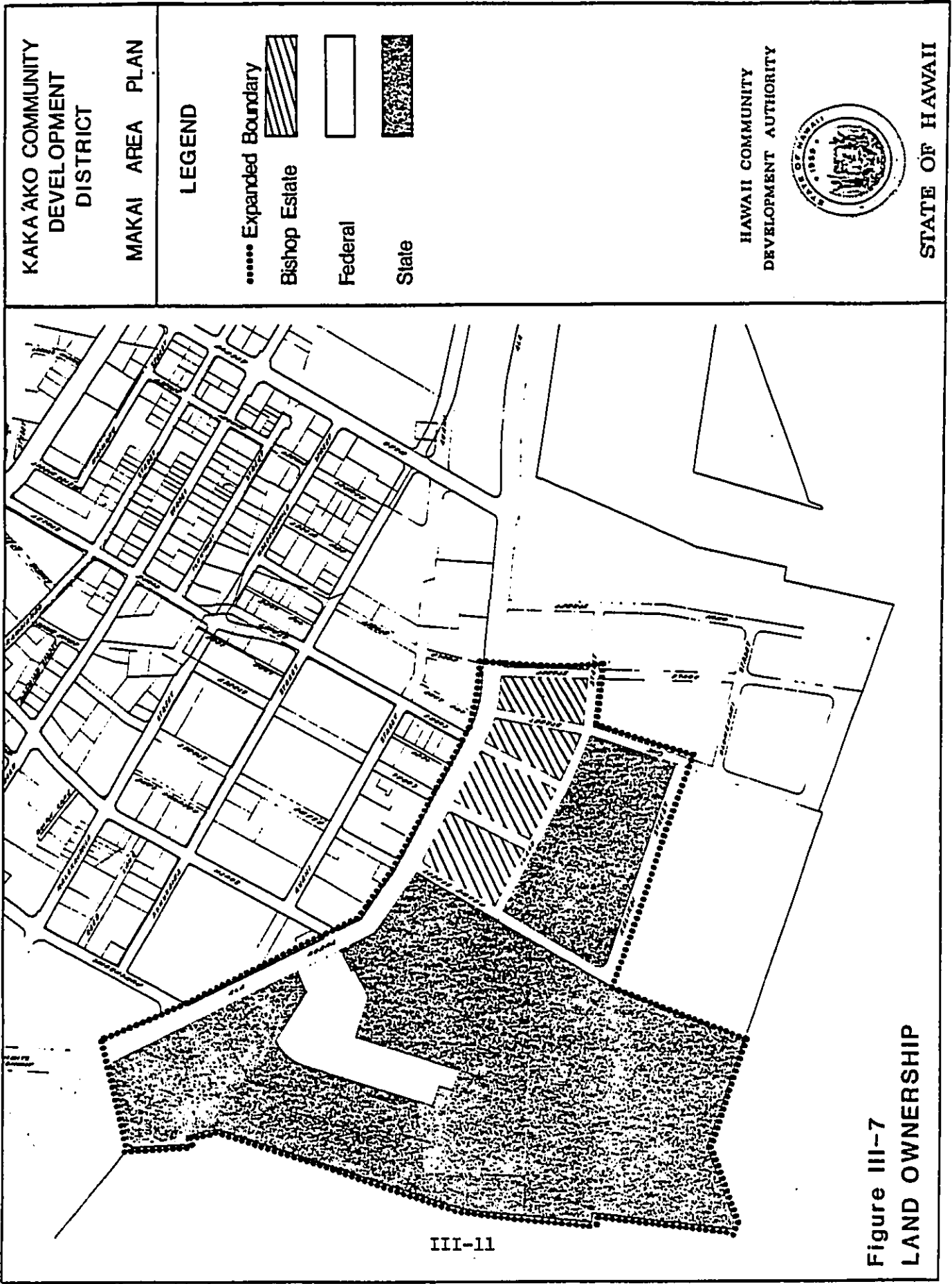
Within the makai area, roughly 91 acres or 85% of all the land area is owned by the State of Hawaii; five acres or 5% is owned by the Federal government; and the remaining 11 acres or 10% are owned by the Bishop Estate. See Figure III-7.

TABLE III-1

GENERAL LAND USE SUMMARY OF THE MAKAI AREA (1979)

<u>Land Use</u>	<u>Number of Parcels</u>	<u>Percent</u>	<u>Land Area(SF)</u>	<u>Percent</u>
Waterfront Industrial	29	56	3,078,695	66
Light Industrial	9	17	812,667	17
Water Extensive Yard Use Wholesaler With Stock Auto Repair and Service				
Service Industrial	4	8	128,011	3
Parking Services Misc. Repair Services				
Retail and Office Commercial	5	9	311,751	7
Animal Care Gasoline Service Station Motor Vehicles and Accesories Communcations				
Professional Services				
Government Administrative Services	2	4	230,476	5
Vacant or Unused Parcels or Structures	3	6	85,858	2
TOTAL PARCELS	52	100	4,647,458	100

Of the State-owned land outside Fort Armstrong, two parcels comprising 13.7 acres are leased to private firms. The remaining State-owned parcels are assigned to various government agencies by Executive Order. All of the Bishop Estate parcels are leased.



3. Economic Activity

The makai area contains an estimated total of 128 economic activities or establishments. The most numerous activity types are in the retail and office commercial category which is primarily due to the majority of activities located in the Gold Bond Building. [4]

4. Historic Sites

Significant historic resources in the makai area include the U.S. Immigration Station, the Department of Health building and the Ala Moana Sewage Pumping Station (See Fig. II-7 in Chap. II). (Note: There are four different stations: the original Hering Station (c 1900), the old Ala Moana Station (1940), the new Ala Moana Station (1983), and the recent Ala Moana Wastewater Pumping Station (1955). The Hering and old stations are the components of the historic sites). Each of these structures was built prior to 1941, and has been associated with a historic period or style. Both the Immigration Station and the Pumping Station are on the National Register of Historic Places. All of these buildings are considered to have "high" preservation potential, historic significance, and can be feasibly maintained and sustained in their present condition.

5. Open Space and Visual Resources

The makai area consists largely of low-rise structures; the ten-story Gold Bond Building being the only high rise. The major open space is in the Fort Armstrong area. There are pockets of open space throughout the makai area that are used primarily for circulation or for the activities associated with the land uses.

View points in the makai area from which view corridors can be seen include the makai ends of Cooke and Coral Streets. The direction of the views from these vantage points is mauka. Because the area is relatively flat, many surrounding areas afford views which pass through or over the area. The primary areas from which major views originate are the downtown area, Makiki, and Punchbowl.

6. Noise

There are three principal sources of noise in the makai area: traffic, industrial equipment, and aircraft. Of these, traffic is the dominant source. Along Ala Moana the average noise level (Ldn) at 50 feet from the centerline exceeds 70 decibels (72-75 dBA). On all other streets the average noise level is around 60-64 dBA. Heavy truck traffic within the makai area is the most prevalent noise source. The noise level at a given site is a function of the traffic on nearby streets as well as the exposure of the site to distant major streets. Because of this, it is common for the upper floors of high-rise structures to have higher exterior noise levels than the lower floors if the upper floors have a line-of-sight to a major street.

The most prevalent noise-intensive industry is auto repair. In general, ambient noise at an auto shop ranges from 60-70 dBA, with

transient noises up to 85 dBA. During the night, when traffic and industrial noises are subdued, air conditioners and refrigeration units become an important steady noise source, ranging from 60 to 80 dBA.

According to the State Department of Transportation's Airport Master Plan, the makai area is within the average aircraft noise exposure (Ldn) contour of 60 or greater.

C. PUBLIC FACILITIES AND SERVICES

1. State and County Government Roles and Finance

In fiscal year 1982, over \$1.4 billion of tax revenues were collected in Hawaii. The chief sources of revenue are the State general excise tax (39% of all tax collections), State personal and corporate income taxes (23%), and the County real property tax (18%), which together account for 80% of 1982 tax collections. Of the total revenues collected, 77% went to the State coffers, while the remainder was divided among the counties for their operating budgets. The real property tax is the major source of County tax revenues and accounted for 51% of the City and County of Honolulu's total \$373 million in 1982 revenues. Another \$12 million of County revenues were funded by CDBG grants from HUD. [5]

Federal grants to State government totaled \$375.9 million in fiscal year 1982. Over 80 percent of these grants were for highways, public welfare, and education. [5]

The State's operating expenditures for 1982 (including general and special fund expenditures and unemployment) were \$1.96 billion, of which \$18.3 million were grants-in-aid to the counties. More than half of State expenditures was allocated for either education (32%), public welfare (16%), or debt service (9%). At the County level, police, fire protection, and other public safety activities accounted for the majority of expenditures. In 1982, the City and County of Honolulu expended \$187.5 million for police, fire protection, highways, mass transit, recreation, health, and sanitation services. [5]

2. Transportation System

The State Department of Transportation (DOT) has jurisdiction over Ala Moana Boulevard and the City and County of Honolulu has jurisdiction over all other streets in the makai area with the exception of Kelikoi Street and a portion of Keawe Street between Ilalo and Kelikoi Streets which are roadway easements owned by the State.

All of the streets in the makai area have adequate right-of-way widths. See Table III-2. Most of the streets, however, do not have curbs, sidewalks or other features. Most of the streets have poor pavement conditions.

Localized traffic problems presently occur on Kaka'ako area roadways during the morning peak traffic period while much more extensive areas of congestion occur during the afternoon peak traffic

TABLE III-2

EXISTING PLANNING AREA STREET SYSTEM

<u>STREET</u>	<u>CLASS</u>	<u>R.O.W.</u>	<u>CURB-TO-CURB</u>
Ala Moana	MAJOR	100	72
Cooke (Queen to Kapiolani)	MAJOR	50	38
Queen to Ala Moana	MAJOR	50	38
Halekauwila	LOCAL (P)	50	(N)
Kamakee(Queen to Kapiolani)	LOCAL (P)	40	(N)
Queen to Ala Moana	LOCAL	76	60
Kapiolani	MAJOR	100	64
King(Punchbowl to South)	MAJOR	80	64
South to Piikoi	MAJOR	90	66
Pensacola	MAJOR	76	60
extension	MAJOR	-	-
Piikoi	MAJOR	80	64
Punchbowl	MAJOR	70	54
Queen(Punchbowl to South)	MAJOR(P)	56	(N)
So. to Ward	MAJOR	56	54
Extension	MAJOR	-	-
South(Kapiolani to Queen)	MAJOR	60	44
South(Queen to A. Moana)	MAJOR	60	44
Waimanu(Piikoi to Pensa.)	MAJOR	56	40
(Pensacola to Drier)	LOCAL(P)	40	(N)
Ward	MAJOR	80	64
Auahi (Ward to South)	LOCAL	60	(N)
Auahi (Ward to Pensacola)	LOCAL	76	60
Cummins	LOCAL(P)	40	(N)
Drier	LOCAL(P)	40	(N)
Ilaniwai	LOCAL(P)	40	(N)
Kamani	LOCAL	40	36
Kawaihao	LOCAL(P)	40	(N)
Kona	LOCAL(P)	40	(N)
Koula	MAJOR(P)	50	36
Mission	LOCAL	40	Varies
Pohukaina	LOCAL(P)	50	(N)
MAKAI AREA STREETS:			
Keawe	LOCAL	60	(N)
Ilalo	LOCAL	50	(N)
Ohe (Makai of Ala Moana)	LOCAL	50	(N)
Kelikoi	LOCAL	50	(N)
Cooke(Makai of Ala Moana)	LOCAL	50	(N)
Koula	LOCAL	50	(N)
Coral	LOCAL	50	(N)

R.O.W = Right of way width in feet; Curb-to-curb = Width in feet
(P) = Partially or entirely private road.
(N) = Partially or entirely no curbs or sidewalks.

period. Assessment of these conditions were based upon field reconnaissance and volume-capacity analyses for the nine intersections summarized in Table III-3.

TABLE III-3
EXISTING LEVELS OF SERVICE FOR KEY INTERSECTIONS

INTERSECTION	MORNING PEAK HOUR		EVENING PEAK HOUR	
	Volume Capacity Ratio	Level of Service	Volume Capacity Ratio	Level of Service
Ala Moana/Punchbowl	.75	C	.79	C
Ala Moana/South	.71	C	.61	B
Ala Moana/Cooke	.72	C	.85	D
Ala Moana/Ward	.88	D	.93	E
Ala Moana/Piikoi	.82	D	.92	E
Kapiolani/King/ South/Alapai				
Kapiolani/Ward	.86	D	.91	E
Kapiolani/Piikoi	.56	A	.93	E
Ward/Queen	.62	B	.61	B

Ala Moana Boulevard, which accomodates the highest morning traffic flow in the area, generally provides acceptable travel speeds (30 miles per hour or more) with few delays at signalized intersections. The principal source of delay occurs at the Ward Avenue intersection due to the heavy left turn movement from Diamond Head bound Ala Moana Boulevard. The special left-turn phase frequently does not permit all of the waiting traffic to enter the intersection. Also, the number of left-turn vehicles exceeds the available storage capacity of the left-turn lane, thus stacking waiting vehicles into and blocking one of the Diamond Head bound through lanes.

The higher volumes during the evening peak hour result in increased delays and lower travel speeds on Ala Moana Bouelvard, as indicated in the lower Levels of Service* for the key intersection. At

*Level of Service -- Level of Service is a standard means of describing traffic conditions associated with various ranges of volume-to-capacity ratios. The six Levels of Service (A-F) used to describe travel conditions, and the range of volume-to-capacity ratios for each, are described in Appendix B.

Ward Avenue, significantly higher through volumes on Ala Moana Boulevard and left turns from makai-bound Ward Avenue result in long queues of traffic on Diamond Head bound Ala Moana Boulevard. At Piikoi Street, increased traffic queuing occurs on Ewa bound Ala Moana Boulevard due to the signal time required to accomodate the heavy left-turn movements at the intersection. Traffic conditions at the Cooke Street intersection are worsened by the number of vehicles turning on the narrow makai-bound approach, small curb radius, and the proximity of parking to the intersection.

Traffic operations are at acceptable levels on Kapiolani Boulevard during the morning peak hour. Minor delays occur at the Ward Avenue intersection as a result of the larger number of vehicles turning left from Ewa-bound Kapiolani Boulevard. The left-turn movement does not pose a significant problem at present since the reversible lane operation provides a fourth Ewa-direction approach lane (used almost entirely for left-turns) and there are comparatively few opposing vehicles Diamond Head bound on Kapiolani Boulevard.

During the evening peak periods, both the Ward Avenue and Piikoi Street intersections on Kapiolani Boulevard result in Level of Service E conditions. At Ward Avenue, the key conflict is between the large number of vehicles travelling in the two-lane off-peak direction (Ewa-bound) and the mauka direction traffic on Ward Avenue. The frequent stopping of buses at the near-by bus stop on Ewa-bound Kapiolani Boulevard contributes to the delay at this intersection.

The Kapiolani Boulevard-Piikoi Street intersection is part of a problem which extends makai on Piikoi Street to include the Kona and Waimanu Street intersections. Large numbers of vehicles turn mauka onto Piikoi Street from these two intersections and the Ala Moana Center driveway. The capacity constraint of the Kapiolani Boulevard intersection and the close spacing of these intersections makai of Kapiolani Boulevard result in blockage of the Piikoi intersections by through or turning traffic and inefficient movement of traffic mauka bound through these intersections.

Based on Hali 2000 Study information, through traffic currently comprises 75 percent of travel on the major Ewa-Diamond Head direction streets in Kaka'ako, while travel within Kaka'ako contributes 25 percent. For mauka-makai streets, through traffic amounts to 55 percent of the total traffic volumes at the mauka boundary (King Street) of the District.

The City and County Department of Public Works does not have any definite plans or schedules for street improvements in the makai area. The City's Department of Transportation Services currently has no active plans for circulation changes in the area. The State DOT is currently studying alternatives to improve Ala Moana as part of an overall study to increase the safety and capacity of the existing makai arterial (i.e., Nimitz Highway and Ala Moana from Middle to Atkinson Streets, Atkinson Street and Kapiolani Boulevard to the H-1 Kapiolani Interchange).

The Honolulu Gateway Beautification Project, initiated by the State DOT, provides conceptual design recommendations for the beautification and safety of the Nimitz Highway and Ala Moana corridor which extends from Sand Island Access Road to Kalakaua Avenue in Waikiki. The following improvements were recommended for the portion of Ala Moana which passes the makai area at its mauka edge:

- a) Development of a flowering street tree planting through the use of tree wells in the existing sidewalks as well as existing planting strips.
- b) Undergrounding of overhead utilities.
- c) Encouraging property owners to screen adjacent parking areas outside of the right-of-way. Also, inadequate existing plant screening should be renovated and new plant screens should be provided where none exist. [6]

The beautification plan also includes the recommendation that a special surface treatment be provided on major intersections along the corridor. This would serve to accent those areas of significant vehicular and pedestrian crossing as well as provide an additional recurring visual element to reinforce the continuity of the roadway. This treatment could be accomplished by painting the entire intersection surface, or by paving existing intersection crosswalks with a pattern-stamped colored concrete suitable for pedestrian use and finished with a high friction factor.

3. Bus Service

Public transportation service in Kaka'ako is provided by "the Bus". The Bus provides islandwide service with its operations centered upon Downtown and the Ala Moana Center on either side of the Kaka'ako area. Kaka'ako's location results in large numbers of buses through the area on Kapiolani and Ala Moana Boulevards (20 to 40 buses in each direction during peak hour). Service is also provided on Piikoi Street, on Ward Avenue from Ala Moana Boulevard to Queen Street, and on Queen Street between Ward Avenue and Downtown, and on Auahi Street. During peak periods, many of these buses carry standing loads.

Approximately 11,000 person trips are made via public transit to or from Kaka'ako each weekday based upon Hali 2000 Study estimates of 1980 travel. This amounts to eight percent of Kaka'ako trips, slightly below the islandwide average of nine percent of trips via public transit.

4. Water Supply

Main distribution waterlines in the makai area are 12 inches and are located along Ala Moana and Ohe Street and within the Fort Armstrong area. All other lines of 8 inches or less are located along Keawe, Koula, and Ilalo Streets, and within the Fort Armstrong and Food Distribution Center areas. [7] Presently, the Board of Water Supply (BWS) has no plans to replace any lines in the makai area.

According to the BWS, present off-site facilities are operating at near capacity. Therefore, if substantial additional water is required for future Kaka'ako improvements in the mauka and makai areas or for other serviceable areas of Honolulu, development of off-site sources, transmission lines, and/or storage facilities will be necessary. The availability of water to meet future demands is discussed in Chapter II, section E(2).

5. Sewage System

Existing sewer lines along Ala Moana are between 24 and 69 inches in diameter. All other sewer lines within the makai area are either 15 inches, 8 inches, or 6 inches in diameter. The Ala Moana Sewage Pump Station (SPS) located in the makai area has a tributary area extending from Nuuanu Stream to Niu Valley (See Figures III-8 and III-9). [3] The average flow at Ala Moana SPS was 50.51 mgd as of June, 1983. This SPS has a design capacity to handle a peak flow of 107 mgd. The existing force main to Sand Island, completed in August, 1983, was enlarged to 78 inches.

6. Drainage System

There is a 7.5 feet by 4 feet drainage trunk line along Keawe Street leading to the Keawe Channel and a 5 feet by 3 feet trunk line along Ala Moana which discharges storm water into Kewalo Basin. A drain line along Olomehane Street enters the Kewalo Basin entrance channel (See Figure III-4). There are also 18-, 24-, and 42-inch drain lines within Fort Armstrong which enter the Honolulu Harbor. All other drain lines from interior areas are connected to these lines for discharge of storm water into the ocean. [3]

7. Solid Waste Collection and Disposal

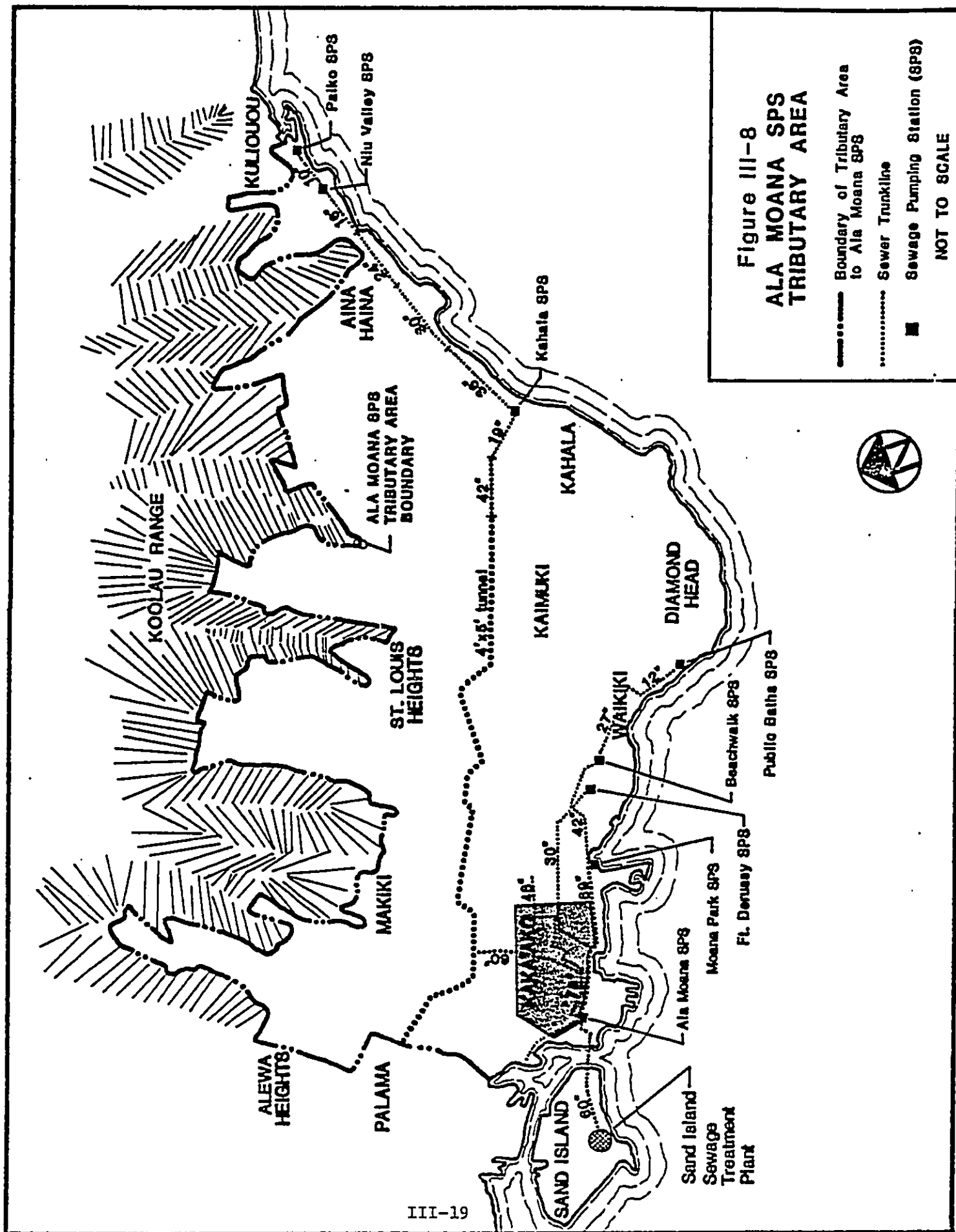
The City and County of Honolulu Department of Public Works provides limited solid waste collection and disposal for businesses (with a fee) within the makai area. Private refuse collectors serve some commercial and industrial users in the area. City collected solid wastes from the Honolulu District are hauled to a transfer station at Keehi, loaded to larger trucks, and hauled to either a private landfill at Palailai (near Makakilo) or taken to the Waipahu incinerator for disposal.

8. Police Service

Kaka'ako is located within the Honolulu Metropolitan District I which extends from Pearl City to Hawaii Kai. District I headquarters are located in Pawaa. At present, there are 2.5 police employees per 1,000 population on Oahu. Additional police service for Kaka'ako will depend upon demand (calls for service) and the rate of development within the District. There are no plans for new police facilities with the Kaka'ako District.

9. Fire Service

The Kakaako Fire Station, located in the mauka area near the intersection of Queen and South Streets, services the entire project



area and most of the Kaka'ako District. The remainder of the District is serviced by the Pawaa Fire Station. Additional service for major structural fires may be provided by the Central, Iwilei, Kuakini, Makiki, and McCully Fire Stations. No additional fire stations are planned for the District.

10. Schools

Two public elementary schools, Royal and Kaahumanu, located outside of the Kaka'ako District presently serve the needs of Kaka'ako. Central Intermediate and McKinley High School adequately serve the older school age population within the District. Pohukaina School, located in the mauka area, presently functions as a library service and administrative facility and as a temporary center for the Honolulu District's Occupational Skills Program. In the short term, existing school facilities are expected to adequately accommodate District school age population increases. The State Department of Education will open new schools as the need arises. Kapiolani Community College (KCC) provides a number of programs for the general public.

11. Electric, Gas, and Telephone Service

The location, size, and age of existing overhead electric lines, utility poles and street light standard location, overhead telephone lines, overhead street light lines, and overhead fire alarm lines, and other facilities and appurtenances are currently inadequate to meet projected future demand. These facilities will need to be upgraded to meet the anticipated demand.

D. REFERENCES -- CHAPTER III

1. State of Hawaii, Hawaii Community Development Authority, Final Environmental Impact Statement, June, 1983.
2. State of Hawaii, Hawaii Community Development Authority. "Soils and Geology" (Phases I and II). Kaka'ako Community Development Plan Project. By Ernest K. Hirata and Associates, Inc., July, 1979.
3. State of Hawaii, Hawaii Community Development Authority, "Sewerage and Drainage System", 1979.
4. State of Hawaii, Hawaii Community Development Authority. "Activities Inventory" (Phase I). Kaka'ako Community Development Plan Project. By Survey and Marketing Services, Inc., September, 1979.
5. State of Hawaii, Data Book, Department of Planning and Economics Development. December, 1983.
6. State of Hawaii, Hawaii Community Development Authority, Work Item #5, Draft Makai Area Plan, May, 1983.
7. State of Hawaii, Hawaii Community Development Authority, "Water and Gas System", 1979.

CHAPTER IV

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

A. INTRODUCTION

This Chapter addresses the short and long-term environmental consequences of the proposed actions and identifies the mitigation measures which are intended to ensure that adverse impacts can be minimized or avoided. The environmental effects resulting from a complete redevelopment of the makai area are discussed in Section B. This analysis assumes that the provisions of the Plan have been implemented over a 25 to 30 year period, and the maximum possible development and population projections have been achieved. Therefore, the effects of the Plan are dealt with on a broad level and where applicable, an analysis of the alternatives (Variations) and the No Action Alternative is included.

The probable effects of the construction of improvement projects for the Kaka'ako District Increment I and future increments are discussed in Section C. The analysis in Section C describes the specific impacts of the improvement program and identifies mitigation measures to be implemented.

Section D addresses the probable effects of State, County, and Federal actions over the next few years.

Section E discusses the mitigating measures which have been incorporated into the Kaka'ako District mauka and makai area Plans and the improvement program for Increment I and future increments. Additional mitigation measures outside of HCDA's jurisdiction are addressed in the Final EIS of August 1983. [1]

Section F describes the status of the unresolved issues identified in the Final EIS, and indicates whether there are additional unresolved issues.

B. CONSEQUENCES OF A COMPLETELY REDEVELOPED MAKAI AREA

This section discusses the potential impacts to the physical, biological, and social environment resulting from the redevelopment of the makai area. Specific findings contained in the Final EIS are updated and unresolved issues are further discussed when they relate to system impacts.

1. Physical Environment

a. Physiography and Geology. Since the makai area was once submerged land and has come about by filling with dredged coral over the last century, there are no prominent topographic features in the area. Therefore, development of the makai area is expected to have no significant impact upon the topography. Also, no major alterations of land forms are anticipated from construction within the area.

The use of private property in the makai area is regulated by the Makai Area Plan, regardless of subsurface conditions. Since the entire makai area is classified as reclaimed land (i.e., filled with dredged coral to obtain the present conditions), construction of multi-story buildings in the area will require special features such as pile foundations, floating foundations, or mat foundations. Figure III-2 shows the uppermost surface of coral layer which could support pile foundations. For foundations bearing heavier loads, it would likely be necessary to drive piles to a deeper layer of coral. [1]

Kaka'ako soils and geology would affect only the cost factor of constructing building foundations. [2] The highest cost will occur in areas of buried stream channels shown in Figure III-2. For all Alternatives, foundation requirements would be essentially the same.

b. Hydrology and Drainage. Development within the makai area boundaries will not measurably affect percolation of water into the soil. Although basal ground water underlies the project area, there are no existing or planned potable water sources within the makai area which could be affected by development. There are also no surface water bodies within the makai area. Sedimentary deposits have formed an extensive coastal caprock which restrict rainfall from percolating through to reach the basal ground water. [3]

Implementation of the Makai Area Plan is expected to convert much of the currently paved and covered surfaces into landscaped open space. A portion of the rainfall currently contributing to runoff will percolate into the ground and be lost to evapotranspiration. Thus a reduction in the total runoff for the entire drainage basin is expected when Kaka'ako is fully developed. [1] The effects of the Plan Variations on drainage and hydrology are similar to the Makai Area Plan, and no adverse impacts are anticipated.

c. Natural Hazards. The makai area already is elevated above the 100-year tsunami and, therefore, no significant hazards are anticipated. All development within the project area, however, will need to comply with procedural and floodproofing requirements of the County flood hazard ordinance.

d. Noise. The acoustical impact analysis conducted for the Final EIS identified three principal sources of noise in the Kaka'ako District: traffic, industrial equipment, and aircraft. Of these, traffic is the dominant source. The original report has been updated for this Supplemental EIS. The updated report, presented in its entirety in Appendix A, reflects the following:

- o The addition of the Makai Area Plan. The original report only addressed the mauka area above Ala Moana Boulevard.

- o The addition of base year and year 2000 aircraft noise contributions to the total noise environment. Aircraft noise contributions are more significant in the makai area.
- o Revisions to the base year and year 2000 traffic projections and noise levels for the Kaka'ako District.

Future traffic noise characteristics within Kaka'ako will resemble that of surrounding areas which are urbanized and characterized by high-rise developments. Redevelopment of the District will cause significant increases (in excess of 3 Ldn units) in traffic noise along Halekauwila, Cooke, and Queen Streets, due to traffic volume increases in excess of 100 percent. Moderate increases (1 to 2 Ldn) in traffic noise are projected for Auahi Street and for South Street. For all other streets, traffic noise increases will be less than 1 Ldn and will be difficult to measure. (See Appendix A, Table VIII for complete results of projected year 2000 traffic noise levels.)

Traffic noise levels in a high-rise unit generally increase with elevation due to increased field-of-view to streets and reflected building surfaces. Traffic noise sources probably tend to radiate more noise upward than horizontally, due to hard pavement surfaces below the vehicles and the use of vertical exhaust systems by some heavy vehicles (trucks and buses). In order to provide estimates of future traffic noise within Kaka'ako, particularly with respect to high-rise elevation, noise predictions at eight (8) receptor locations within residential emphasis zones were made. These locations are shown in Figure IV-1 as locations A through H, with the arrows indicating view direction from the high-rise unit.

Results from this locational analysis were combined with aircraft noise findings. This produced 65 Ldn (the HUD threshold level) contour lines that are also shown in Figure IV-1. These contours do not take into account shielding effects from high-rise structures or the barrier effects along view corridor streets. The contours were constructed to define worst case, year 2000, high- and low-risk zones for exceeding 65 Ldn where both traffic and aircraft noise are combined.

Table IV-1 presents calculations of traffic plus aircraft noise at the eight receptor locations. The results take into account barrier shielding effects along the view corridor streets. Sites A (South Street at Auahi Street), B (between Ala Moana Boulevard and Pohukaina Street), and E (on Ala Moana Boulevard near Piikoi Street) all show projected noise levels that exceed the 65 Ldn level. None of the three locations in the makai area exceed this level.

Overall, the results of the study indicate that the horizontal and vertical zoning policies are very close to optimum in minimizing noise impacts on residential receptors. The majority of the residential emphasis areas are located away from the high

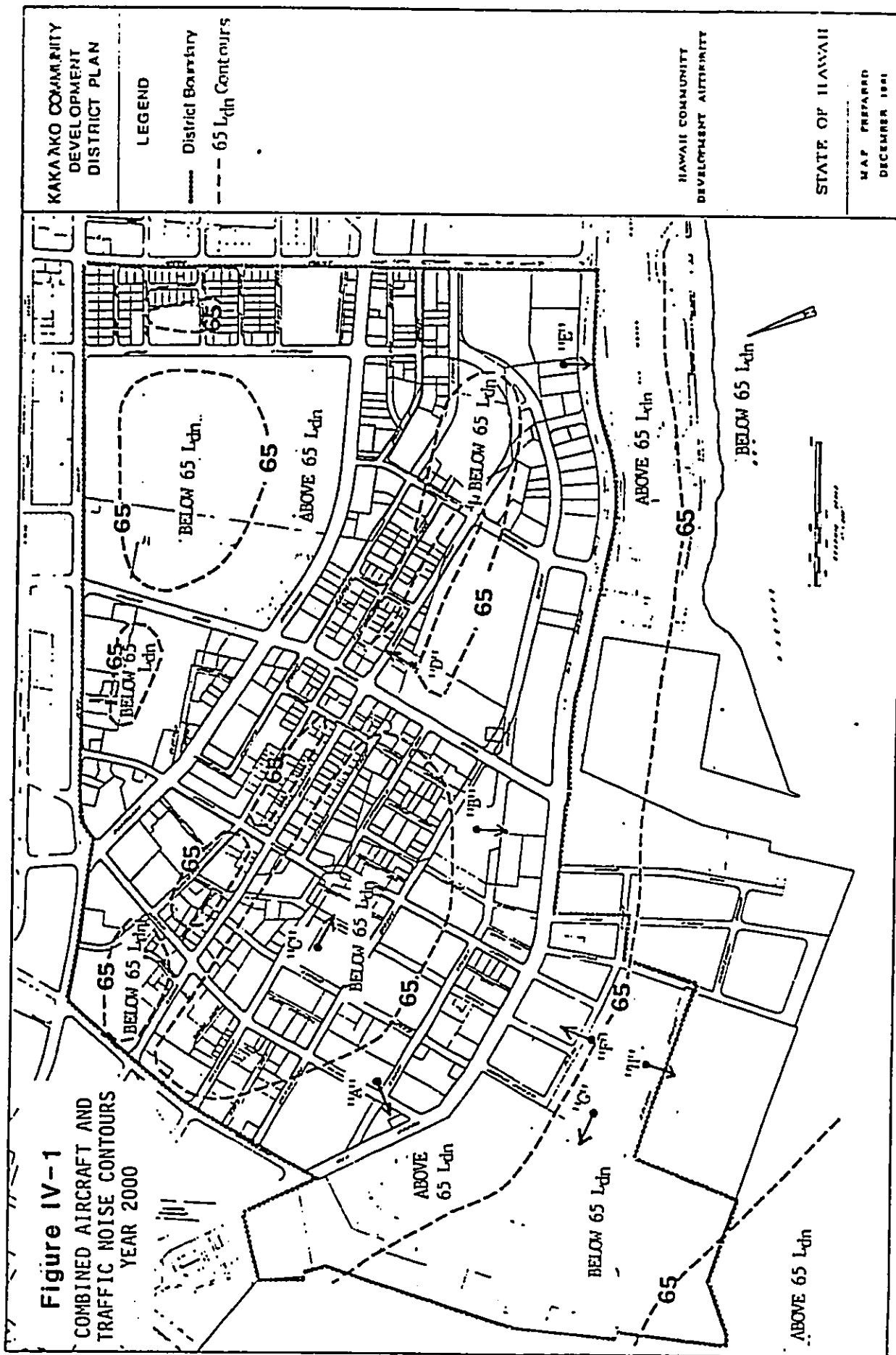


TABLE IV - 1

CALCULATION OF YEAR 2000 TOTAL NOISE LEVELS
(Aircraft plus Traffic)

<u>Location</u>	<u>Traffic Noise (Ldn)</u>	<u>Aircraft Noise (Ldn)</u>	<u>Total</u>
<u>Mauka Area (@340 Ft. Elevation:</u>			
A	67	59.3	68
B	65	58.1	66
C	55	58.4	60
D	60	56.6	62
E	68	53.8	68
<u>Makai Area (@150 Ft. Elevation:)</u>			
F	59	59.6	62
G	58	60.3	62
H	Negligible	60.5	61

Source: Darby-Ebisu and Associates, 1984

traffic noise sources, and parking deck/mall structures are provided as barriers between vertically structured industrial and residential users. The plan minimizes risks of future noise impacts on residential receptors, but evaluations on a case-by-case basis are necessary to predict acceptability with noise standards and regulations.

Noise regulations set forth in the Rules may tend to discourage industrial/commercial uses in the makai area, or add to the noise abatement costs to these tenants. The noise regulations are more stringent than current State Department of Health regulations, and both regulations may be difficult to meet by businesses which require open storefronts.

In addition, noise standards for HUD assisted projects must comply with 24 CFR Part 51 Subpart B, Noise Abatement and Control.

e. Air Quality. An air quality impact analysis was conducted for this Supplemental EIS to update a similar study in the Final EIS. (See Appendix C, Air Quality Impact Analysis).

Since higher density development of the Kaka'ako area will inevitably lead to higher traffic volumes on the streets serving the area, one would expect the quantity of pollutants associated with such traffic to also increase. The results of the air quality analysis, however, generally indicate just the opposite with rather substantial declines in the four major automotive pollutants, i.e., carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx), and lead (Pb). Only sulfur oxides and particulates showed increases although their absolute magnitudes are relatively small as compared to CO, HC, and NOx. (See Appendix C, Table 10)

The reason for these apparent declines despite the projected increase in traffic volumes is the anticipated results of the federal motor vehicle emission control program. This program requires lower emissions on new cars. With the eventual attrition of older, higher-polluting cars and an increase in the percentage of newer, lower-polluting cars, emissions are projected to decline in the long-term, at least until increasing traffic volumes overcome the effect of decreasing emissions. It might also be noted that without the projected traffic volumes, emissions in the area would be even lower due to the federal control program.

To date, emission rates are not actually declining as fast as had been projected. This is due to tampering or removal of emission control devices and delays in the imposition of statutory standards on new vehicles. Any decline in the projected impact of the emission program would result in higher air quality impacts in Kaka'ako.

In regards to ambient air quality, analysis of the 1-hour carbon monoxide levels were rather variable and did not reflect the same decline indicated above. Generally, it was the presence of the public parking garages that appeared to cause the concentrations at certain receptors to rise between 1984 and 2000. (See Figure IV-2) When a comparison of wind direction and locations of garages and receptors is made, it becomes evident that when a receptor is downwind of a garage, that is when the CO concentration is maximized. (See Appendix C, Tables 13 to 15)

The highest concentrations did exceed the State's 1-hour CO standard, generally under the "worst case" scenario with low wind speed; however, some receptors indicated violations even under "average" wind conditions. The apparent violations occurred in both 1984 and 2000 under all three wind directions with the highest values occurring during northerly winds. No exceedance of the federal standards were revealed, although the highest value of 37.7 milligrams/cubic meter was close to the 40 mg/m³ standard.

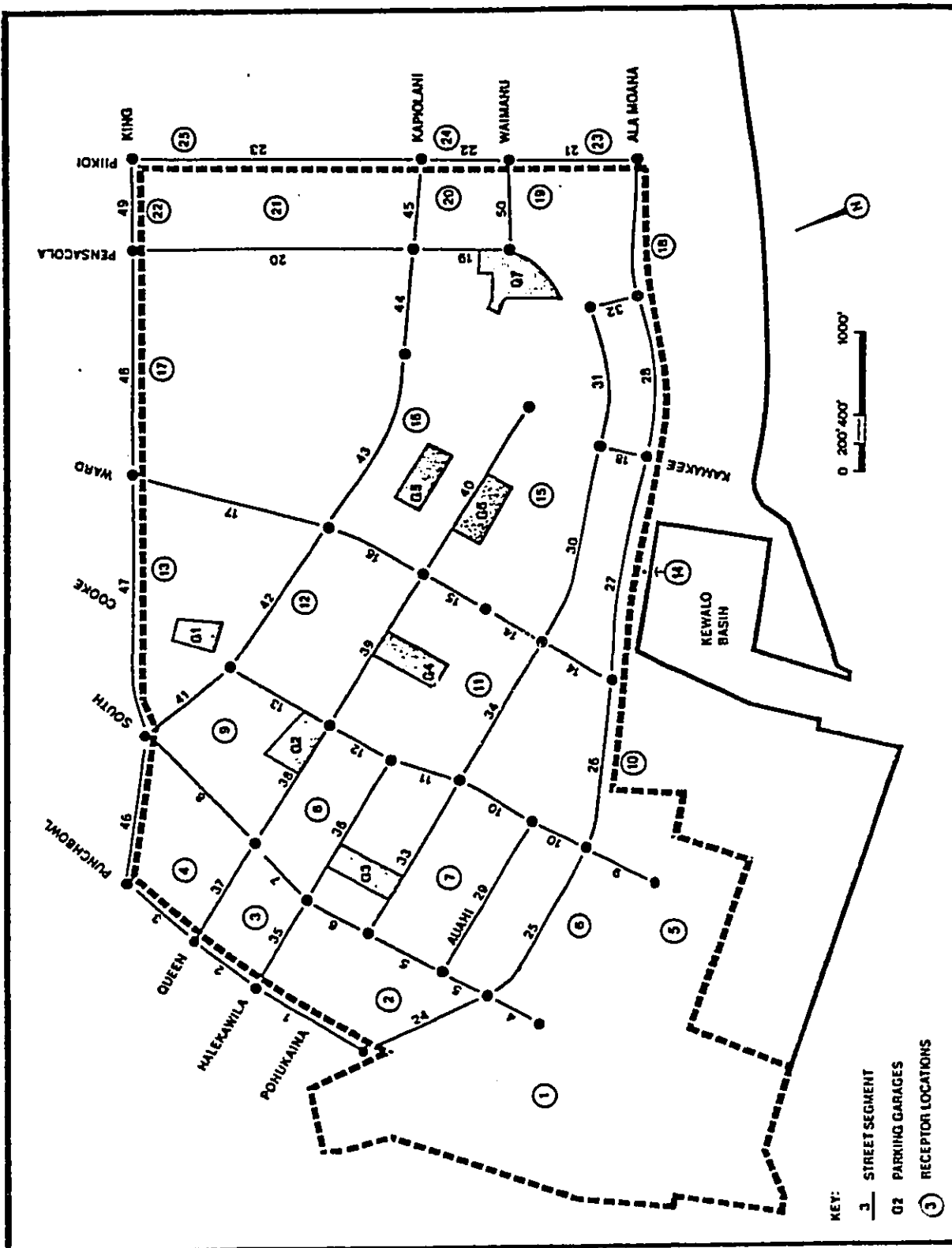


Figure IV-2
AIR QUALITY IMPACT ANALYSIS
STREET, GARAGE AND RECEPTOR LOCATIONS

The 8-hour analysis revealed similar results indicating violations of the State's 8-hour standard at receptors within close proximity to parking garages. Again, high values occurred under all three wind directions, primarily in the "worst case" scenario. With the exception of the highest values, the remainder of the concentrations are very similar to levels currently being measured by the Department of Health at its downtown and Waikiki monitoring sites. Thus, it appears that despite a rather substantial projected increase in traffic volumes in the area, ambient carbon monoxide levels may remain approximately the same with occasional violations of the State's standards. Since these standards are substantially more stringent than the federal standards which are intended to protect public health, one might conclude that occasional violations will not cause an imminent health hazard.

The Ward-Ala Moana intersection analysis showed similar results with potential violations of state standards, but apparent compliance with federal standards.

2. Biological Environment

a. Kaka'ako Makai Area. Implementation of the Makai Area Plan or any of the Alternatives will increase the amount of vegetation in the area. The overall effects, will be a more people oriented urban environment.

b. Nearshore Coastal Waters. Redevelopment of the makai area is expected to cause minimal long term effects on nearshore coastal waters, Honolulu Harbor and Kewalo Basin. Drainage from within the makai area will predominantly flow into the Keawe Street open channel. The amount of this flow will be a relatively small addition to the drainage flow from the mauka area and tributary areas that was analyzed in the Final EIS. That analysis concluded that the total storm runoff will decrease because new parks and required landscaped areas will increase rainfall percolation.

The amount and rate of discharge for periods after a heavy rainfall is expected to increase, however, because of improvements to the drainage system. This is expected to bring about only minor changes to existing nearshore ecosystems. The reasons for this are levels of pollutants in the stormwater discharge will be substantially reduced because of Federal vehicular emission standards and because on-street parking in Kaka'ako will be phased out with the development of parking structures. In addition, the County has prohibited discharge of runoff water from floor drains of covered parking areas into municipal storm drains. [1] With the diversion of 166.7 cfs peak discharge from Kewalo Basin to the Keawe Street drainage channel, water quality is not expected to deteriorate at Kewalo Basin.

3. Social and Economic Environment

Implementation of the Makai Area Plan will upgrade a predominantly older low-rise commercial/industrial area into a modern, medium to high

density environment with a new residential population. Redevelopment of the makai area and the mauka area will not induce growth, but instead will capture growth in floor area that would otherwise go to other parts of Oahu, particularly the leeward area.

a. Growth in Employment, Business Floor Area, Population, and Housing Stock. Redevelopment of the makai and mauka areas of Kaka'ako will affect where commercial and light industrial development takes place; however, market forces will ultimately determine the size and composition of Oahu's economy.

The Final EIS further discusses the potential growth in employment, floor area, population, and housing stock resulting from a redeveloped Kaka'ako.

b. Distribution of Employment, Business Floor Area, Population, and Housing Stock. The central location of the Kaka'ako District will allow for the accommodation of a significant amount of growth in private employment and non-residential floor area. The primary effect, however, will be in the distribution of where growth takes place. By itself, redevelopment of the makai area will have only a limited impact. But added to redevelopment of the mauka area, the extent of employment and business floor area that will locate in Kaka'ako instead of other parts of Oahu will be significant. Redevelopment should not significantly change the amount of growth in employment and business floor area on Oahu, nor will it result in a reduction in these areas.

As in the case of employment and floor space, redevelopment of Kaka'ako will not significantly change the amount of growth in population and housing stock on Oahu, but it will redistribute where residential growth takes place. If developed to the maximum extent proposed by the Makai Area Plan, the area could accommodate 1,547 housing units and 3,868 residents. Because of its location and planned public amenities, Kaka'ako is in a position to strongly compete with an area extending from Pearl City through Hawaii Kai for a share of future apartment and condominium development on Oahu.

The Final EIS further discusses the potential distribution of employment, floor area, population, and housing stock.

c. Land Use. Implementation of the Makai Area Plan would result in mixed-use developments on approximately 27 acres of land containing residential, commercial, and industrial floor space. By comparison, there is no residential use in the makai area at present. The remainder of land within the District boundaries would continue to be used for and allow for the potential expansion of waterfront industrial activities. Implementation of any of the Alternatives would also result in mixed-use developments in portions of the makai area. However, there would be less emphasis on residential use.

The use of land in the makai area would be highly intensified under the Plan or any of the Alternatives, particularly at full implementation. In 1979, the 11 acres of private land fronting Ala Moana Boulevard had an average FAR of 0.76. With a maximum FAR of 2.5, there is potential for construction of approximately 1.2 million square feet of floor area on these lands. The land would continue to have an emphasis on commercial use, but would also include some residential use under the Plan.

The 16 acres of State-owned land bounded by Keawe, Ilalo, Ohe, and Kelikoi Streets would potentially accommodate about 1.5 million square feet of floor area. This floor area would be used for residential, commercial, and industrial uses with an emphasis on residential use. This would be a dramatic change from the light industrial and government-related uses that presently exist on the land.

Full implementation of the Plan would also increase the intensity of land use in the waterfront industrial area, but it would continue the existing types of activity on the land. The Plan allows for a potential 4.8 million square feet of floor area.

The consolidation of lots, street closures, and the replacement of all existing buildings which do not achieve the maximum permitted FAR are assumptions made for determining the above projections. More realistically, actual densities will not reach the maximum potential. During the life of the Plan (25 to 30 years), actual densities will be determined by market forces and existing land encumbrances.

With reasonable interest rates, potentially 50,000 new housing units could be built in the Honolulu District over the next two or three decades. [1] Assuming maximum development, the makai area would accommodate approximately 1,547 new housing units. This would be added to the approximately 17,900 units that could be constructed in the mauka area at maximum development. Additionally, more housing units could theoretically be provided throughout Kaka'ako if residential floor space is substituted for commercial floor space in response to market demands. [1]

Overall impacts resulting from the Makai Area Plan in terms of the demand for land outside of the District would be relatively small. The expansion of harbor-related industrial activities could be accommodated in the makai area, lessening the demand for space in other areas connected with the harbor. Any growth in other non-residential floor space, expected to consist largely of retail trade of consumer goods, professional, and business services, would mean that the same amount of growth would not take place elsewhere.

When combined with the impacts of redevelopment in the mauka area, demand for land outside of Kaka'ako is more highly affected. Households located on commercial or industrial zoned land will probably be displaced at a slower rate. Market demand

to replace privately owned historic low-rise buildings in Chinatown with new high-rise structures may also be reduced. Furthermore, the urbanization rate of agricultural lands on Oahu may also be slowed as demands for housing on such lands is reduced by development of housing in Kaka'ako. [1]

Over the long term, retail trade and labor-intensive service industries are likely to increase substantially in Kaka'ako. Space intensive industries such as manufacturing and warehousing will gradually decline or shift towards parts of Honolulu with lower rents such as Kalihi-Palama, Mapunapuna, the airport industrial area, and Waipahu.

d. Land Ownership. Ownership of land in the makai area would be impacted minimally by implementation of the Makai Area Plan. This is because of the existing land ownership pattern which is characterized by 90% government ownership and only 10% private ownership. All of the private land is the property of Bishop Estate. It is unlikely that the State would sell any of its makai area land, particularly in the waterfront zone. Bishop Estate is also expected to continue its ownership of land fronting Ala Moana Boulevard as long as the Estate makes a profitable return from use of the land.

The Makai Area Plan and the Variation Plans (except for Variation B) would encourage the development of superblocks through closure of Coral and Ohe Streets. The adopted Plan, therefore, increases the development potential of private property in the makai area.

The Kaka'ako District and Makai Area Plans encourage the consolidation of small parcels by allowing greater building bulk and height on large parcels. Adjacent parcels are more likely to be developed jointly because developments on larger parcels can achieve higher densities.

e. Building Rents and Land Values. Because of the makai area's central location and the Plan's urban design standards, future commercial and industrial floor space in the makai area will be able to command rents or sale prices comparable to downtown Honolulu, and somewhat higher than most of the rest of Honolulu's urban core. For similar reasons, the majority of new private multi-family dwelling units in the makai area will probably be priced for the upper middle and upper income market.

f. Public Tax Revenues. The overall amount of growth in economic activity, business income, employment, personal income, business floor area, or housing stock on Oahu will be relatively small as a result of redevelopment in the makai area. Consequently, County and State revenues from taxes on income and expenditures on Oahu will not experience significant growth. Redevelopment would result in a greater increase in property tax revenues from the makai area. However, over the long term, it is unlikely that the extent to which the makai area is redeveloped would affect growth in total property tax collections on Oahu.

g. Demographics. Since there are no legal residences existing in the makai area, implementation of the Makai Area Plan will have a significant positive impact on the demographic characteristics of the area. The majority of new residents in private developments will likely be from income groups identified as not needing government assistance, similar to residents in existing high-rise condominiums in the mauka area.

The high cost of housing on Oahu and high interest rates continue to be major obstacles which prevent a large portion of the island's residents from owning a single-family house or condominium unit. Within the last decade, the percentage of homeowners has remained almost unchanged because of the widening gap between housing prices and incomes. During this period, housing prices have nearly tripled and mortgage loan interest rates have gone from 8.5% to 14%. This has led to a five-fold increase in the amount of monthly income needed to qualify for a loan (over \$3,800 in 1983) to purchase a new housing unit. [8]. The average selling price for a single family home on Oahu in 1982 was \$184,000, while the average price for a condominium was \$107,000. [9]

The reserved housing provisions of the Kaka'ako Plan and the Hawaii Housing Authority's Hula Mae program are two measures which may increase housing opportunities in Kaka'ako for the "Unserviced" household group. Monthly payments on mortgages financed by public bonds are lower than conventional mortgages. HCDA may be able to use public bonds to finance mortgages on reserved housing units, thereby qualifying a greater number of families to purchase a housing unit in Kaka'ako.

The State Hawaii Housing Authority and the City and County Department of Housing and Community Development each have programs specifically designed to provide housing for very low, low, and low-moderate income households. HCDA will not duplicate their efforts and will rely on existing programs to provide very low, low, and low-moderate income housing in Kaka'ako.

Privately developed housing units in the makai area will probably be high-rise condominiums. The demographic characteristics of residents moving into new units will likely be similar to the resident population of the existing two high-rise condominiums in Kaka'ako. Most residents are expected to have traded equity from the sale of their previous home or condominium and be in one of two age groups, 25-35 years or 55 and older. The majority of the makai area resident population will be white collar professional with one or two working adults per household. Most will live in small households, following the Oahu trend of decreasing household size. New Kaka'ako residents are expected to be predominately Caucasian and Japanese -- the major ethnic groups in the State. Because they tend to have lower incomes, part-Hawaiians, Filipinos, and most other ethnic groups are not expected to be represented in proportion to their share of Oahu's population. [1]

h. Status of Existing Businesses. Businesses in the makai area may be temporarily or permanently displaced as a result of redevelopment. As discussed in Chapter 2, Section E(1), HCDA plans to mitigate impacts by providing financial assistance and relocation services to eligible displacees.

Displacement of businesses will be influenced primarily by the phasing and location of new private developments and new infrastructure (i.e., sewers, storm drains, roadways, utilities). HCDA intends to encourage private development by timing public infrastructure improvements to meet private needs. Since the new infrastructure will be financed primarily through improvement districts, the required property assessments will tend to encourage redevelopment of affected properties.

Redevelopment impacts will vary with the type of business, interest rates, construction costs, intensity of land use, and the rate at which redevelopment occurs within the area. Overall, redevelopment will tend to remove low cost space from the makai area. Therefore, businesses requiring large amounts of floor space such as warehouses, wholesaling, and manufacturing may be adversely affected by redevelopment. Generally, the more labor intensive industries such as retail trade and consumer, professional, business, and health and welfare services are most likely to afford higher rents after redevelopment. Businesses which cannot bear the cost of the improved area will locate elsewhere or liquidate.

For obvious reasons, tenants will tend to fare worse from redevelopment than the owner of the buildings and land. [11] The landowner and holders of long-term leases in most cases will benefit from redevelopment of the makai area because they have more flexibility and are better able to take advantage of market opportunities.

i. Historic Sites. Three properties have been designated in the Makai Area Plan for preservation. As part of the ongoing review of the Kaka'ako Plan, HCDA will periodically update the inventory of historic Kaka'ako properties.

State and County funded projects which might effect historic properties in the makai area must first be approved by the State Historic Preservation Office (SHPO) pursuant to Section 6-E, HRS. HUD assisted projects must comply with the procedural requirements of 36 CFR Part 800, Protection of Historic and Cultural Properties for Compliance with Section 106 of the National Historic Preservation Act of 1966 as amended. No such projects are proposed for implementation at this time.

The Makai Area Plan will have a positive impact on the preservation of the U.S. Immigration Station, Department of Health building, and the Ala Moana Sewage Pumping Station. Apart from public projects which will directly affect historic properties, HCDA Rules require a "certificate of appropriateness" from the

HCDA prior to approval of any public or private development which will physically affect any historic site which is formally listed in either the Plan, the Hawaii Register, or the National Register. The HCDA must grant an application for a certificate of appropriateness if (a) the proposed action will not hinder the protection and use of the historic property; (b) the property as it exists is totally inadequate for the owner and/or lessee's legitimate needs; or (c) the owner or lessee is unable to earn a reasonable return unless the proposed project is undertaken. In cases where a certificate of appropriateness must be issued, HCDA can acquire the historic property by eminent domain.

The Rules also provide design guidelines for transition areas between historic sites and surrounding development. These guidelines are to enhance the integrity of the historic resource and mitigate adverse effects from adjacent industrial use areas. The proposed guidelines are as follows:

- o When the historic site is characterized by a low-rise structure surrounded by approximately half the site being landscaped, an open space transition should be provided. This open space transition involves the provision of a 15-foot wide strip of landscaping along the property line adjacent to the historic site using plant materials similar to those surrounding the historic site.
- o Buildings on adjacent sites should be situated so that no shadows are cast on the historic building during midday. This has the effect of forcing taller buildings to locate farther away from the southeast and southwest sides of the historic site.
- o Where the historic resource is characterized by use of distinctive building materials, landscaping or design motifs, these should be repeated in adjacent developments.
- j. Aesthetics. Redevelopment of the makai area will greatly enhance the area's aesthetic environment. A continuous network of open space at grade and on upper level decks, landscaped setback areas along major streets, terraced building facades, and the elimination of overhead wires and parked cars on streets will bring about an end state appearance with a harmonious, cohesive design.

To varying degrees, the Plan and any of the Variations will allow buildings to block views between the shoreline and the Punchbowl lookout. However, the Plan's view corridor setbacks will preserve selected mauka-makai and Ewa-Diamond Head views from within and outside of Kaka'ako.

4. Public Facilities and Services

Generally, inadequate roadways, water lines, sewer lines, and storm drains have been constraints to development in many parts of the

makai area. The Plan and Variations call for systematic infrastructure improvements to meet projected needs and standards and to provide a stimulus for development.

The following impact analyses for specific utilities and public services are described in terms of overall effects when Kaka'ako is fully redeveloped.

a. Roads and Traffic. One of the principal benefits of the Kaka'ako mauka and makai area plans will be a significantly improved vehicular circulation system. Key streets will be widened, a one-way couplet will be implemented, and on-street parking will eventually be phased out on most public streets. These improvements will provide increased roadway capacity and will allow traffic to flow more smoothly within Kaka'ako. As in the mauka area, guidelines in the makai area on urban design will encourage less dependence on the automobile. Nonetheless, traffic volumes in and around the District will significantly increase from 1980 to the year 2000. Because the Oahu Metropolitan Planning Organization (OMPO) expressed reservations about the methodology used for projecting traffic in the Final EIS, further traffic analyses were conducted for the Supplemental EIS using OMPO's Hali 2000 computer model which was not available when the Final EIS was prepared.

The full text of the traffic impact study is presented in Appendix B. The study evaluated existing and potential land use in the Kaka'ako District by the year 2000 and developed detailed travel forecasts for both the mauka and makai areas. Outside of the District, the study identified the general magnitude and impact of Kaka'ako trips within the major Oahu travel corridors. The corridor analysis was formatted to permit comparison to the Hali 2000 study.

Analyses of the level of land use development and the roadway and transit improvements anticipated for the year 2000 indicate the following:

- (1) The year 2000 development level would generate an estimated addition of 82,310 weekday vehicle trips, which would be a 55 percent increase above the 135,000 weekday trips estimated for current uses (See Table IV-2). The planned redevelopment would result in an increase of 6,800 and 8,040 vehicle trips during the morning and evening peak hours, respectively.

The major portion of Kaka'ako vehicle trips would be made to or from areas outside of the District. The travel patterns for these trips were determined from the Hali 2000 Study forecast information. The year 2000 total weekday vehicle trip ends is approximately 17 percent above the vehicle trips estimated for the Kaka'ako land use in the Hali 2000 Study. In the year 2000, through traffic would comprise 70 and 45 percent of the traffic on Ewa-Diamond Head and mauka-makai streets in Kaka'ako, respectively, with Kaka'ako land uses contributing the remainder.

TABLE IV-2
YEAR 2000 INCREASE IN VEHICLE TRIP ENDS ^(a)
Kaka'ako Community Development District

TRAFFIC ANALYSIS ZONE	MORNING PEAK HOUR INCREASE			EVENING PEAK HOUR INCREASE			WEEKDAY INCREASE ^(b)
	In	Out	Total	In	Out	Total	
1	600	70	670	140	560	700	4,560
2	260	30	290	60	240	300	1,970
3	30	10	40	0	20	20	360
5	770	700	1,470	840	940	1,780	15,750
6	30	60	90	50	20	70	220
7	210	260	470	370	350	720	7,660
8	570	260	830	310	590	900	9,420
13	10	40	50	40	20	60	5,150
15	810	280	1,090	260	680	940	10,980
18	300	620	920	690	490	1,180	11,240
19	190	470	660	570	420	990	10,800
23	130	90	220	170	210	380	4,190
TOTAL INCREASE	3,910	2,890	6,800	3,500	4,540	8,040	82,300

- (a) Increase compared to the 1983 vehicle trips generated by Kaka'ako land uses.
- (b) Vehicle trip ends.

- (2) The combined increases in through traffic and Kaka'ako traffic would worsen traffic conditions along those sections of major arterials which currently experience congestion and delays during the peak traffic periods. These include:
- o Ala Moana Boulevard between Punchbowl Street and Ward Avenue, and at Piikoi Street.
 - o Ward Avenue at the Ala Moana and Kapiolani Boulevard intersections.
 - o Piikoi Street between Waimanu Street and Kapiolani Boulevard.
- (3) The widenings and extensions of minor arterial and collector streets within Kaka'ako would be sufficient to accommodate the projected year 2000 travel on these roadways.
- (4) With the increase in traffic (through and Kaka'ako) intersection capacity will be diminished from those shown in Table III-3. The intersections affected and their resultant level of service are shown in Table IV-3.

Mitigation measures to alleviate future traffic problems include modifications to key intersections, implementation of a new form of public transit system (e.g., rail system, shuttle bus, etc.), and implementation of the full Kaka'ako Roadway Plan.

The year 2000 analyses indicate that Queen Street would be approaching its capacity as a two-way, 44-foot wide street. Development beyond 2000 would require additional east-west capacity such as the operation of Queen and Pohukaina Streets as a one-way street couple. This would increase the combined capacity of these two streets by about 20 percent. If the one-way conversion does not occur, Queen Street would require widening to a full four-lane street with left turn lanes similar to Ward Avenue (without on-street parking). A curb-to-curb street width of 54 to 64 feet would be needed.

b. Mass Transit. The existing high occupancy rate on buses operating between downtown Honolulu and Waikiki during peak periods indicates that additional service is required. The traffic study discussed above also concluded that weekday passenger trips on public transit are estimated to increase from 11,000 at present to 15,000 in the year 2000.

Given its strategic location, the concentration of housing in Kaka'ako will lessen future growth of peak hour commuting in the Honolulu District due to more employees living within walking distance of their place of employment. Compared to the Plan Variations, the adopted Plan allows for the largest number of housing units to be built. Therefore, the Plan will likely result in less islandwide demand for additional bus service than the Variations. However, demand for bus service within Kaka'ako and the Honolulu urban core would be much greater than at present.

TABLE IV-3

VOLUME-CAPACITY ANALYSIS OF KEY INTERSECTIONS
Existing and Projected Year 2000 Peak Hours

INTERSECTION	MORNING PEAK HOUR			EVENING PEAK HOUR		
	Existing		2000	Existing		2000
	V/C	L.O.S.		V/C	L.O.S.	
Ala Moana/Punchbowl	.75	C	E	.79	C	*
Ala Moana/South	.71	C	D	.61	B	E
Ala Moana/Cooke	.72	C	D	.85	D	E
Ala Moana/Ward	.88	D	*	.93	E	*
Ala Moana/Piikoi	.82	D	E	.92	E	*
Kapiolani/King/ South/Alapai	.59	A	C	.81	D	E
Kapiolani/Cooke	.71	C	D	.92	E	*
Kapiolani/Ward	.93	E	E	.96	E	*
Kapiolani/Piikoi	.56	A	B	.93	E	*
Queen/Ward	.62	B	E	.61	B	E
Queen/Cooke	.54	A	B	.78	C	C
Queen/South	.43	A	C	.65	B	D
South/Halekauwila	.33	A	A	.50	A	C

V/C - Volume-to-Capacity

L.O.S. - Level of Service

* Projected traffic exceeds intersection capacity.

c. Water Supply. At maximum development, the water demand in the makai area would be approximately 0.8 mgd. When added to the potential demand in the mauka area, a growth in water demand of over 6.3 mgd could be expected at maximum development.

Islandwide figures from the Board of Water Supply (BWS) estimate a 51 mgd increase in the demand for water between the years 1980 and 2000. Most of this increase is anticipated in the Ewa and Honolulu water districts. If existing water sources were developed to their sustainable capacity, an estimated 22 mgd would be available to Oahu residents. (See Table II-14) It is evident, therefore, that new offsite water sources will need to be developed in order to meet future demand.

The BWS lists 13 basal well projects and 22 dike, perched, and caprock source projects as preferred future water sources.[12] A smaller number of secondary sources are also under consideration. The total estimated sustainable capacity of these water sources is 35.15 mgd. The development of these sources along with adjustments in inter-district transfers of water are expected to provide a sufficient supply of water for the year 2000. [13] (The BWS also favors having access to currently unavailable supplies on Oahu that are regulated by the Board of Land and Natural Resources. BLNR's regulation of water is further discussed in Chapter II, Section F.).

The most important sources of new water are to be found in the Windward water district. The development of these sources may produce an estimated supply of 19.8 mgd, much of which could be expected to be transferred to the Honolulu water district. Preferred water sources in the Waianae water district have an estimated sustainable capacity of 5 mgd. Development of these sources is expected to make the district self-sufficient by 1990, further eliminating the need for water to be transferred from the Pearl Harbor water district.

By the year 2000, water demand in the Ewa water district is expected to grow by 14.75 mgd. If this demand can not be met through new source development and adjustments to inter-district transfers as described above, the BWS would most likely apply to the BLNR for permitted full use of sustainable capacity of its water sources.

For the more long-term period of 25 to 30 years, meeting the demand for water on Oahu will likely require the use of additional sources. The largest potential supply, estimated to be as high as 44 mgd, would be from the conversion of potable sugar cane irrigation supplies to municipal use. Another smaller supply, approximately 8 mgd, is potable industrial water from Waiiau Tunnel which is currently used by Hawaiian Electric Company (HECO). [12]

Two potential water sources that have been often discussed are the utilization of brackish and/or salt water through the processes of electrodialysis and reverse osmosis. The BWS is

considering locating a desalting plant in the makai area of Kaka'ako. A site for such a plant has not yet been selected.

The availability of water for specific new development will be determined when building permit applications are submitted to the BWS for review and approval. Further, developers will be required to pay water development charges for source, reservoir, and transmission facilities.

d. Sewage Collection and Treatment. In urban areas such as Kaka'ako, roughly 80 percent of the average daily water consumption ends up as wastewater and sewage. At full development, approximately 4.4 mgd of wastewater can be expected from the mauka area and 0.64 mgd can be expected from the makai area. Proposed sewerage system improvements will be sized to accommodate wastewater from other parts of Oahu which passes through Kaka'ako enroute to the Sand Island STP via Ala Moana Sewage Pump Station (SPS). The makai area sewer branch lines will be upgraded to 8 inches or larger in compliance with County standards, and necessary manholes and other appurtenance will be provided.

e. Drainage. Because the existing drainage system is inadequate, flooding occurs in portions of the makai area. To correct deficiencies, drainage improvements are planned within the makai area to include reinforced concrete pipe and box culverts, manholes, and catch basins. Proposed drainage lines will meet County standards to accommodate estimated 50-year storm runoff from both the District (including the the makai area) and tributary areas.

f. Solid Waste Collection and Disposal. Redevelopment of the makai area will have little impact on the distribution or growth of municipal trash on Oahu. The City and County Department of Public Works will continue to provide solid waste collection and disposal services along with private collectors.

g. Police Service. The redevelopment of the mauka and makai areas will not result in a need to expand police services to Kaka'ako. However, as the population in both the mauka and makai areas grows, increases in the number of calls for service may shift police officers from other districts on Oahu to Kaka'ako. There are no plans for new police stations within the project areas. [1]

h. Fire Service. Existing fire service is considered to be adequate to serve the Kaka'ako District. Currently the City's Uniform Building Code (UBC) requires that buildings above 75 feet contain sprinkler systems and smoke alarms as well as Fire Department pipe connections. Structures over seven stories are also required by the UBC to have an emergency elevator (with its own electrical generator) and an unobstructed 20-foot access way for fire fighters. All new buildings within the Kaka'ako District will conform to the UBC. [1]

i. Schools. No public schools are planned for the makai area. At maximum development, as many as 2,200+ elementary school age children could reside in the mauka area of Kaka'ako. [Ref. 14] The number of children from the makai area would not significantly add to this, even at maximum development. The Department of Education will open new schools as population increases warrant additional school facilities. If the need arises, two elementary school sites are proposed in the mauka area: one on the grounds of the former Pohukaina Elementary School and, if feasible, one sharing the grounds of Kapiolani Community College.

j. Parks and Recreation. At full development, the makai area will have a total of about 3 acres of private recreational space. None of this space will be in the Waterfront Industrial Zone. Sixty acres of public recreational space will eventually be provided in the Waterfront Park adjacent to the District.

New recreation space in the makai area will be located within buildings or on decks. Private property owners can provide required recreational space outdoors or indoors, and at ground level or any elevation up to the deck level. Outdoor recreational space at ground level on major streets will be subject to more noise and air pollution than deck level parks because of the intensity of development. Aside from environmental factors, desirability and usage of recreation areas will be determined by the types of facilities provided and the interests of the residents involved.

The potential peak recreational needs of makai area residents can be estimated by multiplying the maximum anticipated resident population (3,868) by the same per capita share of recreational activities as other Oahu residents as estimated by the 1980 State Recreation Plan. The results are given in Table IV-4.

To estimate the desirable amount of recreational space for both coastal and facility dependent users, the daily occupancy rates shown in Table IV-5 were utilized.

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TABLE IV-4
ESTIMATED PEAK DAY RECREATIONAL ACTIVITIES OF KAKA'AKO RESIDENTS

<u>Major Activities</u>	<u>Kaka'ako District Demands ^{1/}</u>	<u>Makai Area Demands</u>
Walking	9,928	967
Swimming/Sunning	5,956	580
Picnicking	3,574	348
Bicycling	3,574	348
Jogging	3,971	387
Field Games	1,588	155
Fishing	1,191	116
	<u>29,782</u>	<u>2,901</u>

Source: ^{1/} VTN Pacific and Ref. 16, Table 22

TABLE IV-5
MAXIMUM DESIRABLE RECREATIONAL OCCUPANCY RATES FOR OAHU

Recreational Activities	Daily Occupancy Rate
Swimming/Sunning/Beach	435 Individuals/Acre
Tennis	35 Individuals/Courts
Picnicking	80 Individuals/Acre
Field Games	32 Individuals/Acre
Court Games	578 Individuals/Acre
Children's Games	2,174 Individuals/Acre
Lawn Bowling	576 Individuals/Acre

Source: Ref. 15, Phase II — Table F-4

Table IV-6 shows estimated ideal acreages for selected recreational activities, based on the previous projection for peak Kaka'ako District and makai area demand and desirable occupancy rates. [Table IV-4 and IV-5] About 16 acres of beach park, 52 acres of picnic grounds, and 62 acres of playing fields would be considered most desirable. (This excludes the proposed Waterfront Park and the unused capacity of existing parks in Kaka'ako.)

TABLE IV-6
PROJECTED DESIRABLE FACILITIES
FOR KAKA'AKO RESIDENTS RECREATIONAL NEEDS

Activity	Kaka'ako District	Makai Area	Total Acreage
Swimming/Sunning	14	2	16
Picnicking	45	7	52
Field Games	50	12	62

Source: VTN Pacific (1983) and H. Mogi Planning and Research (1984)

The above acreage figures are generally higher relative to City and County Department of Parks and Recreation standards. DPR requirements call for district park facilities of ten acres or more to serve an area within a two-mile radius with approximately 25,000 residents. A greater distance may be served depending upon population density.

The capacities at Ala Moana Park and Magic Island are frequently exceeded. The development of a 60-acre regional park along the shoreline between Kewalo Basin and Fort Armstrong, would greatly reduce the demand at Ala Moana Park and provide recreational opportunities for Kaka'ako as well as other Honolulu residents. [17]

k. Electric, Gas, and Telephone Service. The Hawaiian Electric Company (HECO) anticipates that one or two new substations will be necessary in the Kaka'ako District to satisfy needs both inside and outside the District. Existing substations also will need to be modified to include low sound level transformers to conform with noise regulations. [1] These costs will be assumed by HECO. Eligible costs associated with facilities located within the street rights-of-way will be shared between HECO, the government, and Kaka'ako property owners through the improvement district process. HECO will increase the generating capacity of its Wai'ale'ale and Kahe power plants as needs arise.

The impacts of gas and telephone services to the makai area will be similar to those described in the Final EIS. GASCO, Inc. will need to decide whether to construct service mains to new customers or provide containerized gas. Hawaiian Telephone Company (HTCO) will need to install new underground conduits within public street rights-of-way. Eligible costs will be shared by HTCO, the public sector, and property owners.

The No Action Alternative would likely bring about infrastructure improvements as individual private developments occur. The Makai Area Plan and the Variations would provide infrastructure by improvement districts. This will lead to a more systematic provision of utilities and less delay in their development. Furthermore, much of the public infrastructure servicing Kaka'ako also services areas beyond the District boundaries. This requires infrastructure to be oversized in most cases. Improvements may therefore be too expensive for private developers to finance on their own.

l. Elderly and Child Day Care Centers. Generally, it is desirable to have child day care centers for families within a service radius of 1/2 mile. [Ref. 18] The Plan allows day care facilities to be located on or near the largest parks in Kaka'ako. These facilities will be readily accessible and within easy walking distance for makai area residents.

5. Commitments of Resources, Energy, and Future Options

The Makai Area Plan proposes to intensify the use of existing land resources which are already urbanized. The proposed action is therefore not a commitment of new resources.

The proposed action forecloses future planning options to the extent that it precludes alternative land use plans. However, it should be noted that HCDA's Plan and Rules can be amended as necessary to mitigate unintended or adverse effects.

The proposed action will commit water resources and energy to service future makai area development. However, Oahu's demand for water and energy would probably be greater if the same amount of development were dispersed over larger areas of Oahu. Similarly, the utilization of centrally located urban land lessens potential capital improvement expenditures and the costs that would be incurred for maintenance if the development were more dispersed. Redevelopment in Kaka'ako, with its strategic location, will produce a multiplier effect in regards to other development. This will lead to higher land values and tax revenues.

6. Unavoidable Adverse Impacts

The primary unavoidable adverse impact posed by implementation of the Makai Area Plan involves the displacement of businesses when existing rental properties are replaced by new buildings. It should be noted that this displacement will affect primarily the businesses on the 11 acres of private property fronting Ala Moana Boulevard.

Also, increases in urban development will unavoidably result in higher noise levels and increased traffic congestion.

Redevelopment, however, will lead to more efficient land use and provide a more attractive urban environment for large numbers of people. While the development of the Kaka'ako mauka and makai areas will result in an attractive, functional community for its residents and businesses, there will also be substantial benefits realized by the general public. The development of Kaka'ako will help satisfy the desired development of the primary urban center, nearby existing services and facilities. By directing and concentrating growth to the urban areas, agricultural lands and open space areas are better able to be maintained in their existing uses. Redevelopment will also provide a big stimulus to the construction industry. The housing inventory in Kaka'ako will be significantly increased, with the reserved housing program promoting a steady increase of housing for moderate-income families. Finally, Kaka'ako's redevelopment will mean tremendous long-term savings to government and the general public in terms of reducing demands on the transportation system, curbing the need to stretch out costly infrastructure systems, improving the use of existing services and facilities, and promoting energy conservation. These benefits are considered to justify implementation of the Plan, notwithstanding unavoidable adverse impacts.

7. Relationship between Short-Term Uses and Long-Term Productivity

As noted in the Final EIS, the major tradeoff of redevelopment in Kaka'ako involves the displacement of existing businesses and residents in return for higher density commercial, industrial, and residential development. The proposed action is expected to enhance the long-term vitality of this presently underutilized urban area by upgrading infrastructure necessary for redevelopment and by providing additional public services and amenities. The proposed action does not pose significant long term risks to the health or safety of residents or workers in the makai area.

8. Compliance with Land Use Plans, Policies, and Controls

The City and County of Honolulu Department of Land Utilization is the County's Central Coordinating Agency which was established to maintain a repository of all laws, rules and regulations, procedures, permit requirements, and review criteria of all federal, state, and city agencies having any control or regulatory powers over land development projects within the City and County. Applicable policies and controls are listed below. Details of the specific requirements can be obtained from the Department of Land Utilization.

a. Federal Policies and Controls. Any project that involves Federal funds or approvals may need to demonstrate compliance with a number of Federal laws and Executive Orders, among which include:

- o National Environmental Policy Act (P.L. 91-190) and applicable implementing regulations;
- o Section 307 of the CZM Act (P.L. 92-583), as amended, and applicable implementing regulations;
- o Noise Pollution and Abatement Act (P.L. 91-604) and applicable implementing regulations;
- o Clean Air Act (P.L. 90-148), as amended, and applicable implementing regulations;
- o Federal Water Pollution Control Act Amendments (P.L. 92-500), Safe Drinking Water Act (P.L. 93-523), and applicable implementing regulations;
- o Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (P.L. 94-580), and applicable implementing regulations;
- o Fish and Wildlife Coordinations Act (P.L. 85-624) and applicable implementing regulation;
- o Section 2(a) of EO 11988 on Floodplain Management and Sections 2 and 5 of EO 11990 on Protection of Wetlands;
- o National Historic Preservation Act (P.L. 89-665), Preservation of Historic and Archaeological Data Act (P.L. 93-291), and applicable implementing regulations;
- o Section 10 of the River and Harbor Act (P.L. 90-483), Section 404 of the Federal Water Pollution Control Act Amendments (P.L. 92-500), and applicable implementing regulations; and
- o Uniform Relocation Assistance and Real Property Acquisition Policies Act (P.L. 91-646) and applicable implementing regulations.

b. State Plans, Policies, and Controls. As described in Chapter II, the State Legislature established development guidance policies for the HCDA to implement. These policies provide the basis for the Kaka'ako District and Makai Area Plans. No conflicts exist between the Makai Area Plan and any other State plan, policy, or land use control. Urban use of the makai area is appropriate given that the area is classified within the Urban District by the State Land Use Commission. In compliance with the State Plan (Chapter 225, HRS), urban development is being encouraged within an already urbanized area and the physical and locational attributes of the area have been accounted for during

the planning and designing of activities and facilities. In accord with the State CZM Program (Chapter 205A, HRS), development which is not coastal dependent is being encouraged to locate in an inland area.

The HCDA permit requirements and performance standards governing noise, vibration, and other undesirable factors complement but do not preempt the requirements of other State plans, policies, and regulations.

c. County Plans, Policies, and Controls. The Legislature gave HCDA the power to supercede County ordinances pursuant to Act 153, SLH 1976. With the adoption of the Kaka'ako District and Makai Area Plans and Rules, HCDA has in effect overridden certain local controls. The Kaka'ako Plans, however, will do much to further the goals of both the State Plan and the County General Plan. The No Action Alternative analyzed in this Supplemental EIS compares applicable local land use controls with the Kaka'ako District and Makai Area Plans and Rules.

Other County or State approvals that may be required for individual projects include:

- o Subdivision Permit - County Department of Land Utilization
- o Building Permit - County Building Department
- o Special Management Area Permit - City Council
- o Grading/Grubbing Permit - County Department of Public Works
- o Approval of Drainage Outfall - State Department of Health
- o Conservation District Use Permit - State Board of Land and Natural Resources (BLNR)
- o Use of State Land - BLNR and State Department of Transportation
- o Shorewaters Construction Permit - State Department of Transportation
- o Permit for Industrial Wastewater Discharge - County Department of Public Works

d. EIS Requirements. Prior to HCDA's implementation of public improvements under the Kaka'ako Plan, acceptance of the Final Supplemental Environmental Impact Statement by the Governor is required. Another supplemental EIS document or negative declaration may be necessary if major modifications are made to the Plan or projects and if the original conclusions made in the Final EIS or this Final Supplemental EIS are substantially different. If major changes are not made, the original statements will be considered valid and no additional environmental assessment will be necessary.

C. CONSEQUENCES OF ACTIONS PROPOSED TO CONSTRUCT THE INFRASTRUCTURE IMPROVEMENTS FOR INCREMENT I AND FUTURE INCREMENTS

This section describes the impacts on the environment from the construction of infrastructure improvements for the Increment I improvement area and future increments.

1. Physical Environment

This section describes the impacts generated by the construction of the proposed infrastructure improvements. The construction of the infrastructure improvements for Increment I (as described in Chapter II, Section D) and future increments will primarily impact the social and economic well-being of Kaka'ako business people and residents. Construction activities will also generate impact on the physical environment with respect to air and water quality. These impacts, however, will be temporary and will generally occur only during construction.

Improvements to existing roadways will temporarily restrict vehicular and pedestrian traffic, disrupt business activity, cause a decrease in the overall quality of the environment, and affect commercial buildings and historic sites. In general, construction will be a major cause of inconvenience to the people living, working, having business, doing business in, or commuting through the area. Construction of Increment I is estimated to take approximately a year and a half, during which time the temporary inconveniences will have a major impact on people in the area.

a. Construction Noise Impacts. Short-term noise impacts associated with the installation of the infrastructure improvements will occur as a result of the proposed construction. These impacts are unavoidable due to the short distances between existing residential/commercial structures and the proposed underground facilities, and the necessity to break existing pavement, trench, and drive piles. Exterior construction noise levels at certain buildings will, at times, exceed 80 dB when work is performed within 50 feet of these structures. The interior noise levels at these buildings will probably exceed 60 dB. Noise exposure from construction activities at any one location will be in the order of 2 to 4 weeks as the improvements progress past that location. Figure IV-3 illustrates a comparison of various areas and the levels of ambient noise normal to them.

Noise levels of diesel-powered construction equipment typically range from 75 to 90 dB at a 50-foot distance. Primary noise sources during construction are expected to be backhoes, front-end loaders, pumps, cranes, miscellaneous trucks, jackhammers and pile drivers. Table IV-7 presents average noise

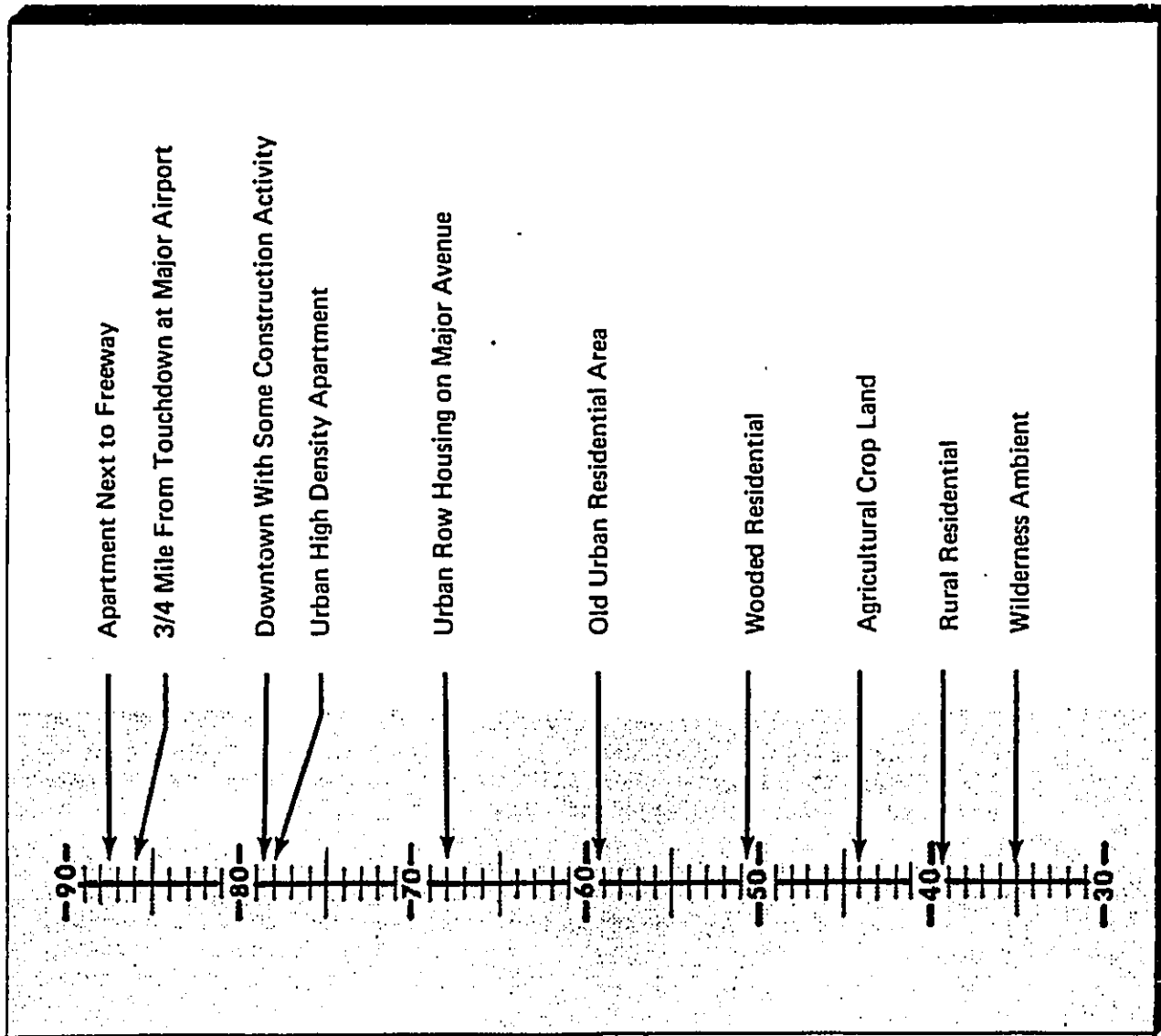
EXAMPLES OF
OUTDOOR
DAY/NIGHT
AVERAGE SOUND
LEVELS IN db
MEASURED AT
VARIOUS
LOCATIONS

Figure IV-3

JULY, 1984

Outdoor Location

L_{dn} in dB



levels of various construction equipment used on Oahu. Figure IV-4 presents anticipated range of construction noise levels versus distance from operating diesel engine driven equipment. Figure IV-5 presents noise measurements at 80- and 50-foot distances (respectively) from a backhoe trencher digging a trench for a sewer lateral. Noise levels of 70 to 80 dB would occur nearly continuously from 0800 to 1100 hours, with short (1 minute) periods of idle and equipment repositioning. During the lunch break, noise levels at the construction site would decrease to the local background ambient level of 50 dB.

TABLE IV-7

A-WEIGHTED SOUND LEVELS (dB) FOR
CONSTRUCTION EQUIPMENT (AT 50-FOOT DISTANCE)

Bulldozers	85 dB
Compactors	85 dB
Graders	83 dB
Front-End Loaders	83 dB
Scrapers	85 dB
Hand Tamers	85 dB
Backhoes	80 dB
Rollers	85 dB
Trenches	83 dB
Compressors	80 dB
Forklifts	80 dB
Cement Trucks	85 dB
Mobile Crane	85 dB
Jackhammers	98 dB

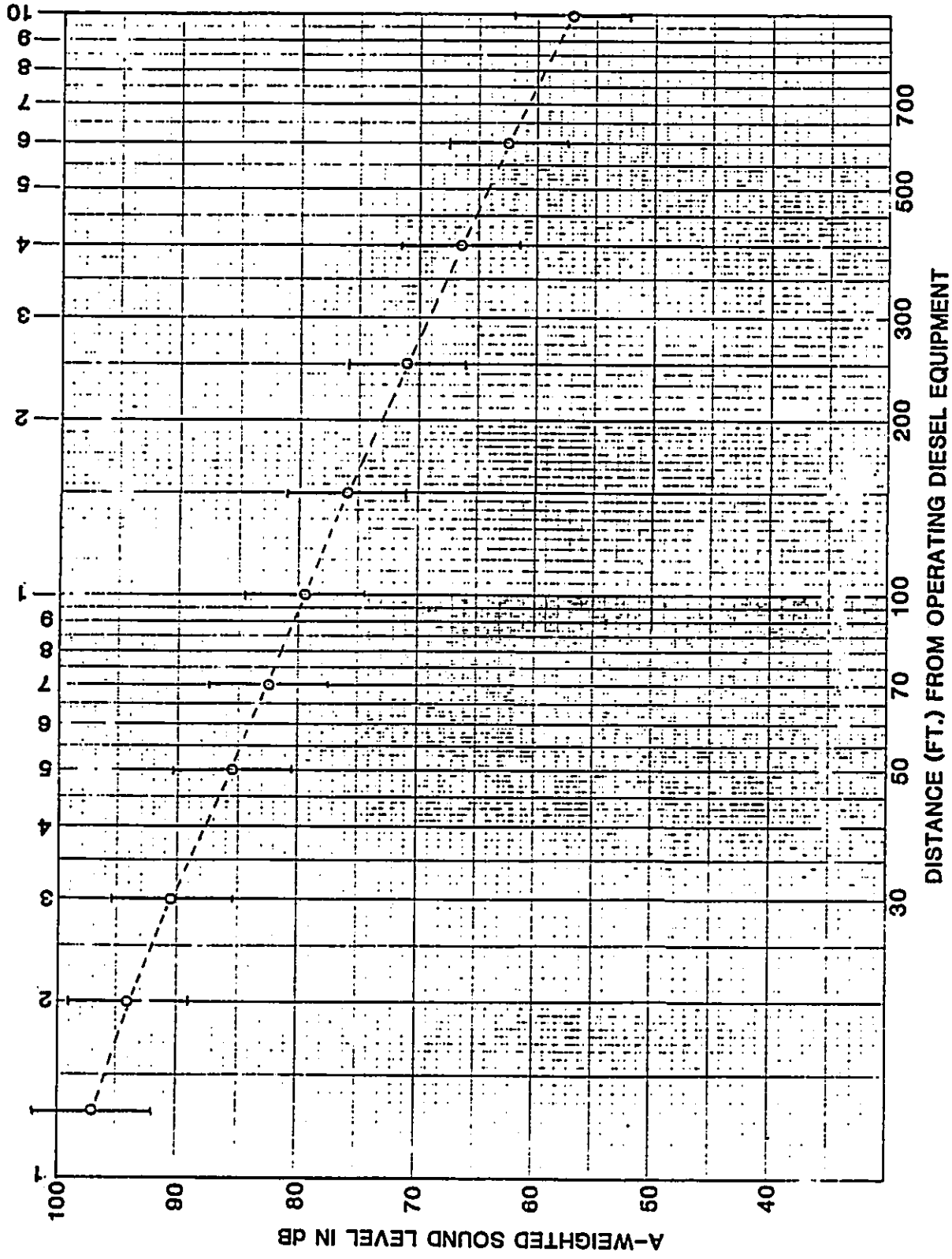
Construction noise levels are expected to be highest where pile driving will be required. Piles will be used to support underground piping, and driven plates will be used to shore-up the sides of trenches. Noise from these activities are characterized as intense (greater than 95 dB) impulses of short individual duration (less than one second), but are repetitive as the piles are driven. Peak noise levels from pile driving activities will be approximately 15 dB greater than the steady levels indicated in Figure IV-4.

Pile driving is not anticipated to occur within 1,000 feet of most residential structures. The major portion of the infrastructure work is anticipated to affect commercial/industrial businesses. However, the Pohukaina School grounds will be considered noise sensitive if former classroom use of the structures is resumed while construction is underway.

ANTICIPATED
RANGE OF
CONSTRUCTION
NOISE LEVELS
VS. DISTANCE

Figure IV-4

JULY, 1984

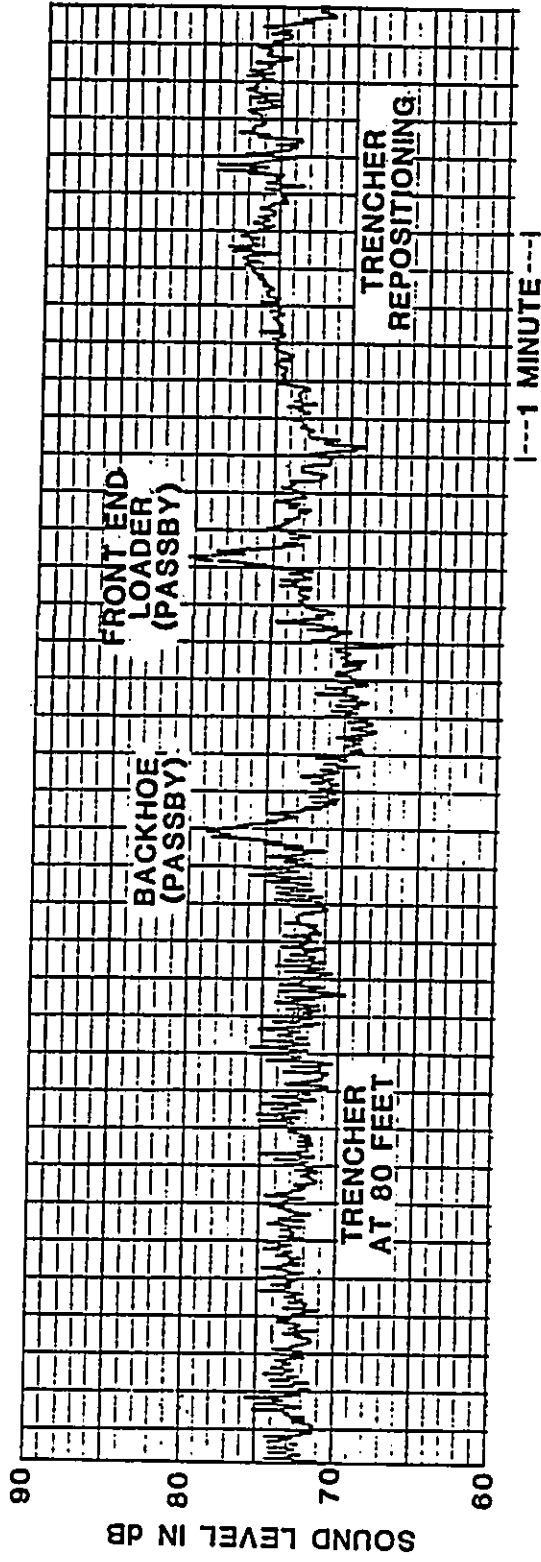


IV-30

**TRENCHER
SOUND LEVEL**

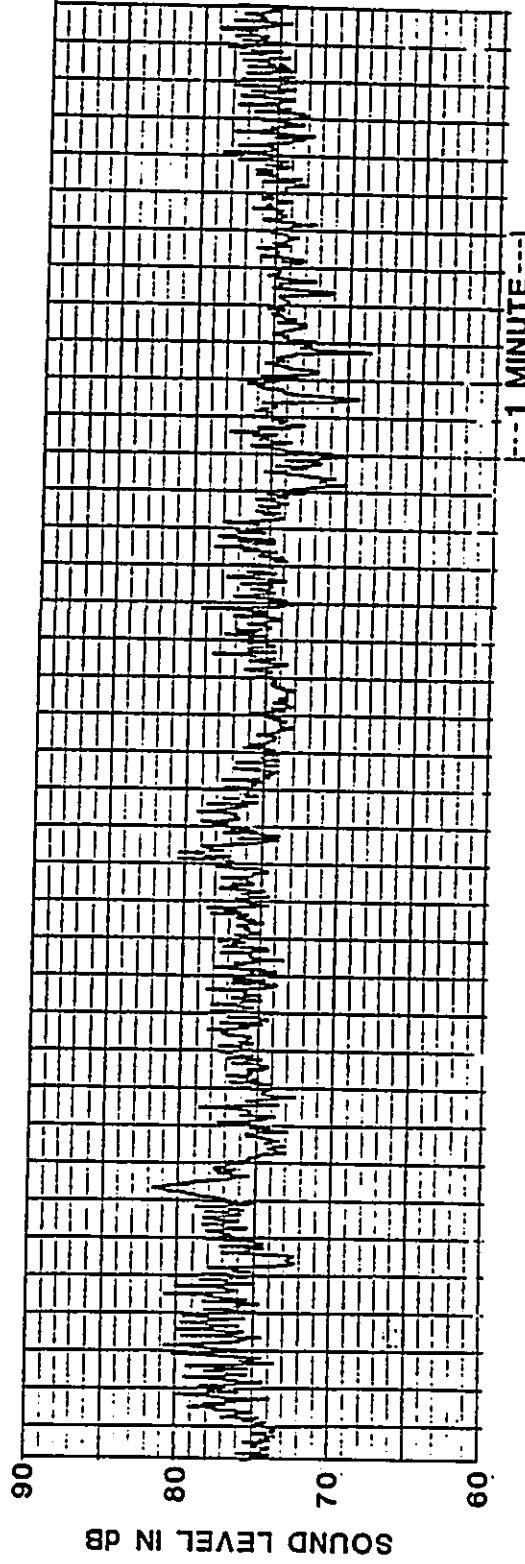
Figure IV-5

JULY, 1984



TRENCHER AT 80 FOOT DISTANCE

IV-31



TRENCHER AT 50 FOOT DISTANCE

Mitigation of noise from construction activities on Oahu is generally accomplished by enforcement of the State Department of Health (DOH) noise regulations. The noise regulations of the Kaka'ako Community Development District Plan are modeled after the State DOH regulations, and therefore similar enforcement procedures will be used within Kaka'ako. The mitigation of construction noise on Oahu has been accomplished by citing equipment with defective mufflers, and by limiting the hours of operation of excessively noisy operations (such as pile driving).

Under DOH permit procedures, construction activities which exceed 95 dB at adjoining properties are restricted to the hours between 9:00 a.m. and 5:30 p.m., from Monday through Friday, and excluding certain holidays. These curfews on excessively noisy activities are intended to minimize noise impacts on residences, since home occupancy rates are lower during the allowable construction periods. As a general rule, pile driving activities will fall within this excessively noisy category, and the existing permit procedures will be adhered to.

Because a major portion of the infrastructure work will generate noise impacts on daytime business/commercial operations rather than residences, consideration will be given to nighttime and early morning waivers of existing property line noise limits within the area whenever construction noise levels at residences do not exceed 50 dB. Waivers to continue construction activity past 6:00 p.m., from Monday through Saturday, have been granted when the best interests of the public are served by reducing the period of construction or by reducing traffic congestion. This may occur along Ala Moana Boulevard. Use of waivers to allow for nighttime construction activities when residences will not be affected, will minimize construction noise impacts on daytime business and school activities.

The use of heavy equipment (i.e. pile drivers) during construction activities may also generate occasional high levels of vibration in and around the construction sites. Vibrations are felt when heavy equipment such as pile drivers are used and during certain types of excavation activities. The operations involving the use of heavy equipment can generate vibration perceptible to nearby structures. Those buildings which are in close proximity to heavy excavation activities may be impacted by construction generated vibrations. Mitigative measures to ameliorate the effects of vibration include the use of vibratory hammers and eliminating changes in water levels in excavated trenches. Water is an excellent conductor of sound waves and high water levels can be conducive to vibration effects.

b. Water Quality. The construction phases of Increment I and future increments are not expected to generate any adverse impacts on existing groundwater resources in the project area or to the caprock located at the coast. However a potential impact may be realized on the nearshore coastal waters and Honolulu Harbor. Presently, both the Keawe open channel and drainage outlets at Piers 2 and 4 receive drainage runoff from the project area and will continue to do so during and after construction of the project.

There are two potential sources of water quality pollutants which may enter the ocean at these points. These include sediments, oil and debris from construction activities and from dewatering activities.

The first source of sediment entering the drainage system will result from the following construction activities:

- o The disturbance of ground cover including vegetation, paving and structures.
- o Clearing and grading.
- o Excavation and filling.

Sediments and other materials generated during construction can enter the existing drainage system during rainy periods, sprinkling activities and when runoff enters the drainage system. The second source of sediment which may potentially impact the nearshore waters is a result of dewatering activities.

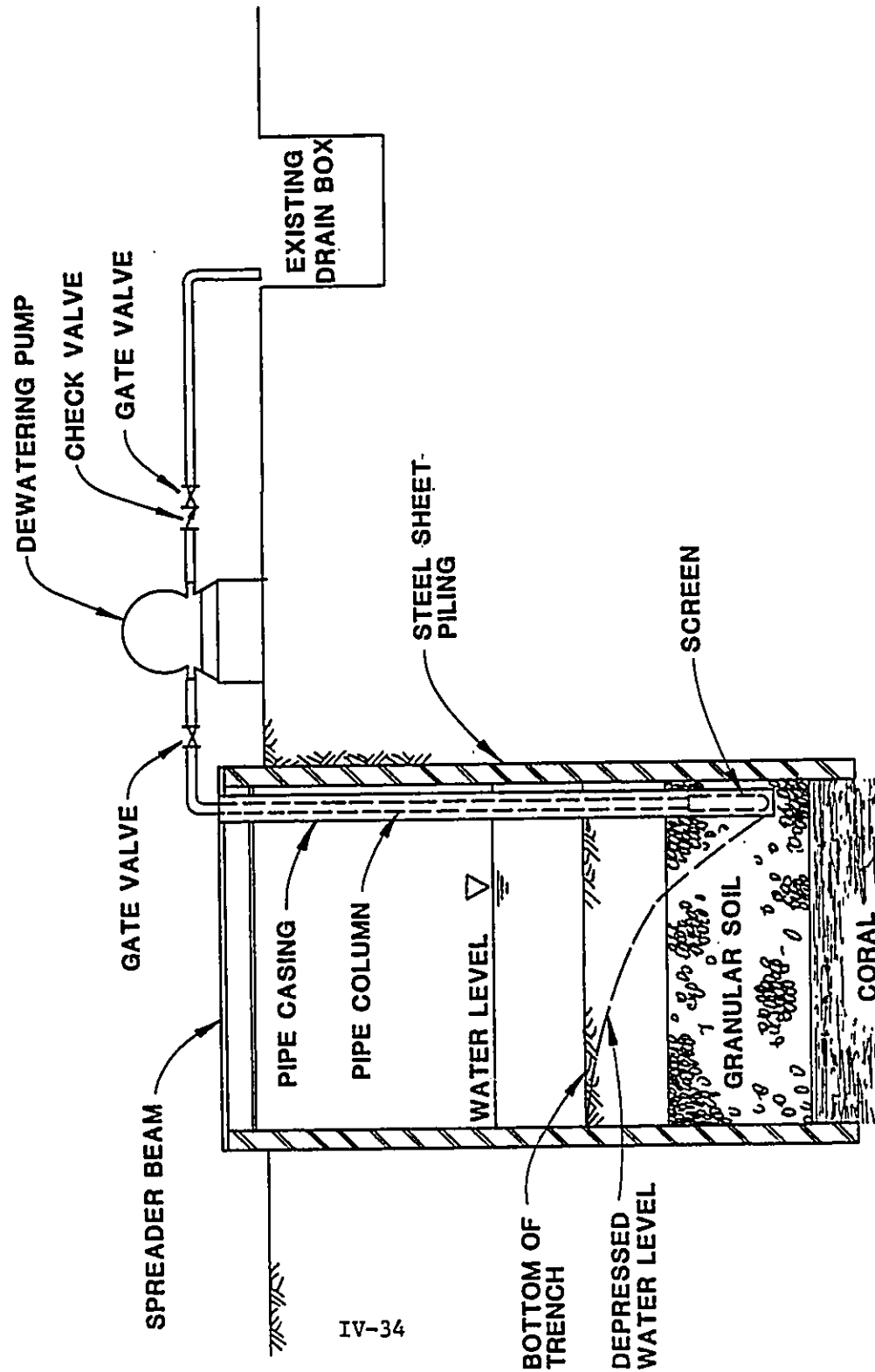
As a mitigation measure to the potentially adverse water quality impacts mentioned above, a temporary cofferdam and a debris-sediment trap or alternate method are proposed to be constructed at the outlets of the drainage system during construction. This will keep sea water from entering the excavation during construction and will trap all of the sediment and debris which may wash into the sea should a storm occur while construction is in progress. The Contractor will be responsible to maintain the debris-sediment trap and to keep it in good working order so that the quality of water at the shoreline is not affected by the sediment, debris, or other contaminants from construction.

In some locations, trenches for the new utility lines and drainage boxes will extend below the groundwater table to an elevation of approximately minus ten (-10) feet. Where necessary, the excavated trench will be dewatered or an alternative method will be used so that construction is accomplished in a dry trench (Figure IV-6). Excavation below

DEWATERING
SYSTEM FOR
TRENCH

Figure IV-6

JULY, 1984



water level will cause sediment to mix with the water in the trench. A dewatering system taking water directly from the trench will contain a high concentration of sediment. Therefore, where necessary, the Contractor will be required to treat this water before disposing it into any existing drainage system or into the sea. A suggested dewatering method is to install well casings, screened at the bottom and set at least five feet below the bottom of the excavation. Electric dewatering pumps can be used to pump the water from the well casings and discharge it into the existing drainage system. The granular material at the bottom of the excavation will serve as a filter and only heavy sediment-free water will be pumped from the trench. Where necessary, the Contractor will be required to install sediment and oil traps during construction to prevent the contamination of the shore waters. In all cases the water must be tested for contaminants and the discharge must meet all applicable Federal, State and City rules concerning water pollution prior to release to the drainage system. Discharge permits must be obtained from the City and County of Honolulu, the State Department of Health and the U. S. Corps of Engineers.

c. Erosion. The outlet of the new drainage system at the end of Keawe Street is adjacent to the stockpile of waste from the Kewalo Incinerator Plant. This outlet is an open channel 30 feet wide, the slope of which on the Diamond Head side extends into the waste pile. This will require erosion control measures to be implemented. The slope of the channel will be benched to reduce the chances of having the material on the slope slide into the channel. If necessary, temporary rock filter will be constructed to trap the sediment and debris from washing into the channel. Permanent erosion controls will be implemented when the park planned for the area is constructed.

d. Air Quality. Construction of Increment I and future increment improvements in Kaka'ako will generate temporary adverse impacts on the ambient air quality of the project area. The principal pollutants anticipated are fugitive dust from construction activities and hydrocarbon emissions or exhaust fumes from construction equipment and vehicles. The generation of fugitive dust is a matter of particular concern because of the ease with which it can be generated. Emission sources of this pollutant include excavation and filling activities, the hauling of construction materials and debris, the use of construction vehicles and equipment, the addition of vehicles belonging to construction workers, traffic congestion and general construction activities.

Although the generation of fugitive dust is a matter of concern, it is not anticipated to be a major impact. The majority of construction activities will be performed within existing roadways. Therefore, it is not anticipated that there will be any major earth moving operations that is normally associated with new roadways. Thus, the emission rate of

fugitive dust should be lower than levels associated with new roadway construction. However, due to the large size of the proposed drainage boxes, a large quantity of excavated material will have to be removed to another location. This will involve the utilization of trucks to haul away the material which will constitute another potential source of fugitive dust. At the present time it is undetermined where the excavated material will be transported to. However, the choice will be made prior to construction.

A potential adverse impact could result from the transporting of the excavation material from the project site to the "dump" site. The addition of heavy-duty trucks could adversely impact local traffic conditions.

Other excavation activities during construction will include cutting through existing pavement, trenching, backfilling and repairing. These activities will also affect the air quality of the project area.

The generation of hydrocarbon emissions or exhaust fumes will also adversely impact the ambient air quality of the project area. Sources of exhaust fumes include diesel-powered vehicles, equipment, and generators. The construction equipment will be in constant use during the period of construction and therefore will be continually emitting exhaust fumes.

Hydrocarbon emissions will also be generated by the additional presence of vehicles belonging to construction workers and as a result of traffic congestion generated during construction. It is not expected that the vehicles belonging to the construction personnel will adversely affect the air quality. However, the disruption of normal traffic patterns and anticipated traffic congestion will cause an increase in hydrocarbon levels.

Under normal tradewind conditions, dust and fumes will be dispersed away from the project site toward the ocean. However, during periods of "Kona" winds when the wind changes direction, the ambient air movement in the project area will decrease thereby lowering the ambient air quality. Due to the constant changing of meteorological conditions, the exact extent of the air quality impacts from the project's construction activities cannot be accurately projected.

To mitigate the effects of construction on air quality, all of the equipment must meet the requirements of State emission control laws. The State Department of Health will monitor equipment for compliance.

2. Biological Environment

a. Flora and Fauna. The implementation of Increment I and future increments is not expected to have a significant impact on the flora and fauna of the project area. It was determined in the initial Final EIS [1] that there are no endangered or threatened floral or faunal species in the project area.

b. Marine Biota. The marine biota of the nearshore coastal waters may be impacted by construction activities. Groundwater pumped from the trenches may have a deleterious effect on the harbor and nearshore biota. Dewatering of the trenches will result in some finely suspended sediments being discharged into the existing drainage system, which empties into the harbor, and out through the Keawe Street drainage channel. These suspended sediments can adversely affect the marine biota inhabiting these areas.

Mitigation of discharging sediment laden waters into the nearshore coastal waters would involve the use of wells and electric pumps where necessary. The wells would be installed prior to excavation near the installed sheet piles. The water pumped from the ground prior to excavation will be of a higher quality with less silt than if the trench were dewatered in the normal procedure. This would lessen the adverse impact on the marine biota.

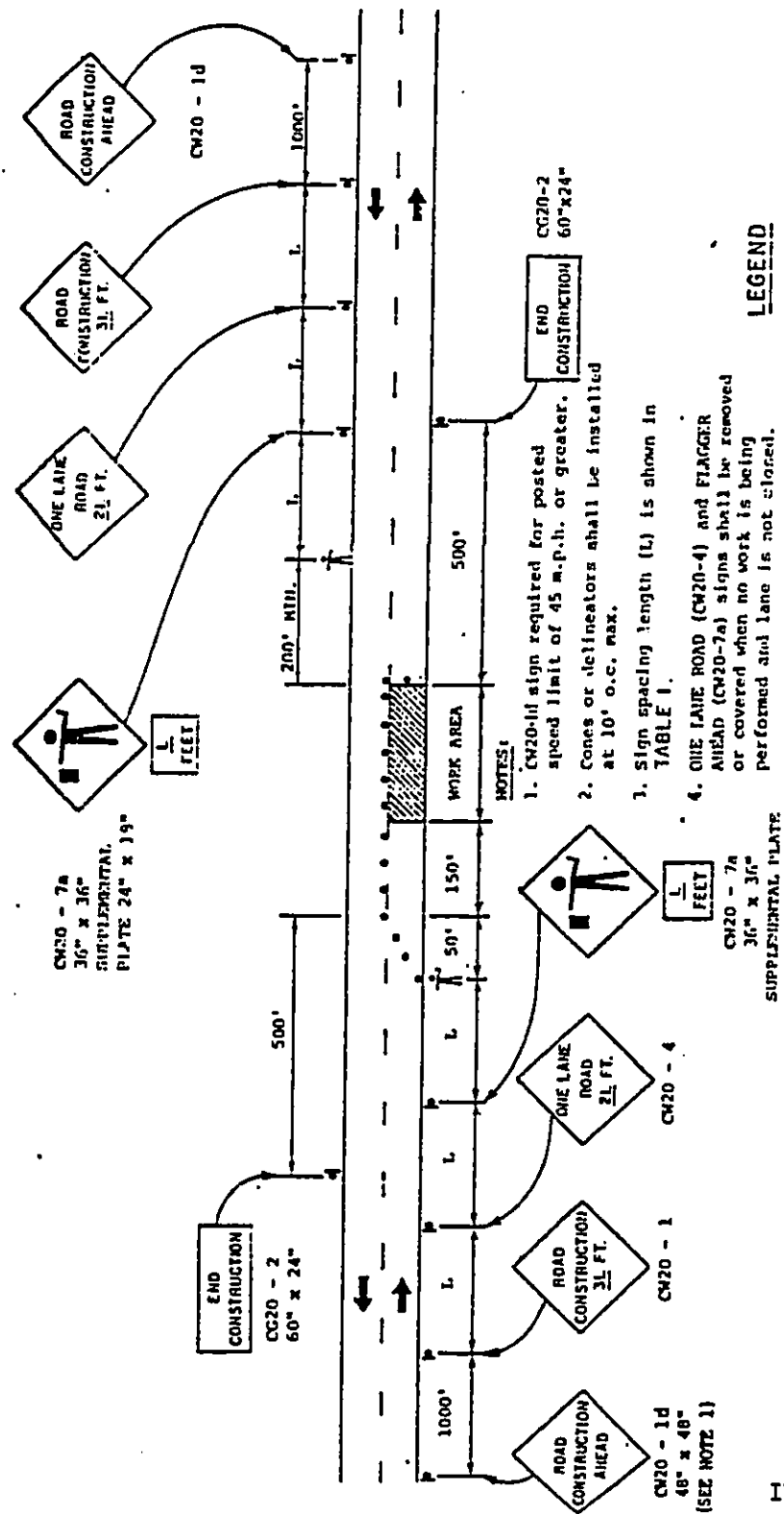
3. Social and Economic Environment

a. Traffic. The construction of the Increment I and future increment infrastructure improvements will result in the excavation of most of the existing streets in the area. Wherever possible, the locations of the new drainage structures, sewers, and utilities were selected so that traffic will be able to proceed through the area with the least amount of inconvenience. However, because the concrete box-type structures to be used in the drainage system varies in width from 4 to 32 feet, it will be necessary to close some of the streets off to vehicular traffic during construction. To minimize this inconvenience, the Contractor may be required to work 20 to 24 hours per day and to reopen the streets to traffic as soon as the trench has been backfilled and a temporary pavement laid to support traffic. Parking will not be permitted along the streets where construction is taking place and where traffic is being diverted around the construction area.

Mitigation of the anticipated traffic congestion will be accomplished by a traffic control plan. Figures IV-7 to IV-10 illustrate general schematics of traffic control.

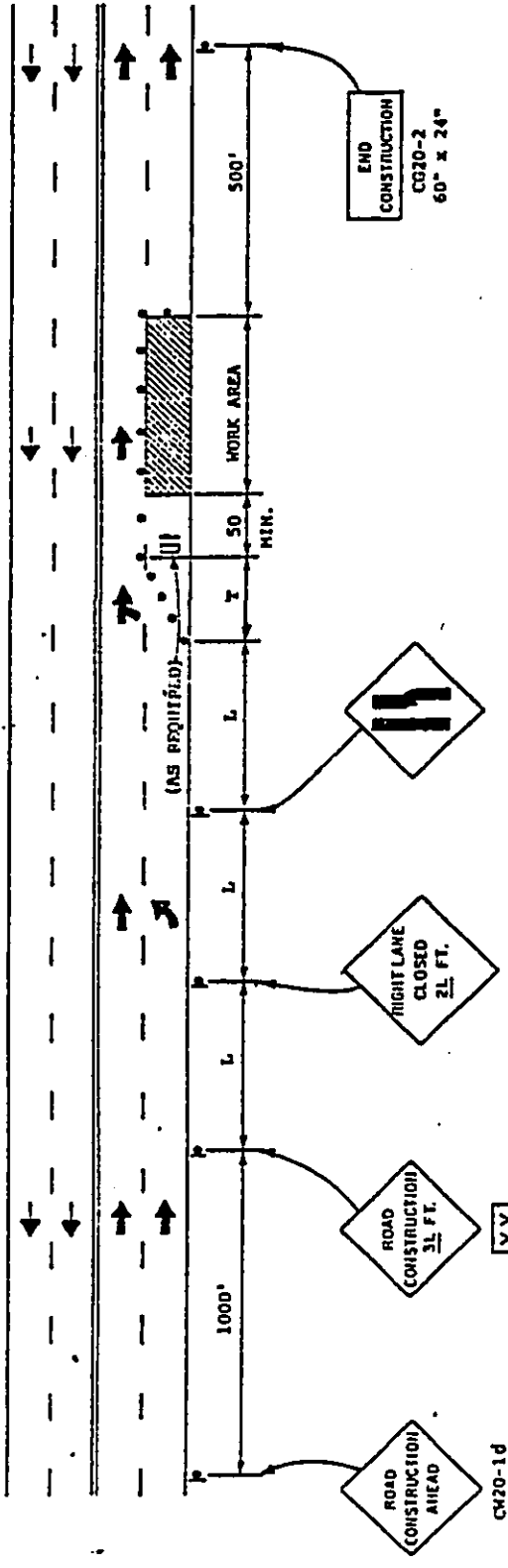
TRAFFIC CONTROL PLAN

Two-Lane
Highway -
One Lane
Closed



TRAFFIC
CONTROL PLAN

Multilane
Undivided
Highway -
Right Lane
Closed



- LEGEND
- SIGN
 - CONES OR DELINEATOR
 - DIRECTION OF TRAFFIC
 - FLASHING ARROW SIGNAL

- NOTES:
- CH20-1d sign required for posted speed limit of 45 m.p.h. or greater
 - See TABLE I for additional dimensions.
 - The advisory speed (w) shall be determined by the Engineer.

IV-39

TABLE I FOR TRAFFIC CONTROL PLAN

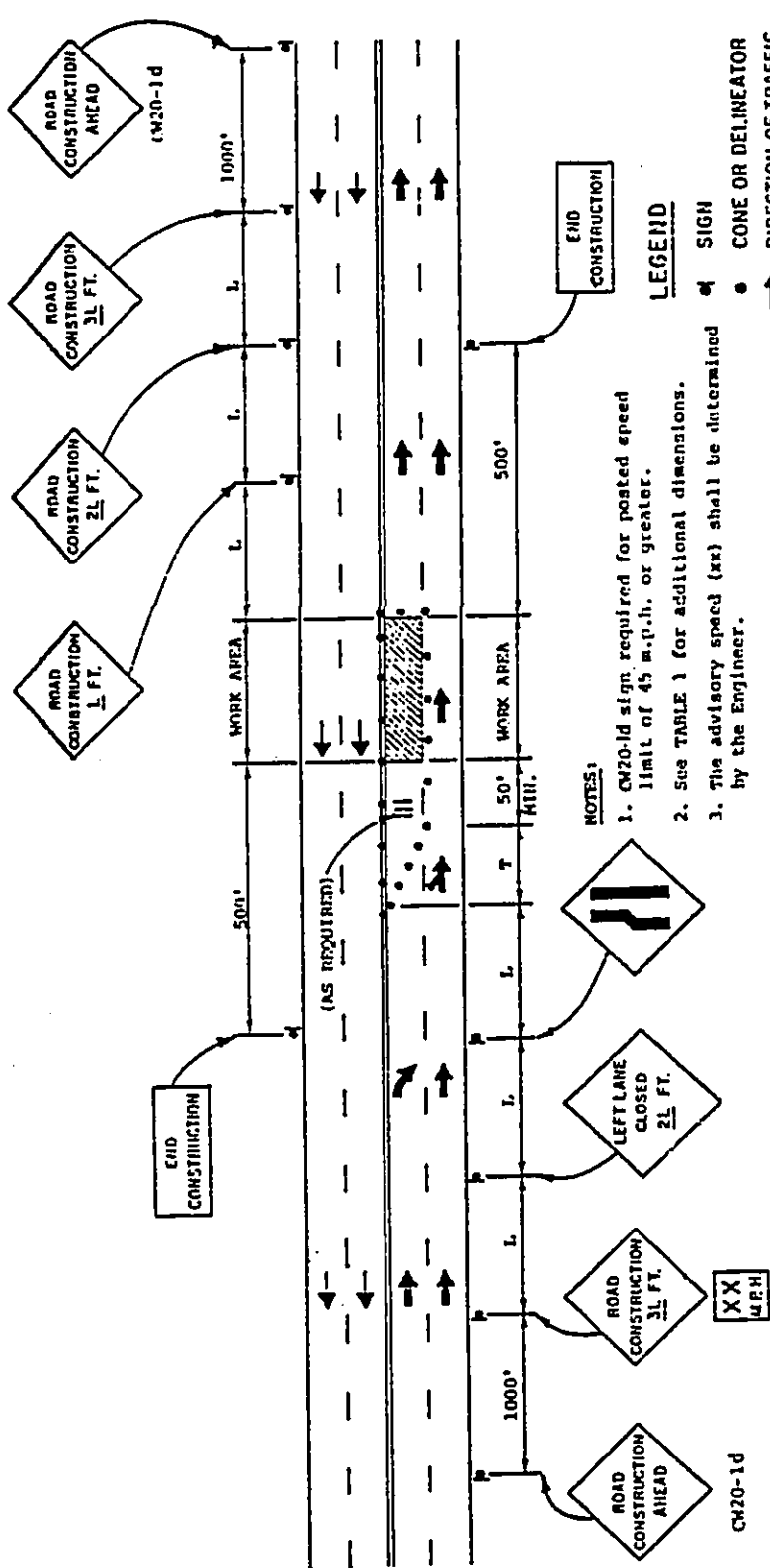
POSTED SPEED LIMIT (1) (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		SPACING OF CONES OR DELINEATORS (FEET) (3)		WORK AREA
		W = 12' OR LESS (2)	W = GREATER THAN 12' (2)	TAPER	TANGENT	
20	250	200	W x 17	20	20	10
25	250	200	W x 17	25	25	10
30	250	250	W x 20	30	30	10
35	250	250	W x 20	35	35	10
40	500	350	W x 30	40	40	10
45	500	550	W x 45	45	45	10
50	1000	600	W x 50	50	50	10
55	1000	700	W x 55	55	55	10

- NOTES:
- Use advisory speeds when posted
 - W = width of lane or offset
 - not applicable for two-lane highways

Figure IV-8
JULY, 1984

TRAFFIC CONTROL PLAN

Multilane
Undivided
Highway -
Left Lane
Closed



IV-40

TABLE 1 FOR TRAFFIC CONTROL PLAN

POSTED SPEED LIMIT (1) (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		SPACING OF CONES OR DELINEATORS (MFT) (3)		WORK AREA
		W = 12' OR LESS (2)	W = GREATER THAN 12' (2)	TAPER	TANGENT	
20	250	200	W x 17	20	20	10
25	250	200	W x 17	25	25	10
30	250	250	W x 20	30	30	10
35	250	250	W x 20	35	35	10
40	500	350	W x 30	40	40	10
45	500	550	W x 45	45	45	10
50	1000	600	W x 50	50	50	10
55	1000	700	W x 55	55	55	10

NOTES:

- 1 Use advisory speeds when posted
- 2 W = width of lane or offset
- 3 not applicable for two-lane highways

Figure IV-9

JULY, 1984

TRAFFIC CONTROL PLAN

Multilane Divided Highway - One Lane Closed

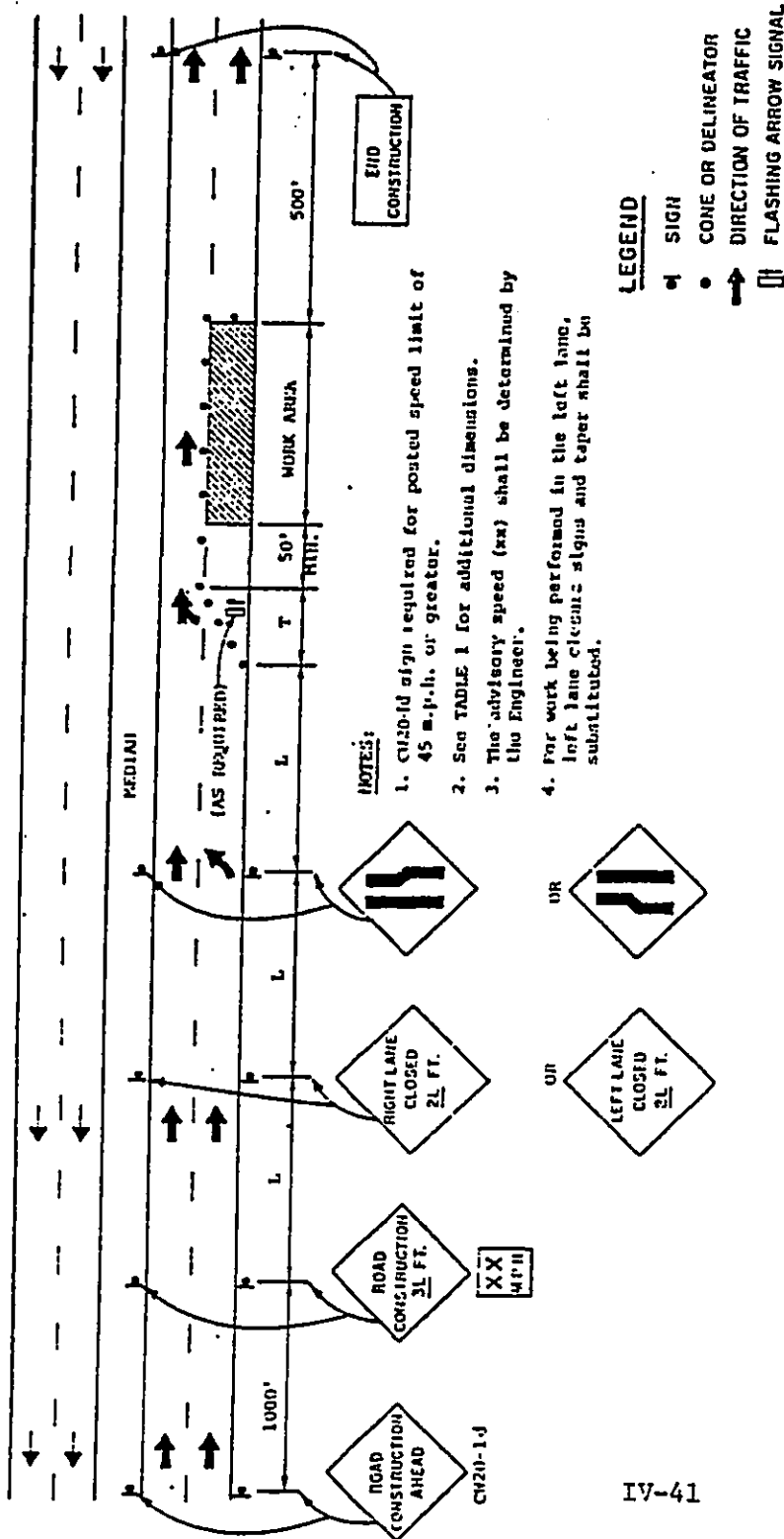


TABLE I FOR TRAFFIC CONTROL PLAN

POSTED SPEED LIMIT (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		SPACING OF CONES OR DELINEATORS (FEET) ③		WORK AREA
		W = 12' OR LESS ②	W = GREATER THAN 12' ②	TAPER	TANGENT	
20	250	200	W x 17	20	20	10
25	250	200	W x 17	25	25	10
30	250	250	W x 20	30	30	10
35	250	250	W x 20	35	35	10
40	500	350	W x 30	40	40	10
45	500	550	W x 45	45	45	10
50	1000	600	W x 50	50	50	10
55	1000	700	W x 55	55	55	10

NOTES:

- ① Use advisory speeds when posted
- ② W = width of lane or offset
- ③ not applicable for two-lane highways

Figure IV-10

JULY, 1984

Before proceeding with actual construction, the Contractor will contact each owner and/or tenant of property adjacent to the construction and work out arrangements for access to the property for the tenants and their visitors and/or customers. It may be impossible to provide access to some properties; in these cases, the Contractor will be required to minimize the amount of time access is limited.

b. Archaeological and Historical Sites. The construction will require the excavation of material in one of the oldest sections of Honolulu. The soils investigation report shows that the shoreline at one time was in the vicinity of Auahi Street and that alluvial deposits suggest ancient streams. In ancient times, it was preferred to live near the shore or along streams where the soil was rich and where food supply was plentiful. The Kaka'ako area was probably inhabited during the nineteenth century in certain non-marsh sections. Therefore, there is a possibility that archaeological findings may be discovered during excavations.

During the two construction phases, excavation will be a common activity along designated streets. There is a possibility that during these excavation operations, archaeological material may be uncovered. The existing land use patterns were built-up above what originally existed during pre- and post-contact periods.

An old map of the project area shows Kawaiahao Church and the Mission Houses where they now exist. The residence of King Kalaukaua was located along the original alignment of Punchbowl Street below Queen Street. Communications with the State Historic Preservation Office revealed that five grave sites were found in the area of Kalaukaua's residence. Another major land use was a leper hospital located between Keawe and Coral Streets mauka of Ala Moana Boulevard. A written account [20] of the area mentions that during the small pox epidemic in 1853, a pest hospital was established seaward of Kawaiahao Church. During this time over a thousand bodies were buried in close-packed and shallow graves in Kaka'ako. Presently, there are no records at the State Historic Preservation Office that give evidence that any of these bodies have been uncovered. Although the possibility exists that this site may be uncovered during excavation work, it is not expected due to the fact that all improvement work will be done within existing roadways.

There are also numerous Land Court Awards which provide indication of homes built prior to the development of Kaka'ako as it is today. Although any evidence of these structures may be gone, it is probable that the midden or trash heaps left by the occupants are still there. These deposits of cultural material give archaeologists an indication of a facet of a previous culture.

Excavation for roadway improvements and for the laying of new utility lines and drainage boxes may uncover cultural deposits or burials in the course of operation. Should this occur, all applicable requirements under the authority of the State Historic Preservation Office (SHPO) of the Department of Land and Natural Resources will be complied with.

Of the seventeen historical sites located in the Kaka'ako District and listed in the Final EIS [1] eleven are found within Increment I. Four of these sites are listed on the National Register of Historic Plans, one is eligible for nomination and the remainder are potentially eligible. Eight of the sites are found in construction Phase 1 of the project area and 3 are in construction Phase 2. Figure IV-11 locates these sites within the Increment I project area and Table IV-8 describes them and indicates their status relative to the National Register.

TABLE IV-8

HISTORICAL SITES WITHIN INCREMENT I OF THE KAKA'AKO DEVELOPMENT PLAN

<u>Resource</u>	<u>Tax Map Key</u>	<u>Status*</u>	<u>Phase 1</u>	<u>Phase 2</u>
1. Kawaiahao Church and Grounds	2-1-32:17	L	x	
2. Mission Houses	2-1-32:2	L	x	
3. Elizabeth Building	2-1-32:8	P	x	
4. McKesson-Robbins Building	2-1-32:10	P	x	
5. Honolulu Brewing & Malting Co.	2-1-31:21	L	x	
6. Old Kaka'ako Fire Station	2-1-31:18	L	x	
7. Hawaii Newspaper Agency Building	2-1-47:4	E	x	
8. Old Primo Brewery	2-1-49:51	P		x
9. Yacht Rigging and Swaging Building	2-1-48:4	P	x	
10. Kewalo Theater	2-1-51:1	P		x
11. Mother Waldron Playground	2-1-51:5	P		x

*NOTE: L - Listed on National Register of Historic Places.
 E - Eligible for Nomination to National Register of Historic Plates.
 P - Potentially Eligible for Nomination to National Register of Historic Plates

A total of three historic sites will be directly impacted by the proposed improvements for Increment I. All three are potentially eligible for listing on the National Register of

HISTORICAL SITES

LEGEND:

- ▲ REGISTERED
NATIONAL HISTORIC
SITE
- ELIGIBLE SITE FOR
NATIONAL REGISTER
- ⊗ POTENTIALLY
ELIGIBLE SITE FOR
NATIONAL REGISTER

Figure IV-11

JULY, 1984



500 0 500 1000
SCALE IN FEET

Historic Places. In Construction Phase 1, the Yacht Rigging and Swaging Building on the mauka side of Queen Street may be demolished in the process of roadway improvements. Right-of-way acquisition was limited to the mauka side to avoid extensively impacting the Kewalo Theater located on the makai side.

In construction of Phase 2, the Kewalo Theater and Mother Waldron Playground will both be impacted by the proposed improvements. Kewalo Theater is located at the corner of Cooke and Queen Streets and will be impacted by improvements to Cooke Street requiring the front 8 to 12 feet of the theater to be removed. The unique facade of the theater which rises above the structure is setback approximately 20 feet from the street. Therefore, this architecturally significant portion of the building will be preserved from demolition. The building will be refaced to match the existing architectural style.

Approximately 8,400 square feet of the Mother Waldron Playground will be "taken" as part of the proposed realignment of Halekauwila Street. The Mother Waldron Playground is potentially eligible for the National Register of Historic Places. Portions of a brick wall on the makai side of the playground may need to be removed for the widening of Pohukaina Street. Land acquisition of the mauka portion of the playground will affect portions of a brick wall, an AC paved court, seesaws, walls, benches, etc. If necessary, the brick walls will be reconstructed or relocated. Although a portion of the playground will be acquired for a roadway realignment, the Kaka'ako Plan proposes an approximately 54,000 square feet expansion of the playground, which will further mitigate the effect of the "taking."

c. Visual Quality. Heavy construction will adversely impact the visual quality of the project area. However, this is a temporary condition, and an overall improvement in the visual quality of the area will result once the infrastructure improvements are completed. For example, the current visual scene of uncurbed roads, lack of sidewalks, haphazard parking and overhead lines, will be eliminated. The areas of temporary impact will include the visual intrusion of construction equipment and activities and the adverse air quality due to increased levels of fugitive dust and hydrocarbon emissions.

All areas of construction will be visually impacted. However, an area of particular concern will be Ala Moana Boulevard which is a major thoroughfare and is also a part of the State Department of Transportation's Honolulu Gateway Beautification Project. It is the goal of this project to

provide "an attractive and appealing visual experience for those traveling along this corridor." [21] The Capitol Segment of the Downtown - Kaka'ako District encompasses Ala Moana Boulevard from the Federal Building to Ahui Street. This segment will be directly impacted by the project during excavation for and placement of the proposed drainage boxes from Pier 4 to Auahi Street, and where Cooke and Coral Streets cross Ala Moana Boulevard.

Mitigation of both the above visual impacts may be achieved by Contractors adhering to DOH regulations with regard to fugitive dust and exhaust fumes from construction equipment. The presence of construction equipment and activities will be mitigated by staging the excavation and placement of the drain box. This would involve the placement of the drain box in small sections, rather than all at once. This action would confine the construction equipment to a small area rather than having them stretched out along the roadways.

d. Utilities. Most of the water, sewer, electric, and telephone lines will be replaced. The Contractor will be required to make arrangements with each of the owners and/or tenants in the area to provide temporary service during construction and to make new service connections to the new utility lines. Except for electrical services, the Contractor will be responsible to provide water and sewer service connections from the new utility lines to existing properties. The tenant and/or owner of the property is responsible to make his own electrical arrangements for electrical service connections to the service outlet at his boundary.

e. Social and Economic Impact on Government, Businesses and Residents. A wide range of social and economic impacts will be generated by the implementation of the construction phases for Increment I and future increments. The construction will affect government, business and residential sectors of the project area and may be direct or indirect. Direct impacts will include the acquisition of land for right-of-way; the blocking of access to government buildings, businesses and residences during construction; rerouting of traffic; refacing of structures which will be partially demolished; and the total demolition of buildings. Indirect construction impacts include altered traffic patterns by commuters to avoid the construction in the project area.

Improvements to roadways and utilities will require the acquisition of property on certain streets within the project area (see Figure II-16). In construction of Phase 1, strip right-of-way acquisition of varying widths will be required along South, Pohukaina, Queen and Kawaihāo Streets. Strip acquisitions will be required on the Ewa side of South Street, approximately

between Ala Moana Boulevard and Reed Lane and between Kawaiahao Street and Kapiolani Boulevard. Right-of-way acquisitions will also be required on the Diamond Head side of South Street, approximately between Halekauwila and Kawaiahao Streets. Table IV-9 lists the properties affected by this action according to Tax Map Keys and streets.

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TABLE IV-9

PARCELS AFFECTED BY RIGHT-OF-WAY ACQUISITIONS FOR
INCREMENT I ROADWAY IMPROVEMENTS

<u>Tax Map Key</u>	<u>Street to be Improved</u>
2-1-29:1	South & Pohukaina Streets
2-1-29:2	South Street
2-1-30:1	Pohukaina Street
2-1-30:2	Pohukaina Street
2-1-30:3	Pohukaina Street
2-1-30:12	South Street
2-1-30:13	South Street
2-1-30:14	South Street
2-1-30:31	South Street
2-1-30:32	South Street
2-1-30:38	Pohukaina Street
2-1-30:39	Pohukaina Street
2-1-30:40	Pohukaina & South St.
2-1-30:41	Pohukaina Street
2-1-30:42	Pohukaina Street
2-1-30:45	South Street
2-1-31:1	South Street
2-1-31:2	South Street
2-1-31:15	South Street
2-1-31:18	South Street
2-1-31:30	South Street
2-1-31:33	South Street
2-1-32:1	South Street
2-1-32:7	South Street
2-1-32:10	South Street
2-1-32:11	South Street
2-1-47:1	Cooke Street
2-1-47:3	South Street
2-1:48:1	Cooke Street
2-1:48:2	Cooke & Kawaiahao St.
2-1:48:3	Queen Street
2-1:48:4	Queen Street

2-1-48:5	Queen Street
2-1-48:6	Kawaiahao & Queen St.
2-1-48:7	Kawaiahao Street
2-1-48:8	South Street
2-1-48:9	South Street
2-1-48:10	South Street
2-1-48:11	South Street
2-1-49:26	Cooke Street
2-1-49:27	Cooke Street
2-1-49:51	Cooke Street
2-1-50:3	Halekauwila Street
2-1-50:4	Halekauwila Street
2-1-50:7	Cooke Street
2-1-50:31	Cooke Street
2-1-50:32	Cooke Street
2-1-50:58	Halekauwila Street
2-1-51:1	Cooke Street
2-1-51:2	Cooke Street
2-1-51:3	Cooke & Pohukaina St.
2-1-51:4	Pohukaina & Halekauwila St.
2-1-51:5	Pohukaina & Halekauwila St.
2-1-51:9	Pohukaina Street
2-1-51:14	Cooke Street
2-1-51:19	Cooke & Halekauwila St.
2-1-51:22	Cooke Street
2-1-51:26	Cooke Street
2-1-51:32	Cooke Street
2-1-52:3	Cooke Street
2-1-52:7	Cooke Street
2-1-52:45	Halekauwila Street
2-1-53:5	Cooke Street
2-1-54:1	Cooke Street
2-1-54:22	South Street
2-1-55:1	Cooke Street
2-1-55:4	South Street
2-1-55:32	Cooke Street
2-1-55:33	Cooke Street
2-1-55:34	Cooke Street
2-1-55:35	Cooke Street
2-1-56:4	Cooke Street

NOTE: These parcels are approximate and subject to change.

Strip right-of-way acquisitions will be required on the mauka and makai sides of Pohukaina Street, between Punchbowl and South. Strip right-of-way acquisitions on the mauka side of Queen Street, between Emily and Cooke Streets, will be required. Strip right-of-way acquisitions on the makai side of Kawaiahao Street, between Emily and Cooke Streets will also be required.

Construction of Phase 2, Increment I will also require right-of-way acquisition to accommodate the new road right-of-way. Property owners and businesses on Cooke, Pohukaina and Halekauwila Streets will be impacted by the proposed roadway acquisitions. Property owners and businesses on Cooke Street will be impacted by right-of-way acquisitions particularly where a major realignment is planned for the Ewa side of the road between Pohukaina and Queen Streets (see Figure II-16). This realignment is necessary to improve sight distances for vehicular movement and to eliminate the sharp reverse curve and hazardous street intersections.

All the property owners on the Ewa side of Cooke Street between Ala Moana and Kapiolani Boulevards will be impacted by right-of-way acquisitions. On the Diamond Head side of Cooke Street, strip right-of-way acquisitions will be required between Ala Moana Boulevard and Pohukaina Street, and between Halekauwila and Kapiolani Boulevard.

On Pohukaina Street, strip right-of-way acquisitions will be required on the mauka side of the road, between South and Cooke Streets.

Roadway improvements to Halekauwila Street will include a major realignment to reduce the number of turns that presently exist. This realignment will occur between Coral and Cooke Streets. The new alignment will cut through the Mother Waldron Playground and the adjacent property. Approximately 9,000 sq. ft. of park area would be converted for roadway and utility use. Existing basketball courts on the mauka end of the park will be affected by the new alignment. Portions of the architecturally designed wall surrounding the park will be removed for roadway improvements. The realignment of Halekauwila Street will extend beyond the boundaries of Increment I to Koula Street. This improvement will involve the widening and realignment of Halekauwila to match the proposed realignment for Cooke Street.

Construction of roadway improvements for Increment I is presently expected to impact 20 buildings in the project area. Either a partial removal or demolition of these structures will be required. The majority of the affected buildings will require partial removal of the existing structure and refacing. Four are recommended for demolition. This decision is based on either the poor condition of the existing structure or extensive removal work which would no longer make the remaining portion of the building functionally useable. Table IV-10 lists the location of

those structures impacted by the proposed project and the amount of the building proposed to be taken in square feet. Figure IV-12 indicates building locations.

TABLE IV-10
BUILDINGS AFFECTED BY INCREMENT I
ROADWAY IMPROVEMENTS

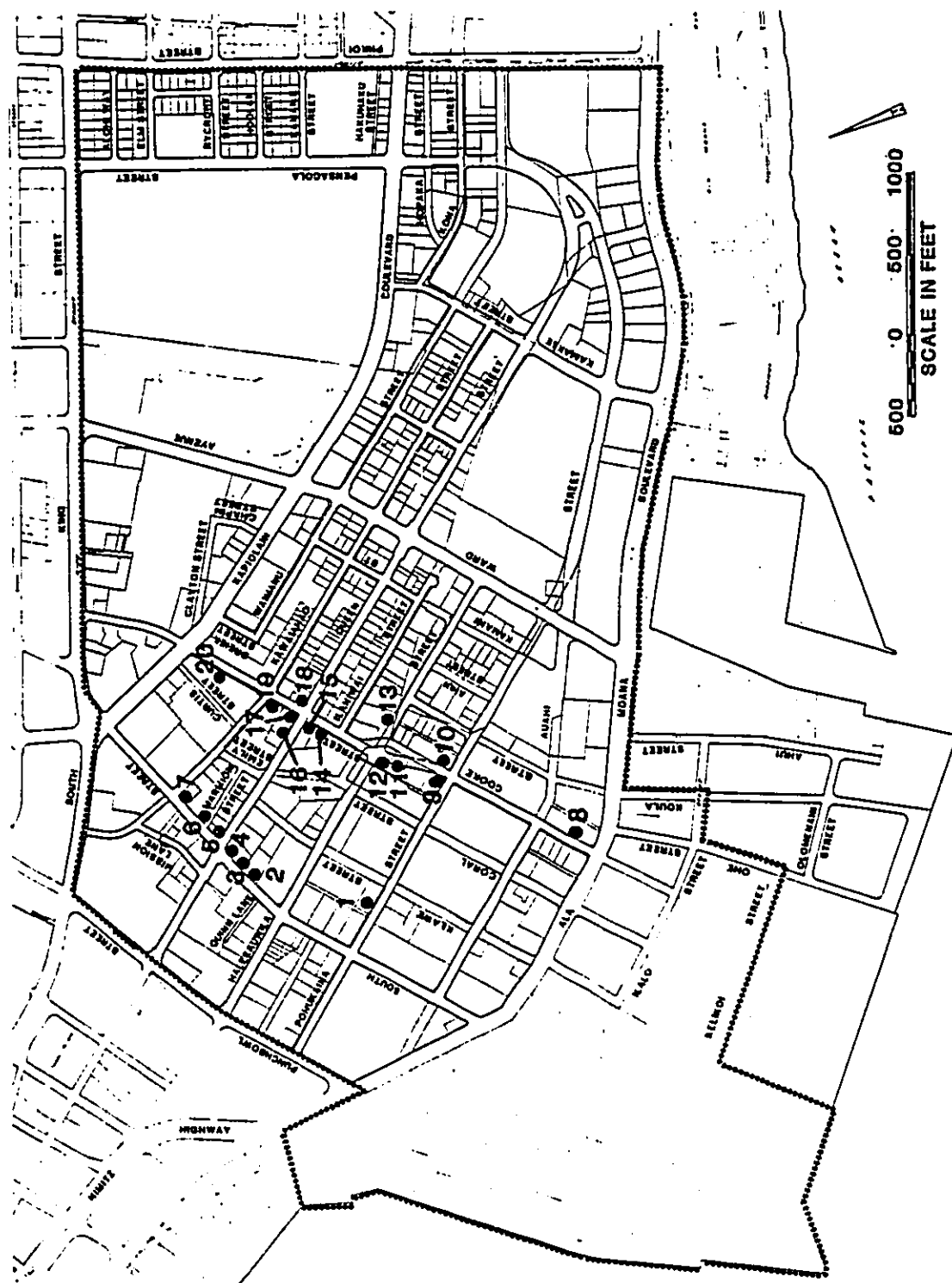
Bldg No.	Parcel TMK	Approximate Existing Floor Area	Approximate Portion of Bldg to be Removed (sq. ft)
1	2-1-30:1	22,000	760
2	2-1-31:33	4,060	1,500
3	2-1-31:1	2,600	400
4	2-1-31:1	2,950	300
5	2-1-48:8	4,360	1,600
6	2-1-48:9	1,920	
7	2-1-48:11	4,970	4,970*
8	2-1-56:4	15,760	(3,390)
9	2-1-51:3	20,800	330
10	2-1-52:7	4,460	2,600
			4,460*
11	2-1-51:32	21,550	(400)
12	2-1-51:22	8,180	6,200
13	2-1-50:4	29,000	3,200
14	2-1-51:14	4,250	4,600
15	2-1-51:1	10,900	1,520
16	2-1-48:4	1,680	500
			1,680*
17	2-1-48:1	9,050	(250)
			9,050*
18	2-1-49:26	5,080	(1,450)
			5,080*
19	2-1-48:2	14,000	(770)
20	2-1-47:1	6,440	2,500
			960

*Entire building to be demolished. Square footage in parenthesis is floor area actually affected by right-of-way acquisition for roadway improvement. Building is recommended for demolition due to poor condition of existing structure or extensive removal work such that remaining building would not be functionally useable.

Construction of the Phase 1 roadway improvements will affect eight structures in the project area. These are Buildings 2 through 7 and Buildings 16 and 17. Buildings 2 through 7 are located at the Diamond Head side of South Street between Halekauwila and Kawaihāo Streets. Portions of building 16 is located on Queen Street on the mauka side. Buildings 2 through 6 will require demolition and refacing. These structures will be

LEGEND:

- 9 LOCATION OF BUILDING ADJUSTMENT



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retained for continued use. Buildings 7, 16 and 17 will require complete demolition in the course of roadway improvements.

Building 16, the Yacht Rigging and Swaging Building, is recommended for complete demolition due to its physical condition and the amount of reconstruction that would be required for retaining the building. It should be noted that this building is a potential candidate for listing on the National Register of Historic Places due to its interesting roof design.

The rest of the buildings impacted by Increment I roadway improvements are included in Phase 2 with the exception of Buildings 8, 10, 13 and 18. These buildings are located outside the Increment I project boundaries but will be impacted by roadway improvements on Cooke and Halekauwila Streets. The widening and straightening of these two streets will require the partial demolition and renovation of Buildings 8, 10 and 13 and the total demolition of Building 18.

The remaining buildings which are located in the Phase 2 project area will be similarly impacted by right-of-way acquisition. The majority of the buildings are located on Cooke Street between Pohukaina Street and Kapiolani Boulevard. Building 8 is also on Cooke Street but is located near the Ala Moana Boulevard end of the proposed roadway improvements. Building 13 is located on Halekauwila Street outside the Increment I project boundary. With the exception of Building 10 all the structures in this construction phase will be refaced after adjustment and retained for use. It is recommended that Building 10 be demolished due to its poor physical condition.

Building 15 is known as Kewalo Theater. Like the Yacht Rigging and Swaging Building in Construction Phase 1, it is potentially eligible for the National Register of Historic Places. It is a "major surviving structure from the old Kaka'ako Community. It is also of architectural interest because of its facade and style of construction." [1] Therefore, following removal of the front portion of the building, the treatment of the refaced portion will match the architectural style of the existing building.

The implementation of the Increment I and future increment construction phases will result in a number of adverse impacts affecting the government, business and residential sectors of the Kaka'ako District. These impacts include stresses created by construction activities; disruption of government and business activities due to closed or limited access to vehicular and pedestrian traffic; traffic congestion due to loss of traveling lanes; rerouting and the presence of large construction equipment and vehicles in the project area; loss of on-street parking; and other construction-related inconveniences to local users and commuters during the period of construction.

The sense of social and economic well-being among businesses, residents, etc., within the project area will be adversely impacted during construction. The added stresses created by construction activities will affect local users, visitors and commuters to the project area. Local residents, businesses and government agencies located in the project area will be especially affected by the loss of land and/or building space; closed or limited access to their homes or businesses; dislocation; and loss of income. All these are stress-related and will adversely impact the sense of well-being of the project area's population.

There are numerous small businesses in the project area which will be affected by the roadway and utility improvements. Construction activities will include the excavation of large trenches which will necessitate the temporary closing or partial closing of some streets. Detours will be initiated to direct street traffic away from areas of construction and there will be times where no on-street parking will be allowed. These actions will create both social and economic impacts on businesses in the area. Some businesses will need to close when utilities are temporarily discontinued or if their building requires partial or total demolition and refacing. Businesses and residents may also require relocation assistance as in the case of buildings requiring total demolition. Relocation services and payments will be provided to eligible displacees in accordance with HCDA's relocation rules. The forms of assistance available to displacees are explained in Chapter II, Section E(1).

Although there are few residences in the Increment I project area, these will also be impacted in the same way as businesses by the construction activities.

Federal and State agencies will also be impacted by construction activities on the roadways. There are several agencies located on Punchbowl and Halekauwila Streets that will be impacted by the proposed roadway improvements. On Punchbowl Street there are the Prince Kuhio Federal Building, the State Department of Transportation and Labor, the State Tax Office, the State Department of Personnel Services, the State Department of Labor and Industrial Relations, the newly constructed First Circuit Courthouse, etc. On Halekauwila Street both the State Employee's Federal Credit Union and the Office of Environmental Quality Control will be impacted by construction during Increment I.

Although there will be temporary adverse impacts during construction, the Increment I improvements will have significant long-term benefits. The majority of the beneficial impacts generated by the construction of the infrastructure improvements

are discussed in the Final EIS of August 1983. Briefly, they include the reduction of hydrocarbon pollution in storm runoff due to the prohibition of on-street parking; significant improvement in local traffic conditions; an increase in the amount of vegetation in the district; an increase in industrial, commercial, and residential use; increased employment from the added business floor area; overall improvement in the quality of the environment; property tax revenues; etc. Construction activity will also increase employment opportunities by local construction firms and suppliers. These benefits are considered to justify implementation of the infrastructure improvements, notwithstanding unavoidable adverse impacts.

4. Commitment of Resources, Energy and Future Options

The implementation of proposed infrastructure improvements for Increment I and future increments will allow for the intensification of the existing land uses of this already urbanized area. The proposed improvements will not generate a commitment of new land resources.

The construction of proposed improvements will, however, foreclose future planning options in terms of alternate infrastructure designs.

The proposed improvements will also require an irretrievable and irreversible commitment of a number of resources for its completion. These resources will include capital, materials, manpower and energy. Financial, material and manpower resources will be irretrievably committed to the planning, design and construction of the improvements. Energy is another valuable resource which will be required for the completion of Increment I and future increments.

The project will also commit water resources after the construction phase is complete to service the new development. The effect of Increment I and future increments on Oahu's resources will be similar to those stated in Chapter IV for the Makai Area Plan.

5. Unavoidable Adverse Impacts

The unavoidable impacts associated with the construction of Increment I and future increments are those normally associated with construction activities. These include decreased air and water quality, increased traffic disruption and congestion, increased noise levels, and disruption of utility services. On a social and economic level, construction activities will adversely impact local businesses and create stresses on the social well-being of Kaka'ako's tenants. Businesses on all streets involving roadway and/or utility improvements will be impacted by construction activities. Those businesses located in buildings that are to be renovated or demolished will be especially affected.

The proposed improvements, however, will lead to more efficient land use and provide a more attractive urban environment for large numbers of people. These benefits are considered to justify implementation of the plan, notwithstanding unavoidable adverse impacts.

6. Relationship Between Short-Term Uses and Long-Term Productivity

The proposed improvements are expected to enhance the long-term vitality of this presently under-utilized urban area by upgrading infrastructure necessary for redevelopment and by providing additional public services and amenities. The major trade-off of the infrastructure improvements in Kaka'ako involves the disruption of existing businesses and residents in return for higher density commercial, industrial, and residential development. The proposed improvements do not pose significant long-term risks to the health or safety of residents or workers in Increment I and in the affected areas.

7. No Action Alternative for Infrastructure Improvements

The No Action alternative is the only alternative for infrastructure improvements. This alternative would consist of repealing the HCDA mandates and allowing Kaka'ako to redevelop in accordance with existing County zoning and land use plans. This would mean that redevelopment would be dependent upon the piecemeal initiatives of individual property owners and on the County capital improvement budget. Since adequate County funds are not available, the burden of infrastructure improvements would be placed upon the individual property owners. Those property owners desiring to develop to allow higher densities in Kaka'ako would have to do so at their own cost. Therefore, the time frame for full development under this alternative would be much longer than under the proposed plan.

8. Required Permits for Construction

A number of permits and variances will be required prior to implementing the construction phase. These are listed below:

o Federal

U. S. Corps of Engineers

- Department of the Army Permit for construction of structures or work in navigable waters

U. S. Signal Corps

- Permit or concurrence for removal of communication lines

o State of Hawaii

Department of Land and Natural Resources

- Concurrence with this Department regarding historic sites
- Conservation District Use Application (CDUA) Permit
- Notice of Intent to Drill
- Shoreline setback variance for construction in the shoreline area

Department of Transportation

- Written permit for any project involving permanent or temporary construction
- Approval for utilities and traffic rerouting

Department of Health

- National Pollutant Discharge Elimination System (NPDES) Permit
- Written Noise Permit
- Variance for 24-Hour construction
- Permit for Air Pollution
- Notification of work on sewer lines

o City and County of Honolulu

Department of Land Utilization

- Permit for the construction of any development or structure within Shoreline Management Area (SMA)

Department of Public Works

- Stockpiling Permit
- Grubbing Permit
- Grading Permit
- Building Permit
- Demolition Permit
- Dewatering Permit
- Excavation Permit

o Others

Hawaiian Telephone Company

- Permit or concurrence regarding work on utility lines

Hawaiian Electric Company

- Permit or concurrence regarding work on utility lines

Gas Company

- Permit or concurrence regarding work on utility lines

Cable TV

- Permit or concurrence regarding work on utility lines

Board of Water Supply

- Notification of drilling in project area

D. CONSEQUENCES OF GOVERNMENT ACTIONS PROPOSED TO IMPLEMENT THE MAKAI AREA PLAN

Government actions implementing the Makai Area Plan are similar to the actions under the Kaka'ako Plan for the mauka area. Therefore, Chapter IV, Section C of the Final EIS should be referred to for a discussion of the consequences of federal actions and State and County actions. This section describes the possible consequences of State and County actions specific to the makai area.

1. Uses of Existing Land and Buildings in Kaka'ako

Implementation of the Makai Area Plan would significantly alter the existing land use in two specific areas. The first is the 16 acres of State land zoned MUZ-R. Presently used as a major food distribution center and research station for the Department of Agriculture, the area could eventually be used for residential, commercial, and light industrial activities. The second area is the four blocks of privately-owned land fronting Ala Moana Boulevard. This area is zoned MUZ-C which would allow for development of intensive mixed-use projects. For the most part, the Fort Armstrong area will continue to be used for harbor-related activities.

2. Assessments on Private Property Owners

Along with public appropriations, improvement districts will be used to finance upgrading of roads, sewers, storm drains, and utilities. Assessments on property owners will be based on the extent to which they benefit from infrastructure improvements. The fact that all of the private land in the makai area is owned by a single major landowner should minimize conflicts concerning the timing of improvements and the ability to bear the burden of improvement district assessments.

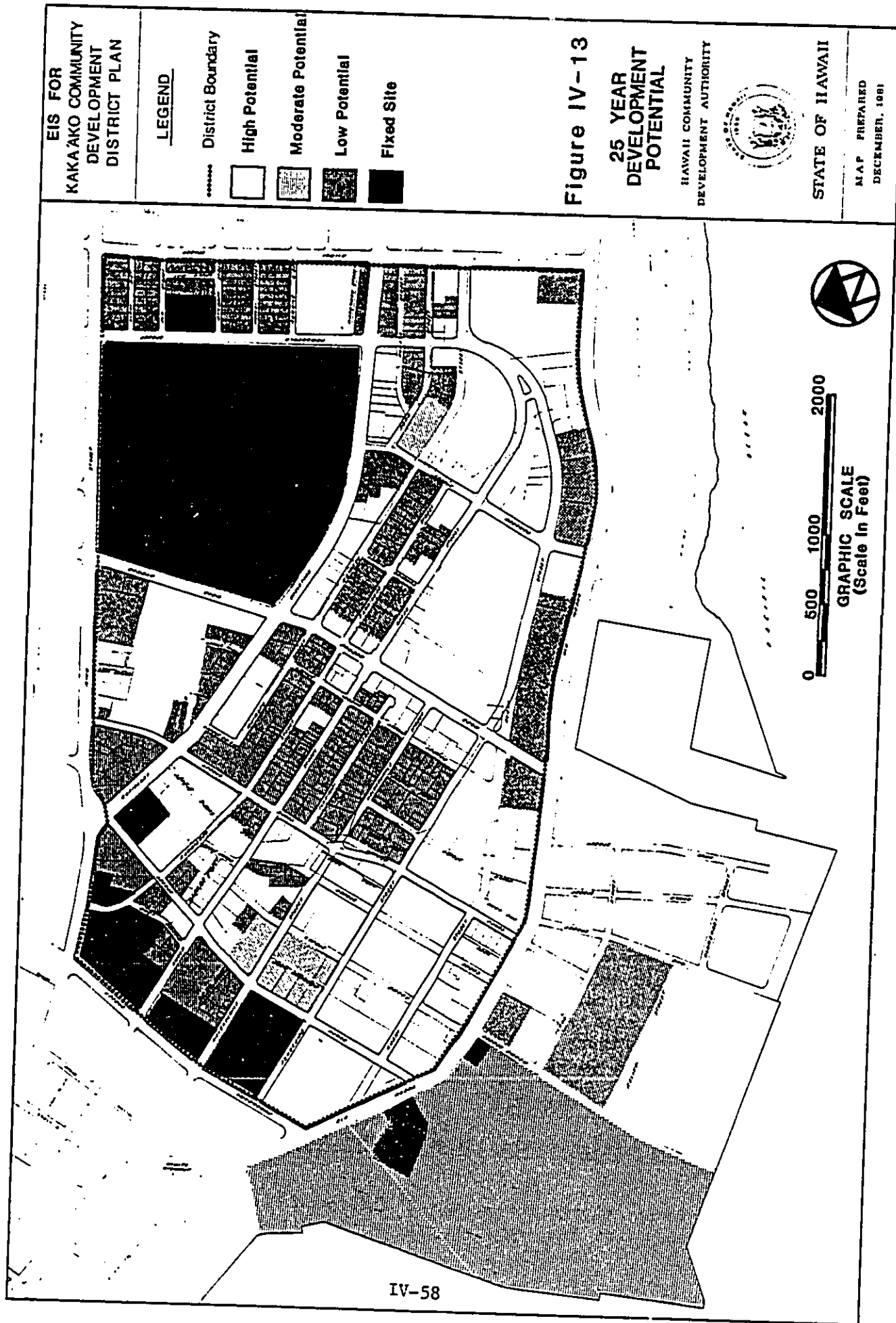
3. Timing of New Buildings

The Final EIS evaluated the 25-year development potential of parcels of land in the mauka area. Criteria used to signify a high development potential were: existing infrastructure was adequate and the lot was greater than 20,000 square feet; or, the parcel was owned by a major land owner and was contiguous to large parcels owned by land owners who could afford to upgrade infrastructure. Using the same criteria for the makai area would result in most of the entire privately-owned area being classified as having a high development potential. (See Figure IV-13) Government owned parcels have a low potential for development within the next 25 years.

E. SUMMARY OF MITIGATION MEASURES

1. Mitigation Measures Which Can Be Implemented Under the Plan and Rules

Many of the mitigation measures incorporated into the Makai Area Plan and Rules are the same as those described in the Final EIS.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Chapter IV, Section D of the Final EIS should be referred to for a discussion of mitigation measures concerning infrastructure, performance standards, housing, dedication requirements, urban design, historic structures, and the Waterfront Park. The discussion below updates the information in the Final EIS concerning mitigation measures dealing with relocation services and measures to alleviate problems of traffic and air quality. Furthermore, mitigation measures for the Increment I Improvement Program are described.

a. Relocation Payments and Services. Residents and businesses displaced by governmental action would be afforded relocation payments for actual and reasonable moving expenses, supplemental payments for replacement housing, optional payments to residents for moving expenses, and optional fixed payments to businesses for losses suffered. Displaced businesses may also be eligible to receive a payment for reimbursement of expenses in searching for a replacement business location and for actual direct losses of tangible personal property. If federal funds or programs are to be utilized, the Uniform Relocation and Real Property Acquisition Act of 1970 will apply.

Displacees of private development action will be entitled to relocation assistance, short of direct monetary payments. Such assistance will primarily be in terms of helping displacees find available replacement accommodations. This will be accomplished through the use of an inventory of available commercial and industrial space within Honolulu. This inventory has been developed by HCDA in collaboration with commercial and industrial real estate brokers.

Relocation facilities within Fort Armstrong are proposed to be made available to displacees on a temporary basis, provided that those displaced by government action would be afforded priority to such facilities. Approximately 90,000 square feet of covered warehouse space is proposed along with open paved areas adjacent to the warehouses. A nonprofit business relocation corporation has been established to improve, manage, operate, and maintain the temporary facilities according to policies adopted by its board of directors and conditions established by the State.

HCDA has established a relocation office for administration of its relocation program and rules. The relocation office will provide services to all families, individuals, businesses and nonprofit organizations to be displaced by public and private development actions within the Kaka'ako District.

HCDA'S relocation assistance program is described in further detail in Chapter II, Section E(1).

b. Roadway and Traffic Operation Measures. Traffic capacity at the key intersections could be increased by localized roadway widenings and modifications. These include the following:

Ward Avenue/Ala Moana Boulevard - The Diamond Head-bound approach of Ala Moana Boulevard could be widened to provide a second (double) left-turn lane on to Ward Avenue for mauka-bound traffic. This would reduce the proportion of signal time needed for the left turns or permit a larger number of vehicles to turn left at the intersection, and would reduce stacking of left-turn vehicles into and blockage of the Diamond Head direction through lanes. The present single left-turn lane should be lengthened if a double-lane is not implemented.

Kamakee Street/Ala Moana Boulevard - The Kamakee Street approach could be realigned with the existing intersection of the Ala Moana Park roadway to create a standard four-way intersection. This would permit left-turns to be made from makai-bound Kamakee Street and Diamond Head-bound Ala Moana Boulevard. It would also improve access to Kaka'ako areas Diamond Head of Ward Avenue and should divert some of the left-turn traffic from Ward Avenue, to Kamakee Street, thus improving conditions at the Ward Avenue-Ala Moana Boulevard intersection. This realignment would require an amendment to the present Plan.

Piikoi Street/Ala Moana Boulevard - Overall intersection traffic conditions could be improved by provision of a right-turn lane from Ewa-bound Ala Moana Boulevard onto mauka-bound Piikoi Street. This would reduce signal time needed for the Ewa-bound approach of Ala Moana Boulevard.

Cooke Street/Ala Moana Boulevard - Given the large number of left and right turning vehicles, the Cooke Street approach should be striped to provide separate left-turn through and right turn lanes to minimize the signal time needed for the Cooke Street traffic.

Ala Moana Boulevard Pedestrian Bridges - The proportion of signal time allotted to cross streets is largely determined by the time needed to permit pedestrian crossing of Ala Moana Boulevard rather than the cross street traffic volume. This would become increasingly critical with larger volumes of Ala Moana Boulevard traffic and more frequent pedestrian crossing of the street as the area uses intensify. Development of the pedestrian bridges to alleviate this conflict should have higher priority at the more critical intersections where high pedestrian activity is present, in particular, Ward Avenue.

Kapiolani Boulevard/Ward Avenue - Conditions at this intersection could be improved by removing parking and restriping the mauka-bound approach to provide a full-width right-turn lane. Evening peak period traffic operations would be improved for Ewa-bound Kapiolani Boulevard by construction of a bus pull-out or relocation of the near-side bus stop to an appropriate distance on the Ewa side of the intersection.

Future Public Transit System - The City and County of Honolulu is presently considering various transit options which

could potentially affect Kaka'ako area travel, in particular the development of a fixed-guideway transit system. Such a rail line (or lines) may traverse a portion of the Kaka'ako area. Development of a rail system could increase transit use for Kaka'ako trips by 3 to 5 percentage points above the level anticipated with bus services in 2000. This would reduce Kaka'ako vehicle trips by 350 to 600 during the morning and evening peak hours. Overall, traffic volumes (through and local) on Kaka'ako streets could be reduced by an average of 2 to 3 percent.

If a rail system is implemented with a line through or adjacent to Kaka'ako, high density developments along the rail line at stations/stops would be likely. Use of rail transit systems would be encouraged by an increase in residential/commercial/employment uses within walking distance of transit stops since travellers resist multiple changes from one transit mode to another (rail line to shuttle bus). Therefore, rail transit use in Kaka'ako will depend upon both the line location and the location of high-activity uses relative to the line.

The Kaka'ako District Plan proposes a shuttle bus service within Kaka'ako to encourage use of public transit for travel to, from, or within Kaka'ako. The shuttle bus service would be routed to serve travel to the major residential and employment sites, and would provide access to the stations/stops of any transit guideway through or adjacent to Kaka'ako.

Full Kaka'ako Roadway Plan - The year 2000 analyses indicate that Queen Street would be approaching its capacity as a two-way, 44-foot wide street. Development beyond 2000 would require additional east-west capacity such as the operation of Queen and Pohukaina Streets as a one-way street couple. This would increase the combined capacity of these two streets by about 20 percent. If the one-way conversion does not occur, Queen Street would require widening to a full four-lane street with left turn lanes similar to Ward Avenue (without on-street parking). A curb-to-curb width of 54 to 64 feet would be needed.

With the extension and conversion to one-way operations, Queen and Pohukaina Streets are expected to attract through trips from Ala Moana and Kapiolani Boulevards in addition to trips destined within Kaka'ako. Preliminary estimates indicate that 300 to 500 through vehicles would be diverted to the Queen/Pohukaina Street couple during the peak traffic hours, primarily trips between Downtown and the Ala Moana Center areas.

The extent and timing of implementation of the above mitigation measures will be determined in collaboration with the appropriate State and County agencies.

c. Air Quality. The Kaka'ako District and Makai Area Plan and Rules provide measures which may mitigate adverse impacts to ambient air quality. Measures to mitigate impacts on air quality include:

- o Since high CO levels are often associated with stop-and-go traffic, they can be mitigated to some extent by improved traffic engineering. Major traffic improvements planned include the provision of improving substandard streets to meet or exceed City and County standards and the implementation of one-way streets along Punchbowl and South Streets and Queen and Pohukaina Streets. With the further elimination of on-street parking on major streets, traffic flow should improve. In addition, the provisions for bike lanes and grade separated pedestrian walkways will to some extent reduce the need for vehicular travel. The City and County is also exploring the potential for a computer assisted signal control system.
- o Encouragement and greater use of public transit in congested urban areas can contribute significantly to reducing CO levels in those areas. The Kaka'ako District Plan provides for an internal transit system to be implemented at some future date as needs dictate.
- o High parking charges can also reduce the volume at an over-utilized parking garage and thereby reduce nearby CO levels.
- o Substitution of public transportation facilities in place of facilities which serve privately owned vehicles in congested urban areas can contribute to lower CO levels.
- o The inclusion of other uses on the garage sites will reduce the overall number of cars which utilize the site, thus reducing the potential concentration of carbon monoxide during low wind periods.

2. Summary of Mitigating Measures for Construction of Infrastructure Improvements

The impacts generated during the construction phases of infrastructure improvements are inherent to construction activities and are considered unavoidable. However, mitigation measures can be taken to lessen these impacts. The discussion below provides a summary of mitigative actions which may be taken to ameliorate the anticipated adverse impacts. These are discussed in detail in Section IV.C.

a. Noise and Vibration. Mitigative measures to control noise and vibration problems during construction include the following:

- o Contractors will follow current DOH noise regulations which cite defective mufflers on construction equipment and limit the hours of operating excessively noisy equipment and/or operations (i.e., pile driving).
- o Use of vibratory hammers which produce less noise and generate less vibrations.

- o Use of electric pumps for the dewatering system. These pumps operate at a quieter level than the usual diesel or gasoline driven pumps. Pumps also control the water level in excavated trenches, thus reducing the potential for transmission of sound waves through the water.
- b. Water Quality. Mitigative measures to maintain the nearshore water quality are summarized as follows:
 - o Where necessary, a temporary cofferdam and a debris-sediment trap or alternate method will be constructed at the drainage system outlets which will inhibit sediment, debris and other contaminants from impacting the nearshore waters. It is the responsibility of the contractor to maintain the debris-sediment trap in good working order.
 - o A possible mitigative measure dealing with sediment suspended in water in the excavated trenches is to install well castings with screened bottoms at least five feet below the bottom of the excavated areas. The granular material forming the bottom of the trench would serve as a filter for water in the trench and would remove heavy sediments from the water sucked in through the well. The resulting water would be free of the heavy sediments that would normally have been discharged into the existing drainage system if normal dewatering procedures were implemented.
- c. Air Quality. Mitigative measures to control the degradation of the ambient air quality caused by construction include the following:
 - o Adherence to DOH regulations regarding the control of fugitive dust and hydrocarbon emissions. These include, but are not limited to, sprinkling of water on excavated areas to control fugitive dust; the maintenance of air control devices on construction equipment; and covering of trucks transporting excavated or fill material.
 - o The formulation of a carefully devised traffic control plan to facilitate the movement of vehicles in and through the project area to reduce the levels of hydrocarbon emissions.
- d. Traffic Control. Measures to mitigate the adverse impacts on the vehicular and pedestrian traffic will be necessary. Ala Moana Boulevard is an area of concern due to its role as a major throughfare for both local users and commuters. Pedestrian traffic and vehicular traffic will be impacted on Ala Moana Boulevard as well as the other thoroughfares in the area. Mitigative measures dealing with these impacts include:
 - o When necessary, scheduling a 24-hour work schedule for improvements along Ala Moana Boulevard in order to expedite construction and to decrease the length of inconvenience to vehicular and pedestrian traffic along this street.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

- o Use of electric pumps for the dewatering system. These pumps operate at a quieter level than the usual diesel or gasoline driven pumps. Pumps also control the water level in excavated trenches, thus reducing the potential for transmission of sound waves through the water.

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- o When necessary, scheduling a 24-hour work schedule for improvements along Ala Moana Boulevard in order to expedite construction and to decrease the length of inconvenience to vehicular and pedestrian traffic along this street.

- o Close coordination with the State and County regarding temporary traffic rerouting plans during the construction phases.
 - o Notices to the public informing them of traffic restrictions in the project area.
 - o The use of precast drain boxes to expedite the construction of the large drain boxes.
- e. Visual Quality. Mitigation of the adversely impacted visual quality of the Increment I project area includes:
- o Adherence to DOH regulations applying to fugitive dust and exhaust fumes to ameliorate the impact of the air quality of the construction sites which is an important facet of visual quality.
 - o Staging of the excavation and placement of the proposed drain boxes.
- f. Utilities. Disruption of utility service during construction can be mitigated as follows:
- o Prior to excavation, the contractor should locate existing utility lines so that none are accidentally damaged during excavation activities.
 - o Lot owners, building occupants, etc. should be notified prior to removal of the existing service lines to their respective areas so that they can make necessary arrangements for that period.
 - o Arrangements should be made by property owners for immediate hookup to new lines during excavation. This will preclude an extended disruption of service and/or having excavation again at a later date to install service laterals.
- g. Social and Economic Impacts. These impacts are the most difficult to mitigate due to the complexity of the project's impacts on the human environment. Some mitigative measures to ameliorate the anticipated impacts include:
- o Restricting excavation and other construction activities by working on small sections at a time as opposed to the entire length of the street. This will reduce closing time of roadways in any section and allow businesses to resume within a shorter period of time.
 - o Where right-of-way acquisition is unavoidable, property owners and lessees will be compensated according to applicable regulations.
 - o Construction along Ala Moana Boulevard should be scheduled to complete the required work as soon as possible so the adverse impacts on vehicular and pedestrian traffic will be minimized.

- o Provisions will be made to install traffic bridges or steel plates so that all streets, lanes, driveways, garages, etc., will be accessible to traffic for the majority of the time.
- o Pedestrian walkways shall be maintained in passable condition or else other facilities will be provided.
- o When excavation activities cross street intersections, safe crossing for vehicles and pedestrians will be provided and maintained.
- o All necessary signs, lights, flares, barricades, and other protective facilities will be installed, provided and maintained and all necessary precautions for the protection, convenience and safety of the public will be taken. All applicable requirements relating to protective facilities and precautions will be complied with during construction.
- o Notices to the public pertaining to the restriction of vehicular traffic and any road closures in the affected work areas will be published prior to the disruption of traffic in a Honolulu daily newspaper of general circulation.
- o It is currently intended that precast box drains will be utilized for the various drain lines associated with the proposed project to keep the duration of the actual construction period to a minimum. This would minimize the inconvenience to adjacent residents and property owners.
- o Excavation, shoring and bracing that are carefully designed, planned and carried out would minimize settlement during excavation. A combination of deep cut-off sheet piling and recharging the groundwater outside the excavation area could be utilized to minimize the effects of dewatering.
- o Concerns regarding the original drainage alignment through the makai area were expressed in the Final EIS. These concerns were in reference to the effect of fresh water discharging into Kewalo Basin on live bait fish and the alignment of the second drainage line through the Foreign Trade Zone (FTZ). In response to this concern, the alignment was altered as follows:
 - The original alignment of the drainage box that would have emptied into Kewalo Basin is now realigned to exit directly to the ocean, via the Keawe Street drainage channel in the makai area.
 - The original drainage alignment through the FTZ was realigned along Ala Moana Boulevard so that FTZ facilities will not be impacted.

F. UNRESOLVED ISSUES

As discussed in Chapter II, Section E, the unresolved issues identified in the Final EIS have been resolved, or will be resolved as work on these areas progresses. There are no other unresolved issues at this point. Furthermore, HCDA does not anticipate having to proceed with an action without resolving major problems.

G. REFERENCES FOR CHAPTER IV

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CHAPTER V

COORDINATION, COMMENTS, AND RESPONSES

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Chester Koga, Sr. Planner
MSW and Cert. in Planning, Administration and Community Development
Seven years experience in regional and environmental planning.

David Curry, Planner
MURP, Urban and Regional Planning
Four years experience in regional and environmental planning.

2. Subconsultants

Wilbur Smith and Associates
Transportation Planning and Engineering

Darby-Ebisu and Associates
Specialist in monitoring and projecting noise

Environmental Management Consultant
Specialist in air quality monitoring and impact modeling

3. Increment I Improvement Planning and Engineering

R.M. Towill Corporation
677 Ala Moana Boulevard
Suite 1016
Honolulu, Hawaii 96813

Francis T. Sanpei, P.E., Chief Engineer
BS-Civil Engineering, MS Environmental Engineering
Fourteen years experience in environmental and planning studies

Walter O. Watson, P.E., Resident Engineer for Construction
BS-Civil Engineering
Five years in construction management

Vivian S. Takagaki, Environmental Analyst
BA-Anthropology
Three years experience in environmental and planning studies

Subconsultants:

Darby-Ebisu and Associates
Specialist in monitoring and projecting noise

Geolabs-Hawaii
Specialist in geology, foundation and soil engineering

B. Parties Consulted for the SEIS Preparation

An SEIS Preparation Notice was published in the OEQC Bulletin on June 8, 1984, pursuant to Chapter 343, HRS. A Legal Notice of Intent to prepare a Supplemental EIS was published in the Honolulu Star Bulletin and Advertiser on July 22, 1984. A similar "Notice of Intent" was published in the Federal Register on August 3, 1984.

The Draft SEIS was sent to public agencies, organizations and individual listed below. Parties who provided comments to the Preparation Notice are designated with an '*', parties commenting on the Draft SEIS are designated with an '+'. The written comments and response letters follow.

1. U.S. GOVERNMENT

- *+ Department of the Army, U.S. Corps of Engineers
- Department of the Interior
- *+ Fish and Wildlife Service
- Geological Survey
- *+ Environmental Protection Agency
- + Senator Spark Matsunaga
- + Department of Commerce (NOAA)
- + Department of Transportation

2. STATE OF HAWAII

- * Department of Accounting and General Services
- + Department of Education
- *+ Department of Health
- * Department of Land and Natural Resources
- *+ Department of Planning and Economic Development
- * Department of Social Services and Housing (Hawaii Housing Authority)
- * Department of Transportation
- + Office of Environmental Quality Control
- University of Hawaii
- *+ Environmental Center
- *+ Water Resources Research Center
- + Oahu Metropolitan Planning Organization
- + Department of Defense
- + Department of Agriculture

3. CITY AND COUNTY OF HONOLULU

- *+ Board of Water Supply
- * Building Department
- *+ Department of General Planning
- *+ Department of Housing and Community Development
- *+ Department of Land Utilization
- + Department of Parks and Recreation
- *+ Department of Public Works
- * Department of Transportation Services
- Office of Council Services
- * Office of the Managing Director
- *+ Police Department
- *+ Fire Department
- * Councilwoman Marilyn Bornhorst

4. ORGANIZATIONS

- Ala Moana Hawaii Properties
- * Ala Moana/Kakaako Neighborhood Board
- American Lung Association
- * Building Owners and Managers Association
- Citizens Against Noise
- Construction Industry Legislative Organization
- Downtown Improvement Association
- Gasco, Inc.
- *+ Hawaiian Electric Company
- Hawaiian Historical Society
- *+ Hawaiian Telephone Company
- Kakaako Business Association
- League of Women Voters
- + Life of the Land
- Oahu Development Conference
- People for Sensible Growth
- Sierra Club
- The Outdoor Circle
- + Trustees of the Bernice P. Bishop Estate
- Tuna Boat Owners Co-op. Inc.
- Victoria Ward, Limited

C. COMMENTS ON THE PREPARATION NOTICE AND NOTICE OF INTENT



United States Department of the Interior

FISH AND WILDLIFE SERVICE
100 ALA MOANA BOULEVARD, SUITE 100
HONOLULU, HAWAII 96850
P.O. BOX 30007
HONOLULU, HAWAII 96850
AUG 22 1984
ES Room 6307
AUG 21 1984

Mr. Frank Johnson
Environmental Officer
Department of Housing & Urban Development
P.O. Box 30007
Honolulu, Hawaii 96850

Dear Mr. Johnson:

This letter is in response to your Notice of Intent (NOI) to prepare a Supplemental Environmental Impact Statement (SEIS) for the Kaka'ako Community Development Plan, Oahu, Hawaii (49 FR 31158-31159). The Service recommends that the SEIS evaluate the effects of all alternative plans upon nearshore water quality. We further urge that opportunities to enhance urban recreational fishing (i.e. public piers, jetties) and nature study be included as mitigation measures.

Due to limited manpower and fiscal resources, the Service is unable to serve as a "cooperating agency" in the preparation of the SEIS at this time. However, we invite you to utilize our library and other technical information sources during the preparation of the SEIS.

Sincerely yours,

Ernest Kosaka
Ernest Kosaka
Pacific Islands Administrator

cc: OEPR, Washington, D.C.
DOI, San Francisco
DLNR, Honolulu
FWS, Portland, OR (AHK)
FWS/EC, Washington, D.C.



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 100
Honolulu, Hawaii 96813
(808) 548-7180

June 27, 1984

Mr. Ernest Kosaka, Project Leader
Office of Environmental Services
U. S. Department of the Interior
Fish and Wildlife Service
P. O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Re: Supplemental EIS Preparation Notice
for the Kaka'ako Community Development
District Plan

Thank you for your letters of May 25, 1984 and June 15, 1984 concerning the subject Supplemental EIS Preparation Notice.

We are well aware of the necessity to protect our wildlife resources and have taken steps to identify any endangered or threatened flora and fauna in the area. Based on our studies, the area does not contain any endangered or threatened species. Further, we feel that the improvements contemplated will not endanger the marine flora or fauna of near shore waters.

A copy of the Draft Supplemental EIS will be provided to your agency for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director



United States Department of the Interior

FISH AND WILDLIFE SERVICE
100 ALA MOANA BOULEVARD
P. O. BOX 50187
HONOLULU, HAWAII 96813

RECEIVED
ZS
Room 6307
MAY 25 1984

Mr. Rex D. Johnson
Executive Director, Hawaii Community
Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

HAWAII COMMUNITY
DEVELOPMENT AUTHORITY
AUTORITY

Re: Preparation Notice, Supplemental
EIS, Kakaako Community
Development District Plan

Dear Mr. Johnson:

Due to current manpower and budget restrictions, the Office of Environmental Services cannot devote the time necessary to conduct a thorough review of fish and wildlife concerns associated with the referenced action at this time. We strongly recommend that you consult directly with the State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife, and consider their recommendations in your project planning.

Please be advised that this notification does not abrogate your responsibilities to comply with the requirements of the Fish and Wildlife Coordination Act, nor does it represent Service approval of, or support for, the proposed activity. The Service may review future actions related to this proposal should administrative constraints be alleviated or if adverse impacts to significant fish and wildlife resources are identified. Please continue to keep this office apprised of the project's status.

Sincerely yours,

Ernest Kosaka
Ernest Kosaka
Project Leader
Office of Environmental Services

cc: INFS-UPTO
HDFAW
EPA, San Francisco



United States Department of the Interior

FISH AND WILDLIFE SERVICE
100 ALA MOANA BOULEVARD
P. O. BOX 50187
HONOLULU, HAWAII 96813

RECEIVED
ZS
Room 6307

JUN 15 1984

Mr. Rex D. Johnson
Executive Director, Hawaii Community
Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Re: Preparation Notice for a
Supplemental EIS for the Kakaako
Community Development District
Plan

Dear Mr. Johnson:

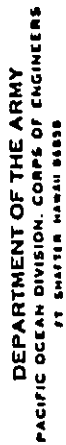
We have no additional comments to offer at this time.

Sincerely yours,

Peter A. Hume
Ernest Kosaka
Project Leader
Office of Environmental Services

cc: INFS - UPTO
HDFAW
HDOAR
EPA, San Francisco





June 26, 1984

RECEIVED

•24 JUL 29 AM 10 17

... JULY
DECEMBER
SECURITY

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

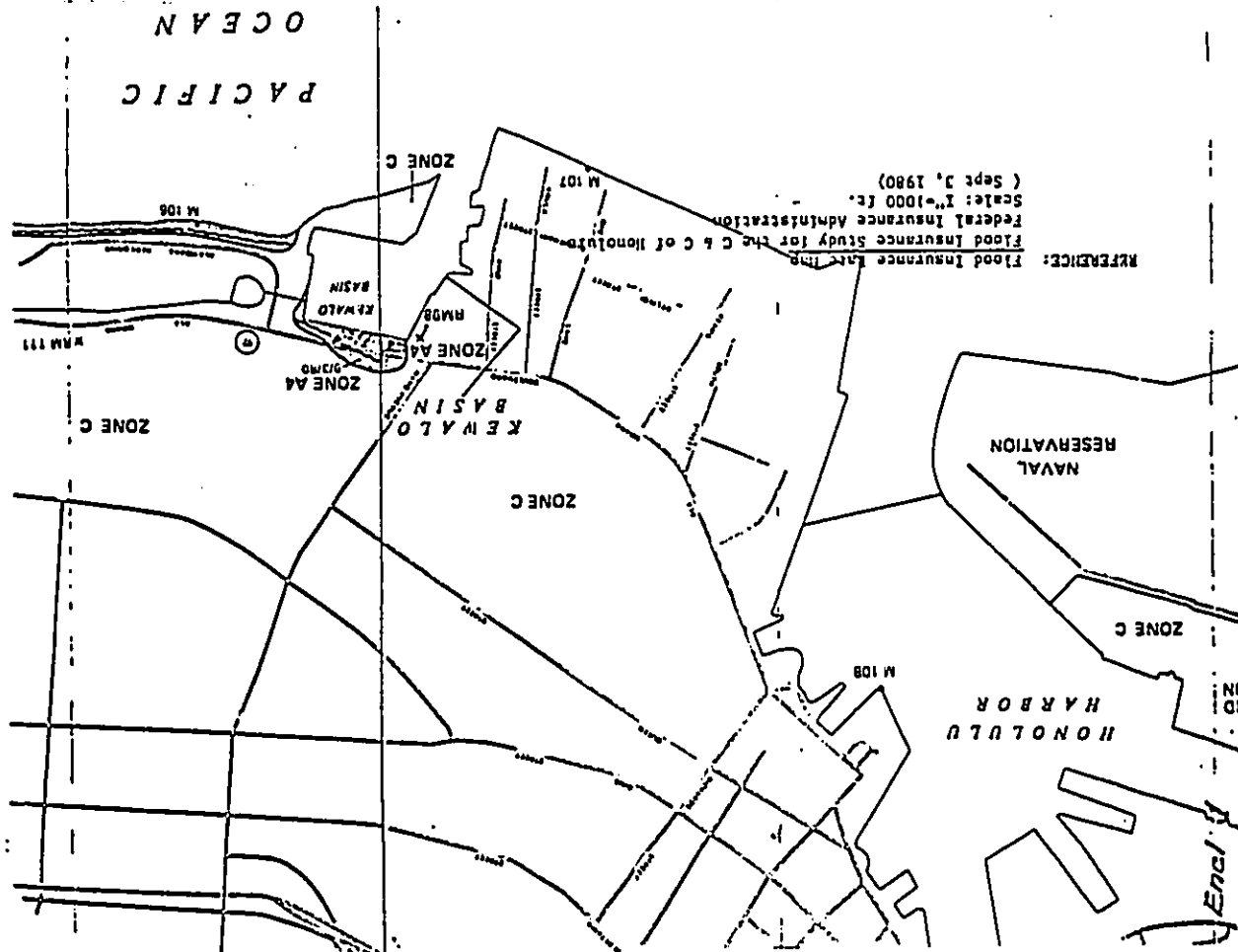
Thank you for the opportunity to review and comment on the Preparation Notice for a Supplemental EIS for the Kakaako Community Development District Plan. The following comments are offered:

- a. Any work within the navigable waters of the United States will require a Department of the Army permit from the Corps of Engineers.
- b. A portion of the shoreline area near Kewalo Basin is designated Zone A4 and is subject to tsunami inundation according to the flood hazard map (Enclosure 1), prepared by the Federal Insurance Administration as part of the Flood Insurance Study for the City and County of Honolulu. The entire shoreline is not, therefore, only designated by Zone C or area of minimal flooding, although most of the Kakaako project development site does fall within the Zone C category. Similarly, this Zone A4 area is inland of the shoreline and is considered within the regulatory flood plain.

Sincerely,

W. E. Lawrence
Kirkuk Company
Chief, Engineering Division

Enclosure





State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Asynthis
Chairman
Kenneth F. Brown
President
Rex D. Johnson
Executive Director

July 20, 1984

Mr. Kisuk Cheung, Chief
Engineering Division
U. S. Army Corps of
Engineers
Federal Building
Room 5124
300 Ala Moana Boulevard
Honolulu, Hawaii 96850

Dear Mr. Cheung:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of June 26, 1984 concerning
the subject Supplemental EIS Preparation Notice.

V-8

We anticipate that a drainage improvement project
proposed within Honolulu Harbor will require a Department
of the Army Permit from the Corps of Engineers. The
necessary permit documents will be prepared and submitted
to the COE for review.

We will include your comments relating to the flood
hazard zones.

A copy of the Draft Supplemental EIS will be provided
to your agency for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
215 Fremont Street
San Francisco, Ca 94105

RECEIVED
DEPT. OF HUD
HON. AREA OFFICE
OCT 11 1984
47 4 '84

Frank Johnson, Environmental Officer
Department of Housing and Urban Development
300 Ala Moana Blvd.
Box 50007
Honolulu, Hawaii 96850

Dear Mr. Johnson:

The Environmental Protection Agency (EPA) has reviewed the Notice of Intent for a Supplemental Environmental Impact Statement (SEIS) titled MAKAI AREA PLAN, KAKA'AKO COMMUNITY DISTRICT, CITY OF HONOLULU, HAWAII.

Our review is based on the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508). We have the enclosed comments to offer at this time.

We appreciate the opportunity to comment on the proposed project. Please send five copies of the Supplemental Environmental Impact Statement (SEIS) to this office at the same time it is officially filed with our Washington, D.C. office. We also request notification of any public hearings to be held on this project. If you have any questions, please contact Patrick J. Colter, Federal Activities Branch, (415) 974-0948 or FTS 454-0948.

Sincerely yours,

Patrick J. Colter
Patrick J. Colter, Chief
Federal Activities Branch

Enclosure (5 pages)

-1-

Air Quality Comments

1. A DEIS and an FEIS have been prepared for Kaka'ako and they have been reviewed by EPA. Our comments (October 7, 1982 and October 26, 1983) noted our concerns regarding that project. We felt that our concerns were not completely resolved in the FEIS.

Our concerns were in the following interrelated areas.

- Predicted violations of State and Federal 8-hour carbon monoxide (CO) standards within the project,
- Lack of adequate mitigation measures to prevent such violations,
- The possibility that the regional traffic impacts of the project may have been underestimated,
- Unrealistic assumptions regarding traffic growth relative to population growth,
- Apparently inadequate coordination with the Oahu Metropolitan Planning Organization (OMPO).

We would hope that by now, concerns b, c, d, and e have been resolved, and that "a" will no longer be a concern.

2. EPA therefore urges that the SEIS:

- Present a realistic and detailed description of the cumulative impacts of both projects upon vehicle traffic,
- Include realistic assumptions regarding traffic increases,
- Document that the analysis of both projects, including all planning assumptions, has been fully coordinated with OMPO and with the Department of Health, and that these agencies have no substantial objections to the projects as they are proposed,
- Describe in detail the air quality modeling that has been performed and the results thereof, including the cumulative impacts of both projects upon 1-hour and 8-hour CO concentrations at critical points within the projects,
- In the event that such modeling forecasts violations of CO standards, describe and make binding commitments to mitigation measures which are demonstrably adequate to prevent such violations. This should include, if necessary, scaling down the projects.

Water Quality Control

For each alternative the SEIS should:

1. Completely describe current drainage patterns in the project locale.
2. Assess how altering drainage patterns and characteristics will affect drainage hydrology, surface runoff, erosion potential, soils, vegetation, and therefore water quality.
3. Discuss the project's conformity with State and local water quality management plans and Federal-State water quality standards.
4. Evaluate the potential for increased toxicity in the stream due to either discharge to the streams or runoff from surrounding areas.
5. Discuss the present capacity of the existing sewage conveyance and treatment system and the potential sewage flow increases as a result of the project. Assess the impact of increased flows on the existing system, especially on the system's ability to meet National Pollutant Elimination System (NPDES) or State-issued permit conditions.
6. Identify appropriate mitigation measures to protect water quality both during and after project construction.
7. HUD should be aware that the Pearl Harbor and southeastern Honolulu area is now petitioned as a Sole Source Drinking Water Aquifer. The maps on the following 2 pages indicate that a major portion of the island is included in this petition (shaded area). The numbered sections to the southeast of the petitioned area are being evaluated by EPA for possible inclusion into the designated area. The development plan should evaluate potential impacts from the project that may affect this aquifer. Close liaison with EPA Region 9's Groundwater Office, the Underground Injection Control Section and the Hawaii Branch of the Water Management Division is advised.
8. The SEIS should discuss cumulative impacts on the already overburdened groundwater resource in the project vicinity. Oahu is now experiencing a water shortage problem and the SEIS must address mitigation to resolve the problem of obtaining potable water for the project area.

V-15
10

General Comments

1. The SEIS should rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated (40 CFR 1502.14).
2. The SEIS should clearly explain the relationship between the project's cost benefit analysis and any analyses of unquantified environmental impacts, values, and amenities. (40 CFR 1502.23).

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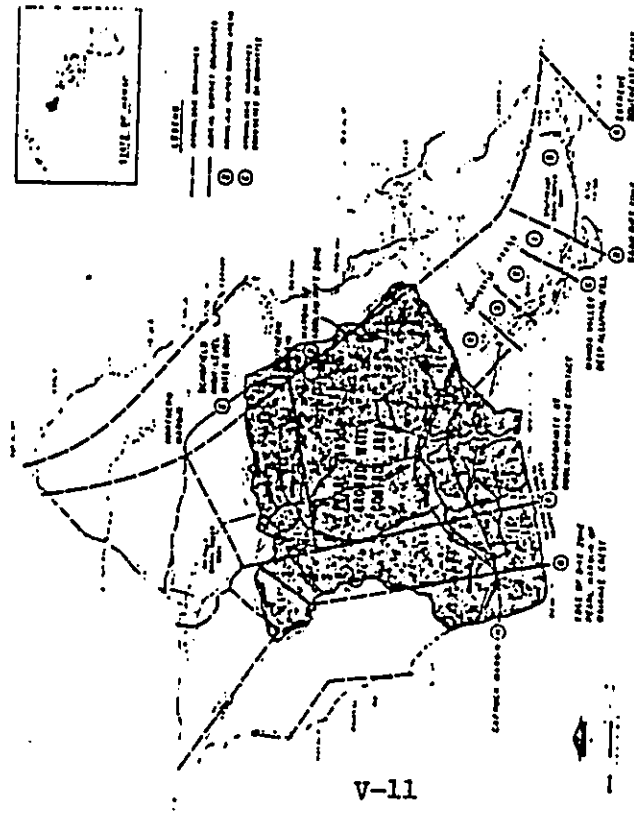


Figure 1. Pearl Harbor Ground Water Control Area (GWCA).
Showing Hydrologic Boundaries Considered by the Committee

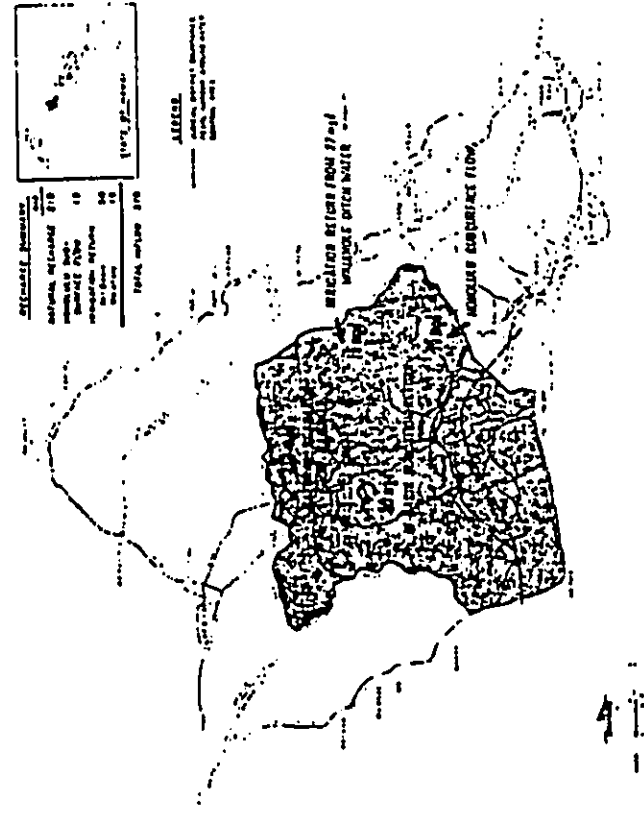


Figure 3. Recharge to the Pearl Harbor GWCA.
Derived from Inflow Method



U.S. Department of Housing and Urban Development
Honolulu Area Office, Region IX
300 Ala Moana Blvd., Room 3318
Honolulu, Hawaii 96850

October 25, 1984

Ms. Loretta Kahn Barasmanian, Chief
Federal Activities Branch
U.S. Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

Dear Ms. Barasmanian:

Subject: Notice of Intent to Prepare Supplemental EIS for
the Kaka'ako Community Development District Plan

Thank you for your letter of October 1, 1984 concerning the
subject Supplemental EIS Notice of Intent.

Air Quality

The Supplemental EIS will contain a special study that re-examines impacts to air quality as a result of the inclusion of the Makai Area Plan and the cumulative impacts that may result from the redevelopment of the Kaka'ako District and makai area. Noise impacts and traffic impacts will also be re-examined.

The study shows the following findings:

1. There will be a decrease in carbon monoxide, hydrocarbons, nitrogen oxides, and lead.
2. There will be a small increase in automotive particulates and sulfur dioxides.
3. Ambient levels of carbon monoxide will continue to show occasional violations of 1-hour and 8-hour state standards.
4. Traffic and transit solutions need to be studied at key intersections and parking structures to mitigate against high levels of CO.

The new traffic study mentioned above has been coordinated with the Oahu Metropolitan Planning Organization (OMPO).

Water Quality

The Kaka'ako Plans do not include any alteration of the current drainage pattern. The plans will be designed to improve the current inadequate drainage system to accommodate peak discharge.

The Kaka'ako Plan will not affect the ground water in the Pearl Harbor region since no ground water injection is planned. Sewerage discharge will be through current systems now in place.

Thank you for your offer of assistance. A copy of the Draft Supplemental EIS will be provided to your agency for review and comment when it becomes available.

Very truly yours,

Robert K. Finkel
Robert K. Finkel
Manager

cc: ✓ Mr. Rex D. Johnson, Executive Director
Mr. Mugi Planning and Research, Inc.

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
HONOLULU AREA OFFICE, REGION IX
300 ALA MOANA BLVD., ROOM 3318
HONOLULU, HAWAII 96850

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P. O. BOX 117, HONOLULU, HAWAII 96810



STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P. O. BOX 117, HONOLULU, HAWAII 96810

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P. O. BOX 117, HONOLULU, HAWAII 96810

JUN 19 1984

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development
Authority
677 Ala Moana Boulevard
Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental
EIS for the Kakaako Community Development
District Plan

We have reviewed the subject Preparation Notice for a
Supplemental Environmental Impact Statement and have no com-
ments to offer.

Very truly yours,

RIKIO NISHIOKA
State Public Works Engineer

/lm



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

June 27, 1984

Mr. Rikio Nishiooka
State Public Works Engineer
Department of Accounting and
General Services
State of Hawaii
P. O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Nishiooka:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letters of May 17, 1984 and
June 19, 1984 concerning the subject Supplemental EIS
Preparation Notice.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/MT:sk
cc: Mr. Frank Johnson, Environmental Officer
H. Moki Planning & Research, Inc.



STATE OF HAWAII
DEPARTMENT OF HEALTH

P. O. BOX 1475
HONOLULU, HAWAII 96813

June 19, 1984

SENDER'S ADDRESS
Department of Health

RECEIVER'S NAME
Department of Health

IN REPLY, PLEASE REFER TO
PROJECT 88

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
677 Ala Moana Blvd., Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Request for Comments on Supplemental Environmental Impact
Statement (EIS) for the Kakaako Community Development District Plan

Thank you for allowing us to review and comment on the subject proposed EIS.

The Preparation Notice for a Supplemental EIS for the Kakaako Community Development District Plan does not fully address the Department of Health's concerns regarding the noise impact of the project as stated in the October 29, 1981 memorandum (copy attached).

Noise from stationary sources, construction, industrial and recreational activities must comply with all applicable noise codes and regulations.

We reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

Sincerely,

Melvin K. Koizumi
MELVIN K. KOIZUMI
Deputy Director for
Environmental Health

Attachment

October 29, 1981

MEMORANDUM

TO: Planner, Staff Services
FROM: Chief, Noise and Radiation Branch
SUBJECT: Comments to Environmental Impact Statement Preparation
Notice for the Kakaako Community Development District Plan

1. Concur with author's comment under Section III C Noise that "the mixing of commercial, industrial and residential uses may result in some compatible combinations with respect to noise exposure." Such incompatibilities may also pose some problems on school classroom environment.
 - a. Heavy vehicles traveling to and from commercial or industrial facilities may also pose some problems if routed through residential areas or nearby schools.
 - b. Plans should be included in locating such facilities away from residential units or schools. If such plans cannot be initiated, areas utilized for commercial or industrial activities should be designed in such a way to minimize possible noise impacts.
2. Through facility design, noise from any equipment, such as air conditioning/ventilation units, exhaust units, pumps and compressors, must be attenuated to meet the allowable levels of Public Health Regulations Chapter 44B, Community Noise Control for Oahu.
3. Any proposed parking structures or multi-level garage should be designed to control noise, specifically towards tire squeals and vehicular emissions.
4. Noise from existing or proposed entertainment facilities may pose a problem in terms of annoyances to neighboring residents. Control measures should be considered.

5. Noise from activities associated with the use of recreational areas, such as, playgrounds, parks and centers and including recreational areas on school grounds, can have adverse effects on adjacent residents.

Activities associated with construction phase must comply with the provisions of Public Health Regulations, Chapter 44B, Community Noise Control for Oahu.

- a. The contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable noise levels of the regulations.
- b. Construction equipment and on-site vehicles or devices requiring an exhaust of gas or air must have a muffler.
- c. The contractor must comply with the conditional use of the permit as specified in the regulations and the conditions issued with the permit.

6. Traffic noise from heavy vehicles traveling to and from the construction site must be minimized in residential areas and must comply with the provisions of Public Health Regulations, Chapter 44A, Vehicular Noise Control for Oahu.

4-15

JTH:ak

Thomas H. Anahulu



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

July 3, 1984

Mr. Melvin K. Koizumi
Deputy Director for
Environmental Health
Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Koizumi:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of June 19, 1984 concerning the subject Supplemental EIS Preparation Notice.

The Preparation Notice states that noise levels can be expected to increase with implementation of the Makai Area Plan. Automobile and truck traffic, industrial equipment, and aircraft are cited as the principal sources of noise in the makai area. A special noise study evaluating these noise-generating activities and identifying means for reducing noise impacts will be included in the SEIS.

There are no schools or public recreation areas designated within the makai area. The proposed Waterfront Park, adjacent to the makai area, will be planned and developed by the Department of Land and Natural Resources.

Performance standards regulating noise, glare, odor and vibration are included in the Rules along with a permit system administered by the State Department of Health for controlling noise-emitting activity. In addition, all Department of Health rules and regulations intended to control nuisances and protect environmental quality remain in effect.

A copy of the Draft Supplemental EIS will be provided to your Department for review and comment when it becomes available.

Very truly yours,

Robert K. Mline
 Rex D. Johnson
 Executive Director

RD/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

[illegible]

R. D. Johnson, HCOA
Re: EIS-Kakako Plan
Page Two
JUL 2 1 54M

This statement should be debated because we are not certain as to the exact waterfront park acreage at this time. Furthermore, as a State park, the Waterfront Park will include passive recreational activities such as fishing, picnicking, walking, and sightseeing, as differed from active recreational activities such as baseball, basketball, and soccer, which a neighborhood park provides. Accordingly, the total area may not be fully served by a State waterfront park.

Should you have any questions on these matters, please feel free to call us.

Sincerely,

SUSUMU ONO
Chairperson

Ref:HV3:59

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

We have reviewed the preparation notice for a supplemental environmental impact statement (EIS) covering the Kakaato Plan. We have some concerns to express.

Water Supply

The preparation notice indicates that the Plan's Final EIS of 1983 identified a host of unresolved issues, including those relating to the availability of water and the funding of public infrastructure improvements. According to the Honolulu Board of Water Supply present off-site water facilities are operating at near capacity, and it is likely that the implementation of the Kakaako improvements in the maule and makai areas will require the expansion of off-site source, transmission, and storage facilities. Because the State is a principal land owner in the makai area, we anticipate State participation in the proposed improvement district program to help finance the needed utility improvements.

Because the Kaka'o project lies within the State-designated Honolulu Ground Water Control Area, any ground water development contemplated in conjunction with the project will need to be reviewed and approved by the Board of Land and Natural Resources.

Recreation

On page 9, paragraph 4, of the notice, the following statement appears:

Public recreation facilities for the Hakai area would be provided in the adjacent 60-acre State park along the Waterfront."



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
480 Ala Moana Boulevard, Suite 310 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brwn
Chairman
Rex D. Johnson
Executive Director

September 10, 1984

The Honorable Susumu Ono
Chairperson of the Board
Department of Land and
Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Ono:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of July 27, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The Draft Supplemental EIS will discuss issues relating
to the availability of water to service the needs of the
Kakaako District and the funding of public infrastructure
improvements. We are aware that any ground water develop-
ment required for the Kakaako area will be reviewed and ap-
proved by the Board of Land and Natural Resources.

We will include your comments relating to the role of
your Department in the development of facilities at the
Waterfront Park.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:af
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.



DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

COMMUNICATING THE DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT
MAILING ADDRESS: 1000 ALA MOANA BOULEVARD, SUITE 1001, HONOLULU, HAWAII 96813

Ref. No. P-9883

RECEIVED

984 JUL 11 AM 9 58
July 5, 1984

HAWAII COMMUNITY
DEVELOPMENT
AUTHORITY

GEORGE B. AMANUSA

ELMER M. KIRBY

JOHN B. PUGHILL

MARLENE E. BOWEN

JOHN B. PUGHILL

MARLENE E. BOWEN

JOHN B. PUGHILL

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MARLENE E. BOWEN

JOHN B. PUGHILL

MARLENE E. BOWEN

JOHN B. PUGHILL

MARLENE E. BOWEN

JOHN B. PUGHILL

MEMORANDUM

TO: Rex Johnson, Executive Director
Hawaii Community Development Authority

FROM: Kent M. Keith, Director *Kent M. Keith*
State of Hawaii

SUBJECT: SEISPM for the Makai Area of the Kaka'ako Community Development
District Plan

We have reviewed the subject preparation notice for the supplemental
environmental impact statement and have no comment on the document.

Thank you for the opportunity to review it.



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

July 20, 1984

George K. Ariyoshi
Governor

Kenneth F. Bruen
Chairman

Rex D. Johnson
Executive Director

The Honorable Kent M. Keith
Director
Department of Planning and
Economic Development
State of Hawaii
P. O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Keith:

Re: Supplemental EIS Preparation Notice for the
Kaka'ako Community Development District Plan

Thank you for your letter of July 5, 1984 concerning
the subject Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Maki Planning & Research, Inc.

JUN 18 1984



STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING
HAWAII HOUSING AUTHORITY
P. O. BOX 1700
HONOLULU, HAWAII 96813

June 13, 1984

Mr. Rex D. Johnson
June 13, 1984
Page 2

of Honolulu for use of block grant funds should be addressed. It may be timely to renew discussion with the City and County in light of the recent publicity regarding availability of their CDBG funds.

Sincerely,

Paul A. Tom
PAUL A. TOM
Executive Director

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Rex:

Re: Preparation Notice for a Supplemental EIS
for the Kakaako Community Development Plan

Thank you for allowing us the opportunity to offer comments as you prepare a Supplemental EIS for the Kakaako Community Development District Plan.

V-20

Of concern to us are two unresolved issues listed on page 15: the financing of public housing, and the uses of Federal, State and County funds and programs in Kakaako.

As you are well aware, public housing development has depended on subsidies from the Federal Government. Because such funds are no longer available, this issue should no longer be considered as means of providing housing in the district.

What should be addressed in the supplemental EIS is the financing of assisted housing (both rental and for-sale projects). If you decide to utilize the Hula Mae program to provide mortgages in Kakaako, the existing program at HUA may be used. Although modification to the existing Hula Mae program may be possible, a duplication of technical people and procedures already operating at HUA should be avoided to take full advantage of the resources already in place.

A detailed discussion of the uses or needs of Federal, State, and County funds would be appropriate in the Supplemental EIS. For example, the status of HCDA's request to the City and County



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

June 27, 1984

Mr. Paul A. Tom
Executive Director
Hawaii Housing Authority
State of Hawaii
P. O. Box 17907
Honolulu, Hawaii 96817

Dear Mr. Tom:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of June 13, 1984 concerning
the subject Supplemental EIS Preparation Notice.

We are aware that Federal funds for public housing
development are not available at this time. However, we
have not totally ruled out the possibility of future
funding opportunities.

The Hawaii Community Development Authority does not
intend to duplicate the programs and services provided by
existing public housing agencies. In this regard, we
anticipate the continued administration of the Hula Hae
program by your agency.

Because CDBG funds are project specific, we will
initiate discussions with the City and County of Honolulu
as we become aware of specific projects that could qualify
for these funds in the District.

A copy of the Draft Supplemental EIS will be provided
to your agency for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:sk
cc: Mr. Frank Johnson, Environmental Officer
H. Maki Planning & Research, Inc.



George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

State of Hawaii
Hawaii Community Development Authority
577 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

July 3, 1984

PAUL J. YAMASAKI
Director

DEPARTMENT OF TRANSPORTATION
JONATHAN S. KAMATA, P.O.
WALTER L. MO
CHERYL D. SOON
ADAM D. WICKERT

MINISTERIAL TO
STP 8.9981



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
100 PACIFIC STREET
HONOLULU, HAWAII 96813
June 18, 1984

Mr. Rex D. Johnson,
Executive Director
Hawaii Community Development
Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Preparation Notice for a Supplemental
EIS for the Kakaako Community
Development District Plan

Our review of the preparation notice identified these
areas of concern:

1. The Makai Area Plan limits building heights for the Fort Armstrong harbor area to 45 feet. Should a need and justification for exceeding this height develop to service the state's transportation goals is there any recourse that will permit exceeding this limit?
2. The mitigation measures for the storm drain improvements effects on water quality include improving the circulation in Kewalo Basin. This measure, as presented, is vague and should be elaborated upon. Kewalo Basin is under our jurisdiction and it is unclear who would be responsible for financing and maintaining improvements in the Basin.
3. On page 10, harbors should be included as a public facility.

Thank you for the opportunity to comment on the preparation notice. We look forward to your continued coordination of this project with us.

Very truly yours,

Wayne J. Yamasaki
Wayne J. Yamasaki
Director of Transportation

The Honorable Wayne J. Yamasaki
Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Yamasaki:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of June 18, 1984 concerning the subject Supplemental EIS Preparation Notice.

The height limits established in the Makai Area Plan are part of the overall plan to provide an integrated urban design scheme. Within the Waterfront Industrial area, structures and equipment which are accessory and incidental to the principal uses and structures may exceed the 45-foot height limit. If these requirements constrain harbor operations, the means to address and mitigate these constraints is through an amendment to the Makai Area Plan. Another recourse may be possible through the variance procedure.

We apologize for any ambiguity created by the statements concerning improvements at Kewalo Basin. We will make the necessary changes in the Draft SEIS to clarify this matter.

We will incorporate an appropriate reference to harbors as a public facility in the Draft SEIS.

A copy of the Draft Supplemental EIS will be provided to your Department for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/AT:sk
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.



University of Hawaii at Manoa

Water Resources Research Center
Hobart Hall 283 - 2540 Dole Street
Honolulu, Hawaii 96822

3 JUL 9 AM 9 54
3 JULY 1984

RECEIVED
UNIVERSITY
DEVELOPMENT
AUTHORITY

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

SUBJECT: Preparation Notice for a Supplemental EIS for the Kakaia
Community Development District Plan, Honolulu, June 5, 1984

We have reviewed the subject Notice and offer the following comments:

1. Ref. Final EIS for the Kakaia Community Development District Plan, Appendix A, p. 17. It is stated that because 50 acres will be converted from impervious to pervious surfaces, there will be a 15% reduction in total runoff volume. Using the Rational Formula, the following calculation shows that only a 5% reduction of peak discharge can be realized:

$$Q_{peak} = CIA$$

$$A. \text{ Fully covered land: } C = 0.9, A = 450 \text{ acres}$$

$$Q_{A \text{ peak}} = 0.91 (450) = 4051$$

$$B. 400 \text{ acres covered land plus 50 acres of open area}$$

$$Q_{B \text{ peak}} = 0.91 (400) + 0.51 (50) = 3851$$

$$\% \text{ reduction of peak discharge} = \frac{Q_{A \text{ peak}} - Q_{B \text{ peak}}}{Q_{A \text{ peak}}} \times 1002$$

$$= \frac{201}{4051} = 5\%$$

What effect will this 10% (15% less 5%) difference have on the design of the storm drain system and on the frequency and intensity of flooding?

AN EQUAL OPPORTUNITY EMPLOYER

- 2 -

2. The Final EIS did not address the effect(s) of decreased salinity attributable to increased fresh stormwater flow into Kewalo Basin from the Kakaia Redevelopment. Will bait fishes kept in the fishing vessels be adversely affected, for example?

Thank you for the opportunity to comment. This material was reviewed by UNAC personnel.

Sincerely,

Edwin T. Murebayashi
Edwin T. Murebayashi
EIS Coordinator

ETH:jm



University of Hawaii at Mānoa

Environmental Center, July 1, 1984
Crawford 317 - 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (local) 944-1341
DEVELOPMENT AUTHORITY

May 29, 1984
PH:0030

Mr. Rex D. Johnson
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

**Preparation Notice
Supplemental Environmental Impact Statement
Kaka'ako Community Development District Plan**

In response to your request for input at the preparation stage of this Supplemental EIS for the Kaka'ako Community Development Plan, we have reviewed the document in-house and have the following suggestions:

The issues which continue to be of primary concern with regard to redevelopment of the Kaka'ako Community include: 1) the potential impacts associated with drainage, flooding, and coastal water degradation, and 2) the social and economic impacts to the business residents of Kaka'ako. We would suggest that considerable attention be directed toward these issues and that the social/economic analysis address, not only the impacts of the redevelopment on the residents of Kaka'ako, but also the effects of the relocation or elimination of certain businesses in relation to the communities they presently serve.

Yours truly,

Doak C. Cox

Doak C. Cox
Director

cc: Jacquelin Miller



**State of Hawaii
Hawaii Community Development Authority**

677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 546-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

June 27, 1984

Doak Cox, Ph.D.
Director
Environmental Center
University of Hawaii
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Dr. Cox:

Re: Supplemental EIS Preparation Notice
for the Kaka'ako Community Development
District Plan

Thank you for your letter of May 29, 1984 concerning the subject Supplemental EIS Preparation Notice.

The Supplement EIS will address the impacts associated with drainage, flooding, and coastal water degradation, and examine the social and economic impacts to businesses in Kaka'ako.

The SEIS will further discuss our relocation program which has the following features: (1) rules of administrative procedures which define the categories of assistance required and the levels of assistance provided to persons in such categories, (2) relocation services provided by our relocation office, (3) temporary relocation sites that will be made available, and (4) other services that are being or will be provided.

A copy of the Draft Supplemental EIS will be provided to you for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson

Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 301
Honolulu, Hawaii 96813
(808) 548-7180


George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

July 20, 1984

Mr. Edwin T. Murabayashi
Page Two
July 20, 1984

A copy of the Draft Supplemental EIS will be provided to your agency for review and comment when it becomes available.

Very truly yours,


Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mugi Planning & Research, Inc.

Mr. Edwin T. Murabayashi
EIS Coordinator
Water Resources Research Center
University of Hawaii
2540 Dole Street
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of July 3, 1984 concerning the subject Supplemental EIS Preparation Notice.

To clarify your concern about runoff volume, please note that the Kakaako Plan projects an additional 50 acres of land to be converted from impervious to pervious surfaces (Final EIS, Appendix A, p. 17). Regardless of the change in surface characteristics, the storm drainage system has been planned to accommodate peak discharge from a 50-year storm. This improvement to the drainage system will alleviate the current flooding conditions being experienced.

To improve conditions at Kewalo Basin, one of the major drainage lines will be rerouted away from Kewalo Basin. The net effect will be to decrease peak discharge by 166.7 cfs. The Department of Transportation is further contemplating improvements to Kewalo Basin to improve water circulation. We believe that these improvements should improve conditions at Kewalo Basin.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
835 SOUTH BERETANIA
HONOLULU, HAWAII 96813



RECEIVED

'84 MAY 29 AM 10 13

MAY 23, 1984

HAWAIIAN UNITY
DEVELOPMENT
AUTHORITY

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development
Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Your Letter of May 10, 1984, on the Preparation
Notice for a Supplemental EIS for the Kakaako
Community Development District Plan

4-26

We have no objections to the proposed plan. We request that
a water master plan for the "Kakaako" area be submitted for our
review and approval.

The availability of water shall be determined when building
permit applications are submitted for our review and
approval.

Our concerns are also acknowledged on page 14 under
Unresolved Issues.

If you have any questions, please contact Lawrence Whang at
527-6138.

Very truly yours,

Kazu Hayashida
KAZU HAYASHIDA
Manager and Chief Engineer

EILEEN ANDERSON, Mayor
YOSHIE H. FUJIMURA, Chairman
MICHELLE CHAN
WALTER DOOS JR., Vice-Chairman
PAULA R. KATI
ERNEST A. MATARI
WAYNE J. YAMASAKI
KUMUWASHIMA
Manager and Chief Engineer



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

June 27, 1984

The Honorable Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of May 23, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The Kakaako Area Plan provides for improvements to the
water system in the area which will be designed to meet
water demand for the proposed land use activities.
Proposed improvements include new waterlines, fire
hydrants, water valves, manholes, and other
appurtenances. We understand that the availability of
water for specific new developments will be determined
when building permit applications are submitted for your
review and approval.

As requested, the SEIS will address the issue
concerning the potential availability of water to Kakaako
as well as to new developments in Leeward Oahu. Based on
the most current studies, the SEIS will evaluate the
present water demand and steps which may be utilized to
meet demand 25 to 30 years in the future.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
910 SOUTH BERKELEY
HONOLULU HAWAII 96813



July 9, 1984
JUL 9 AM 9 54

ENHANCED WATER SUPPLY

WALTERA DOON JR.
NATION/ACADIA
PACIFIC COAST
PACIFIC COAST
PACIFIC COAST
PACIFIC COAST

WALTERA DOON JR.
NATION/ACADIA
PACIFIC COAST
PACIFIC COAST
PACIFIC COAST
PACIFIC COAST

COMMUNITY
DEVELOPMENT
AUTHORITY

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development
Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Your Letter of June 5, 1984 Requesting Comments on
Preparation Notice for a Supplemental Environmental
Impact Statement (EIS) for the Kakaako Community
Development District Plan

Thank you for giving us the opportunity to review the
Supplemental EIS Preparation Notice.

Our comments in our May 23, 1984 letter to you are still current.
However, we would like to add the following:

- 1) The comment that the availability of water shall be determined when building permit applications are submitted for our review and approval should be expanded to include the stipulation that if water is made available, the developers will be required to pay our water development charge for source, reservoir, and transmission facilities.
- 2) In addition to the water development charge, the developers may be assessed a charge for off-site water line improvements which are installed in the Downtown/Kakaako area to improve the flow into the Kakaako area.

4-27

Mr. Rex D. Johnson
Page 2

July 3, 1984



- 3) We are considering the installation of a reverse osmosis (RO) desalting plant in the makai area of the Kakaako Community Development District in the future to accommodate planned growth beyond the capability of existing and developable ground water supplies. Our preliminary planning indicates a 15-acre site would be required for the plant. The exact site will be determined when work begins in earnest to implement the project. We have discussed this matter previously with your staff.

If you have any questions, please contact Lawrence Whang at 527-6138.

Very truly yours,

Ray H. Hayashida

RAY H. HAYASHIDA
Manager and Chief Engineer

For Water... man's ground - not study

For Water... man's ground - not study



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George F. A. ...
Kenneth F. ...
Rex D. Johnson

July 20, 1984

The Honorable Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of July 3, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The SEIS will include your comments relating to
1) water development charges to developers, 2) assessments
for off-site water line improvements, and 3) a
desalination plant in the makai area.

A copy of the Draft Supplemental EIS will be provided
to your agency for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

CITY AND COUNTY OF HONOLULU
BUILDING DEPARTMENT
HONOLULU MUNICIPAL BUILDING
300 SOUTH KING STREET
HONOLULU, HAWAII 96813

1A 100a (01)
7/13 8.17



GILBERT M. ANDERSON
Mayor

ROY H. TANJII
DIRECTOR AND BUILDING SUPERINTENDENT
WILLIAM P. REMULAN
PLANNING DIRECTOR
PB 94-416

June 18, 1984

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental EIS
Kakaako Community Development District Plan

We have reviewed the Preparation Notice for a Supplemental EIS for the Kakaako Community Development District Plan and have no comments.

Thank you for the opportunity to review the preparation notice.

Very truly yours,

ROY H. TANJII
Director and Building Superintendent

cc: J. Harada



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 546-7180

June 27, 1984

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

The Honorable Roy H. Tanjii
Director and Building Superintendent
Building Department
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Tanjii:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letters of May 18, 1984 and June 18, 1984 concerning the subject Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided to your Department for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/XT:sk
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

BUILDING DEPARTMENT
CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
1515 KALANOA AVENUE
HONOLULU, HAWAII 96813



CHIEF OF DIVISION
MAIL

OFFICE OF THE
DIRECTOR OF BUILDING DEPARTMENT
HONOLULU, HAWAII
OFFICE MAILING

PB 84-365

May 16, 1984

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

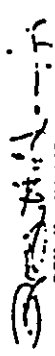
Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental ZIS
Kakaako Community Development District Plan

We have reviewed the Preparation Notice for a Supplemental
ZIS for the Kakaako Community Development District Plan and have no
comments.

Thank you for the opportunity to review the Preparation
Notice.

Very truly yours,


ROY H. TANJI
Director and Building Superintendent

cc: J. Harada

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

510 SOUTH KING STREET
HONOLULU, HAWAII 96813



RECEIVED

JUL 18 AM 10 31

WILLARD T. CHOW
CITY PLANNING DIVISION
DEPT. OF GENERAL PLANNING

JULY 17, 1984
CITY PLANNING DIVISION

DDP6/84-2057

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development
Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Preparation Notice for a Supplemental EIS
for the Kakaako Community Development District Plan

Our comments are as follows:

1. The two public elementary schools, Royal and Kakaako, located outside of the Kakaako District will be serving the needs of school children between the ages 5 to 11 years. In view of the distance which must be covered in a neighborhood characterized by intensely developed commercial/industrial/residential uses, the issue of school children safety in travelling to and from school needs to be discussed. If school busing is to be proposed, the busing program should be described. Additionally, the preparation notice indicates that new schools will open up when the need arises. In support of this statement, information on the type of schools and possible locations needs to be provided before the properties are pre-empted.
2. Public recreation facilities for the makai area are expected to be provided in the adjacent 60-acre State Park along the waterfront. Because no public recreational facilities will be provided within the project area, discussion on the status of the State Park project, and its development schedule would be appropriate in order to give some indication as to the park's availability when needed.

V-31

Mr. Rex D. Johnson
Page 2
July 17, 1984

3. Parking provisions and their adequacy to service the needs of the mix of residential/commercial/industrial activities are not discussed.
4. In addition to vehicular traffic noise assessments, there may also be a need to quantify and evaluate the impact of potential noise levels likely to be produced at (1) the waterfront industrial area with its heavy equipment and machinery and (2) the future regional park site if active recreational pursuits will be permitted. The preparation notice land use plan shows residential locations neighboring these potentially high noise generators.

Sincerely,

Ralph Kawamoto
RALPH KAWAMOTO
Planner

APPROVED:

Willard T. Chow
WILLARD T. CHOW



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Arlynshi
Chairman
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

July 30, 1984

The Honorable Willard Tim Chow
Director
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attention: Mr. Ralph Kawamoto

Dear Dr. Chow:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of July 17, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The Department of Education currently has no plan to
provide bus service for Kakaako school children.

The DOE has no immediate plan to develop a new school
in the District, and has indicated that two schools, Royal
and Kahuamahu, currently can accommodate a moderate amount
of growth. The DOE will evaluate the need to open another
school when they believe that the two schools have reached
capacity. The Kakaako District Plan designates two sites
for accommodating future increases in the school age
population in the District.

The Draft SEIS will contain information relating to
the development of the Kakaako Waterfront Park.

We believe that the parking provisions of the Kakaako
Plan will assure an adequate level of service. In
addition to on-site parking requirements, the Kakaako Plan
designates several sites for development of public parking
garages to help offset the need for additional on-site
parking. Furthermore, we feel that the "shared parking"
concept will be implemented by developers of mixed-use
projects.

The Honorable Willard Tim Chow
Page Two
July 30, 1984

The Draft SEIS will contain a separate study to
address the impacts relating to noise from traffic,
aircraft, machinery, etc.

A copy of the Draft Supplemental EIS will be
provided to your Department for review and comment when it
becomes available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer, DHUD
H. Hagi Planning & Research, Inc.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
810 SOUTH KING STREET
HONOLULU, HAWAII 96813



JOSEPH M. CONANT
DIRECTOR
CHARLES M. THOMAS
DEPUTY DIRECTOR

RECEIVED

MAY 25 4 19 44

HAWAIIAN COMMUNITY
DEVELOPMENT
AUTHORITY

MAY 25, 1984

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Preparation Notice: Environmental Impact Statement
for Kakaako Development Plan (Kakao Area Plan)

We have reviewed the above Preparation Notice for the Kakaako Development Plan and offer the following comments.

1. We note that substantial displacement of residents and businesses can be expected to result if the proposed plans are implemented. Possible relocation sites or facilities should be identified in the Preparation Notice.
2. Based on the developable land area allocation for the mixed use residential zone, approximately 1,547 housing units for 3,868 residents will be accommodated. This amounts to 2.5 persons per household. The supplemental EIS will indicate the categories of housing developers--private, public and nonprofit--and the housing units proposed to be delivered appropriate to its target market. However, the report should discuss (a) public developer's source of funding; and (b) how a concentrated mixed use district will affect water and, particularly, sewer service.
3. Within the Central Business District, the State's one-hour standard for carbon monoxide is being exceeded at the present time. Although the Federal air quality standard has not been exceeded, the supplemental EIS should indicate whether or not the State or Federal standards will be adhered to and mitigative measures or alternative measures need to be identified.

Joseph M. Conant
JOSEPH M. CONANT

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
810 SOUTH KING STREET
HONOLULU, HAWAII 96813



JOSEPH M. CONANT
DIRECTOR

RECEIVED

JUN 29 AM 10 17

HAWAIIAN COMMUNITY
DEVELOPMENT
AUTHORITY

JUNE 26, 1984

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental EIS
for the Kakaako Community Development District Plan

On May 25, 1984, the Department of Housing and Community Development submitted comments on the proposed Kakao Area Plan (see attached letter). We do not have additional comments.

We will retain the Supplemental EIS for our files.

Joseph M. Conant
JOSEPH M. CONANT

Attachment--Letter dated May 25, 1984



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

June 27, 1984

The Honorable Joseph Conant
Director
Department of Housing and
Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Conant:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of May 25, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The SEIS will describe ICDA's relocation program and
accompanying rules. The SEIS will also describe efforts
currently under way to temporarily relocate displaced
businesses.

The SEIS will address the public developer's source of
funding. As part of the makai area redevelopment,
infrastructure improvements will be made to meet
anticipated demand. The housing program and
infrastructure improvement program will be addressed in
the SEIS.

An air quality study is being conducted as part of the
SEIS to identify potential impacts and possible mitigation
measures.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813



RECEIVED

74 JUL 11 AM 9 42

HAWAII COMMUNITY
DEVELOPMENT AUTHORITY

July 9, 1984

LUG/84-2805(RF)

Mr. Rex D. Johnson
Executive Director
Hawaii Community
Development Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Supplemental Environmental Impact Statement (EIS) Preparation Notice
for the Kakaako Community Development District Makai Area Plan
Tax Map Keys: 2-1-15, 28, 57 - 60 and Portion of Ala Moana Boulevard.

The EIS should contain a list of applicable land use controls and a list of
necessary approvals, including the following:

Special Management Area (SMA): The Makai Area is within the SMA including the
makai portion of Ala Moana Boulevard (from the centerline). Development in this
area will be subject to review under SMA provisions pursuant to Chapter 205A,
HRS, and Ordinance No. 84-4.

Shoreline Setback Area: Any development occurring within the 40-foot Shoreline
Setback Area at Tax Map Key 2-1-28 will be subject to the Shoreline Setback
Rules and Regulations, pursuant to Chapter 205A, HRS.

Flood Zone: Most of the Makai Area is in the Federal Flood Insurance Rate Map
(FIRM) Zone C which is described as an area of minimal flooding. A small
portion of Ala Moana Boulevard in the Kewalo Basin area is in FIRM Zone A4 with
a base flood elevation of 4 feet. This flood zone is described as an area of
100-year flood; base flood elevations and flood hazard factors determined.

If you have any questions, please contact John Makagawa of our staff at 523-4640.

Very truly yours,

Michael M. McElroy
MICHAEL M. McELROY
Director of Land Utilization

MMN:st



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001

600 Ala Moana Boulevard, Suite 310 Honolulu, Hawaii 96813

(808) 538-7180

July 20, 1984

George R. Ariyoshi
Governor

Kenneth F. Binn
Chairman

Rex D. Johnson
Executive Director

The Honorable Michael M. McElroy
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. McElroy:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of July 9, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The Draft SEIS will contain a list of applicable land
use controls and necessary approvals including: Special
Management Area Use Permit, Shoreline Setback Variance,
and Flood Hazard Districts.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

150 SOUTH KING STREET
HONOLULU, HAWAII 96813



RECEIVED
GENERAL ENGINEERING
SECTION AND CITY ENGINEER
OFFICE OF THE
CITY ENGINEER

June 18, 1984

ENV 84-177

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development
Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Re: Preparation Notice for a Supplemental EIS for the
Kakaako Community Development District, Honolulu,
Oahu, Hawaii

In response to your request for comments for the subject project, we submit
the following information.

1. Several references are made to the Ala Moana sewage pump station. There are actually four (4) different stations: the original Herring Kakaako station (circa 1950), the old Ala Moana station (1940), the new Ala Moana Station (1955), and the recent Ala Moana wastewater pumping station (1983). The Herring and old stations, and the underground storage reservoir fronting Ala Moana Boulevard are the components of the historic site. The new and recent stations will be retained as part of the South Honolulu sewer system.
2. The Land Use Plan (figure 2) designates the historic Ala Moana station as "Mixed Use Zone, Commercial." The existing City Corporation Yards (outside the District boundary) are designated "Parking." We question these designations.
3. If Keawe Street, between Ala Moana Boulevard and Ilalo Street (Figure 1), is realigned (page 7), access to the historic and existing stations must be provided.
4. The unresolved issue of funding for public infrastructure improvements should be settled early so that funds can be timely programmed for the construction of these improvements.

Mr. Rex D. Johnson

- 2 -

June 18, 1984

5. City collected solid wastes (page 21) from the Honolulu District are hauled to the Kakaako refuse transfer station. The transfer station is utilized by some of the large private haulers; however, during period of equipment outage, privately hauled solid wastes are not accepted.

Me ke aloha pumehana,

Michael J. Chun

MICHAEL J. CHUN
Director and Chief Engineer

cc: Division of Wastewater Management
Division of Refuse Collection and Disposal



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Arlyon
Chairman

Kenneth F. Brown
Chairman

Rex D. Johnson
Executive Director

July 3, 1984

The Honorable Michael J. Chun
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Dr. Chun:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of June 18, 1984 concerning
the subject Supplemental EIS Preparation Notice.

We appreciated your correction to the references made
to the Ala Moana Sewage Pump Station. We will incorporate
your comments in the Draft SEIS.

The land use designation for the sewage pump station
along Ala Moana Boulevard as "Mixed-Use Commercial
(MUZ-C)" was done at the request of the Department of Land
and Natural Resources (DLNR). We understand that once the
facility is phased out of operation the land will be
returned to the jurisdiction of the DLNR, which proposes
to lease it out for commercial purposes.

The portion of land where the City's Corporation Yard
is located is designated as "Park" rather than "Parking"
as your letter states. The Legislature designated the
area for development of a State Waterfront Park.

The Hakai Area Plan points out that Keawe Street
(Makai of Ala Moana) can be realigned to provide a direct
connection to the area mauka of Ala Moana. This
realignment will take place only after affected property
owners are notified and their concerns are addressed.

The Honorable Michael J. Chun
Page Two
July 3, 1984

The Draft SEIS will outline the HCDA's District-Wide
Improvement Program and Rules. Funding for infrastructure
improvements will be addressed.

Your comments relating to solid waste disposal will be
incorporated in the Draft SEIS.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Wogi Planning & Research, Inc.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING
630 SOUTH KING STREET
HONOLULU, HAWAII 96813



WILLIAM A. BONNETT
Director
TELEPHONE 531-1111
FAX 531-1111

WILLIAM A. BONNETT
Director
TELEPHONE 531-1111
FAX 531-1111

June 12, 1984

TES/84-1905

Mr. Rex D. Johnson
Executive Director
State of Hawaii
Hawaii Community
Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental EIS for the
Kaka'ako Community Development District Plan

The traffic impact study for the supplemental EIS should address the following concerns:

1. The adequacy of the street system within the project area. Special attention should be given to evaluating the adequacy of the streets connecting the mauka and makai areas.
2. The adequacy of the off-street parking that will be provided. In this regard, the impact of reducing parking requirements and the granting of a variance for off-site parking should be studied.
3. The method of financing the street and off-street parking improvements. The Hawaii Community Development Authority's policy on the use of the City's Ordinance 2412 for frontage improvements should also be defined.

If there are any questions, please contact Kenneth Hirata of our Traffic Engineering Division at 527-5009.

Sincerely,

William A. Bonnet
WILLIAM A. BONNETT



State of Hawaii
Hawaii Community Development Authority
77 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
808) 548-7180

June 27, 1984

George R. Ariyoshi
Governor
Kenneth F. Brown
Lieutenant Governor
Rex D. Johnson
Executive Director

The Honorable William A. Bonnet
Director
Department of Transportation Services
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Bonnet:

Re: Supplemental EIS Preparation Notice
for the Kaka'ako Community Development
District Plan

Thank you for your letter of June 12, 1984 concerning the subject Supplemental EIS Preparation Notice.

A traffic study will be conducted as part of the SEIS using the Hali 2000 transportation model for traffic generation. The study will address the adequacy of the existing street system, forecast future travel for the increased development envisioned within the Kaka'ako area, and identify traffic conditions with the planned roadway system improvements.

We feel that the "shared parking" concept will be implemented by developers of mixed-use projects. In addition, the Kaka'ako Plan provides for development of public parking garages which will alleviate the need for additional on-site parking.

The SEIS will address the HCDA's District-Wide Improvement Program for improvements to streets and utility systems. Details of the improvement program including phasing, costs, and methods of financing will be discussed in the SEIS. The Authority has not established a policy on the use of the City's Ordinance 2412.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING
500 SOUTH KING STREET
HONOLULU, HAWAII 96813

The Honorable William A. Bonnet
Page Two
June 27, 1984

A copy of the Draft Supplemental EIS will be provided to your Department for review and comment when it becomes available.

Very truly yours,
Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.



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HAWAII COMMUNITY
DEVELOPMENT
AUTHORITY TE6/84-2278
July 5, 1984

Mr. Rex D. Johnson
Executive Director
Hawaii Community
Development Authority
State of Hawaii
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental EIS for the
Kaka'ako Community Development District Plan

The traffic study should address the following concerns:

1. The amount of traffic that will be generated by the ultimate development of the area and its impact on the supporting street system.
2. The adequacy of the street system surrounding the project area: Capacity analysis of the critical intersections should be included as part of the study.
3. The improvements to the street system that will be needed to support the development.

We thank you for providing us this opportunity to review and comment on the project.

If there are any questions, please contact Kenneth Hirata of my staff at 527-5009.

Sincerely,

William A. Bonnet

WILLIAM A. BONNET
Director



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
880 Ala Moana Boulevard, Suite 314 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

July 20, 1984

The Honorable William A. Bonnet
Director
Department of Transportation
Services
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Bonnet:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of July 5, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The Supplemental EIS will include a traffic impact
study which is based on the Hall 2000 Study of the Oahu
Metropolitan Planning Organization. In order that our
findings could be analyzed on a systems basis, permitting
comparisons to the Hall 2000 study travel information, a
similar time horizon was utilized. The findings will not
include the ultimate traffic generation. However, the
study will indicate the assumptions used and the magnitude
of traffic impact at full development.

The traffic impact study will include an analysis of
critical intersections and describe possible mitigation
measures. The study will address the street system within
our project boundaries as it is affected by travel within
and through the Kakaako District. Outside of the Kakaako
District, the study will indicate the magnitude and impact
of Kakaako trips within the major Oahu travel corridors.

The roadway system improvements proposed in the
Kakaako Plan have been developed to meet the needs of the
Kakaako District.

The Honorable William A. Bonnet
Page Two
July 20, 1984

Our staff and the consultants on the traffic impact
study for the Kakaako District have discussed the study
methodology and findings with representatives of the
Department of Transportation Services to further address
your Department's concerns.

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/MT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

OFFICE OF THE MANAGING DIRECTOR
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813

GILBERT A. ANDERSON
DIRECTOR



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HAWAIIAN COMMUNITY
DEVELOPMENT
AUTHORITY

May 24, 1984

ANDREW I. T. CHANG
MANAGING DIRECTOR

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Preparation Notice for a Supplemental EIS
for the Kakaako Community Development District Plan

Thank you for forwarding the subject preparation notice.

I understand that affected City agencies which have previously indicated their interest in the proposed project are also receiving copies of the report. These agencies will be submitting their respective comments to you through the Department of Land Utilization.

Thank you for including us in the review process.

Very truly yours,

Andrew I. T. Chang
ANDREW I. T. CHANG



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

June 27, 1984

The Honorable Andrew I. T. Chang
Managing Director
Office of the Managing Director
City and County of Honolulu
530 South King Street
Honolulu, Hawaii 96813

Dear Mr. Chang:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of May 24, 1984 concerning the subject Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided to you for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:sk
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

MAIL ROOM

RECEIVED MAY 24 1984



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Mr. Rex D. Johnson
May 24, 1984
Page 2

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MAY 24 1984

Thank you for the opportunity to comment on this preparation notice.

Sincerely,

DOUGLAS G. GIBB
Chief of Police

By *David Heaurulani*
DAVID HEAURULANI
Acting Assistant Chief
Administrative Bureau

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Re: Preparation Notice for a Supplemental EIS for
the Kaka'ako Community Development District Plan

The Honolulu Police Department has reviewed the preparation notice for the Supplemental Environmental Impact Statement (EIS) for the Kaka'ako Community Development District Plan. To aid you in preparing your final EIS, we would like to express the following concerns and propose measures that may lessen adverse impacts:

1. To insure the safety of bicyclists in designated bike lanes, we suggest utilizing the design employed by other mainland cities of situating the bike lane between the sidewalk curb and the vehicle parking lane. The bike lanes are further protected from intruding vehicle traffic by additional curbing along its outside perimeter.
2. Although we recognize the aesthetic imperative behind the concept of providing parks on above-grade parking garages, the department would like to express its concern over potential safety hazards. If access to these parks is permitted during the evening hours, adequate attention should be paid to proper illumination and security.
3. To relieve traffic congestion and on-street parking problems, the Hawaii Community Development Authority may want to consider increasing the off-street requirement from one-half to one stall for each reserved housing unit.

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

100 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813



WILLIAM A. ANDERSON
Mayor

OUR REFERENCE: DI-MJP

PL. 173 6-11

DOUGLAS G. GIBB
Chief
WALTER P. ROSS
Deputy Chief

June 13, 1984

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Re: Preparation Notice for a Supplemental EIS for
the Kaka'ako Community Development District Plan

The Honolulu Police Department has reviewed the recent Supplemental
Environmental Impact Statement (EIS) for the Kaka'ako Community
Development District Plan. Our comments are the same as those
submitted on our May 24, 1984 review.

Thank you for the opportunity to comment on this preparation
notice.

Sincerely,

DOUGLAS G. GIBB
Chief of Police

By *Edwin Ross*
EDWIN ROSS
Assistant Chief
Administrative Bureau



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

June 27, 1984

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

The Honorable Douglas G. Gibb
Chief
Police Department
City and County of Honolulu
1455 South Beretania Street
Honolulu, Hawaii 96814

Dear Chief Gibb:

Re: Supplemental EIS Preparation Notice
for the Kaka'ako Community Development
District Plan

Thank you for your letters of May 24, 1984 and
June 13, 1984 concerning the subject Supplemental EIS
Preparation Notice.

We appreciate your suggestions relating to the design
of bike lanes in order that bicyclists can be afforded a
greater degree of safety. Please note, however, that the
Kaka'ako Plan calls for the eventual elimination of
on-street parking on most streets.

The SEIS will address the need to illuminate and
provide for security of planned above-grade parks.

Under the Kaka'ako District Plan, off-street parking
required for each reserved housing unit can be reduced to
one-half of the off-street parking requirement per unit.
This reduction is intended to reduce the overall cost of
constructing reserved housing units. Further, the "shared
parking" concept which would be encouraged in a mixed-use
area, coupled with the provision of public parking
garages, should alleviate the need to increase parking
requirements.

The Honorable Douglas G. Gibb
Page Two
June 27, 1984

A copy of the Draft Supplemental EIS will be provided
to your Department for review and comment when it becomes
available.

Very truly yours,


Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hogi Planning & Research, Inc.

CITY AND COUNTY OF HONOLULU

FIRE DEPARTMENT

1013 S. BERETANIA STREET, ROOM 305
HONOLULU, HAWAII 96813

RECEIVED
MAY 24 1984



CITY
DEVELOPMENT
AUTHORITY

May 24, 1984

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development
Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental
EIS for the Kakaako Community Development
District Plan

We have reviewed the Preparation Notice and have determined that there is no significant impact to the fire protection services for the subject project. Fire facilities and equipment are adequately provided for your protection.

Very truly yours,

Helvin M. Nonaka
Helvin M. Nonaka,
Fire Chief

MMH:ct/NSW



**State of Hawaii
Hawaii Community Development Authority**

680-Ale Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

June 27, 1984

The Honorable Helvin M. Nonaka
Chief
Fire Department
City and County of Honolulu
Room 305
1455 South Beretania Street
Honolulu, Hawaii 96814

Dear Chief Nonaka:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of May 24, 1984 concerning the subject Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided to your Department for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

George R. Aiyoshi
Governor
Kenneth F. Brown II
Chairman
Rex D. Johnson
Executive Director



CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813 / TELEPHONE 523-6000

MARILYN BORNHORST
Councilmember

May 25, 1984

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HAWAII COUNTY
DEVELOPMENT
AUTHORITY

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Re: Supplemental EIS for Kakaako Makai Area
Dear Mr. Johnson:

I would like to comment regarding page 9 of your preparation notice. In the last paragraph where you discuss view corridors, you mention that a mid-block view corridor is proposed to provide a view along Cooke Street to the Waterfront Park and ocean. I think it is very important to establish that you are equally concerned with the view from the ocean to the Koolaus. I would like to refer you to the Oahu Development Conference waterfront study made in the early 1960's which suggested specific building envelopes and view corridors.

On page 12, next to last paragraph, I note that you are exempting set-aside housing from the full parking requirement. I question whether this would have a good long-term effect on the district.

I would like to make just one further additional comment which is that the floor area ratios you are allowing and the other specific planning and zoning decisions the Authority is making continue to diverge from the planning system for the rest of the City. I am more and more concerned that the separate planning efforts in these kinds of details further complicate the planning and zoning for the island which developers must cope with in their plans and with which citizens must struggle to be aware of. I really think this is the time to look again as to whether we do need two different planning entities making land use decisions on one island.

Sincerely,

Marilyn Bornhorst
MARILYN BORNHORST
Councilmember

MBB



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

June 27, 1984

The Honorable Marilyn Bornhorst
Councilwoman
Honolulu City Council
City and County of Honolulu
Honolulu, Hawaii 96813

Dear Councilwoman Bornhorst:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of May 25, 1984 concerning the subject Supplemental EIS Preparation Notice.

We agree that the view of the Koolaus from the Cooke Street view corridor is equally important with the view of the Waterfront Park and ocean. We feel that the Cooke Street view corridor will assure views in both the mauka and makai directions. The SEIS will discuss elements of the Plan which provide for view corridors.

Under the Kakaako Plan, off-street parking required for each reserved housing unit can be reduced to one-half of the off-street parking requirement per unit. This feature was incorporated in the Plan to reduce the overall cost of constructing reserved units. The Plan also provides for public parking garages to help offset the need for additional parking. Furthermore, we feel that the "shared parking" concept will be implemented by developers of mixed-use projects.

While we can fully appreciate and share your concern to provide a certain degree of predictability to developers and the general public relating to public planning efforts, we are obligated by our legislative mandate to provide adequate options for the redevelopment of the Kakaako area. The Kakaako District Plan and

The Honorable Marilyn Hornhorst
Page Two
June 27, 1984

District-Wide Improvement Program will assure that redevelopment proceeds in an orderly manner.

A copy of the Draft Supplemental EIS will be provided to you for review and comment when it becomes available.

Very truly yours,



Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

ALA MOANA KAKAOKO NEIGHBORHOOD BOARD NO. 11
677 Ala Moana Blvd. Suite 1001
Honolulu, HI 96813



RECEIVED

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July 24, 1984
ALA MOANA KAKAOKO NEIGHBORHOOD BOARD NO. 11
AUTHORITY

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Blvd. Suite 1001
Honolulu, HI 96813

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental EIS for the
Kakaoko Community Development District Plan

Although the Ala Moana - Kakaoko Neighborhood Board No. 11 did not have
any comments regarding the subject notice, we would like to continue to be a
consulted party.

Thank you for the opportunity to comment.

Sincerely,

Louise E. Peterson
Louise E. Peterson
President

cc: Neighborhood Commission



State of Hawaii

Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

August 20, 1984

Ms. Louise E. Peterson
President
Ala Moana-Kakaoko Neighborhood
Board No. 11
c/o Neighborhood Commission
Office
Honolulu Hale
Honolulu, Hawaii 96813

Dear Ms. Peterson:

Re: Supplemental EIS Preparation Notice
for the Kakaoko Community Development
District Plan

Thank you for your letter of July 24, 1984 concerning
the subject Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided
to the Ala Moana-Kakaoko Neighborhood Board for review and
comment when it becomes available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

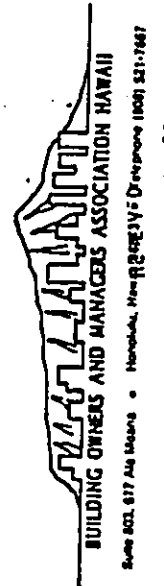
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cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

George R. Ariyoshi
Governor

Kenneth F. Hirose
Lieutenant Governor

Rex D. Johnson
Executive Director



State of Hawaii
Hawaii Community Development Authority
680 Ala Moana Boulevard, Suite 1001
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

June 27, 1984

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
Ste. 1001, 677 Ala Moana
Honolulu, Hawaii 96813

RE: PREPARATION NOTICE FOR A SUPPLEMENTAL EIS FOR THE KAKAOKO COMMUNITY
DEVELOPMENT DISTRICT PLAN

Dear Rex Johnson:

Thank you for your invitation to have Building Owners and Managers Association Hawaii (BOMA-Hawaii) participate in identifying specific environmental concerns that should be addressed in the supplement to the "Final Environmental Impact Statement for the Kakaoko Plan".

The Board of Directors of BOMA-Hawaii has appointed Christine Maki, Treasurer and Director of BOMA-Hawaii to submit comments, if any, on other sources of impact and what measures could be taken to minimize those impacts.

All future notices and correspondence should be submitted to Ms. Maki at:

Carlson Properties, Inc.
677 Ala Moana, Ste. 811
Honolulu, Hawaii 96813
Phone: 521-1087

Very truly yours,
Christine Maki
Christine Maki
Executive Director

cc: Christine Maki

Ms. Christine Maki
Director/Treasurer
Building Owners and
Managers Association
c/o Carlson Properties, Inc.
Suite 811
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Ms. Maki:

Re: Supplemental EIS Preparation Notice
for the Kakaoko Community Development
District Plan

Thank you for your letter of May 18, 1984 concerning the subject Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided to BOMA Hawaii for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Moki Planning & Research, Inc.

HAWAIIAN ELECTRIC COMPANY, INC.

Box 2750 Honolulu, Hawaii 96840

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HY/G

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
Suite 1001, 677 Ala Moana Boulevard
Honolulu, Hawaii 96813

COMMUNITY
DEVELOPMENT
AUTHORITY

Dear Mr. Johnson:

Subject: Preparation Notice for a Supplemental EIS for the
Kakaako Community Development District Plan

We have reviewed the above Preparation Notice for a Supplemental
EIS and offer the following comments:

1. On page 20, paragraph 2, the EIS recognizes that the overhead
utilities will be placed underground in the makai area of the
project just as they are for the larger makai area of Kakaako
Increment 1. It should be pointed out that the cost of
undergrounding in the makai area will be borne 1/3 by the
utility, 1/3 by the HCOA (State) and 1/3 by the property
owners just as it is in the makai area.

2. On Page 22, paragraph 11, since we do not know and have not
been told what the anticipated electrical demand will be in
the makai area, we do not know whether or not HECO existing
electrical facilities will require upgrading other than
undergrounding.

3. If the proposed development of Kakaako requires 138 kv
substations/lines in the area, the question of undergrounding
becomes a very significant question.

4. Since the above subject will be in close proximity to existing
HECO facilities which will remain energized, the following
HECO notes are to be included as part of the final construction
plans.

- a. The Contractor is to exercise extreme caution when the
excavation and construction crosses or is in close
proximity of our lines and is to maintain 13'-0"
clearance for his equipment while close to and/or under
the overhead facilities.

HAWAIIAN ELECTRIC COMPANY, INC.

Mr. Rex D. Johnson
July 11, 1984
Page Two

- b. The Contractor is to comply with the directions of the
State of Hawaii Occupational Safety and Health Law (DOSH).
- c. When trench excavation is adjacent to or under existing
structures or facilities, the Contractor is responsible
for properly sheeting and bracing the excavation and
stabilizing the existing ground to render it safe and
secure from possible slides, cave-ins and settlement,
and for properly supporting existing structures and
facilities with beams, struts or underpinning to fully
protect it from damage.
- d. For pole bracing instruction should field conditions
and/or construction procedures require that poles be
braced to facilitate construction, the Contractor is to
contact the Honolulu District Overhead Superintendent,
at 548-7745, a minimum of 72 hours in advance.
- e. Should it become necessary, any work required to relocate
HECO facilities shall be done by HECO. The Contractor
shall be responsible for all coordination.
- f. The Contractor shall be liable for any damages to HECO's
facilities.
9. The Contractor shall report any damages to HECO's
facilities to the HECO Trouble Dispatcher at 548-7961.

Thank you for the opportunity to comment on this Environmental
Preparation Notice.

Sincerely,

Stephen D. Coles
Stephen D. Coles, Ph.D.
Acting Manager
Environmental Department

JMP,Jr.:ca



State of Hawaii
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
600 Ala Moana Boulevard, Suite 338 Honolulu, Hawaii 96813
(808) 548-7180

George K. Aiyemhi
Chairman
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

July 30, 1984

Stephen L. Coles, Ph.D.
Acting Manager
Environmental Department
Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, Hawaii 96840

Dear Dr. Coles:

Re: Supplemental EIS Preparation Notice for the
Kakaako Community Development District Plan

Thank you for your letter of July 11, 1984 concerning
the subject Supplemental EIS Preparation Notice.

The cost share for the undergrounding of overhead
electrical lines will be noted in the SEIS.

The electrical improvements shown in the Makai Area
Plan were determined with the assistance of HECO personnel
during the preparation of the Plan. The Plan calls for
upgrading the existing distribution lines to 12KV. We
will apprise HECO of the specific electrical requirements
for the makai area as engineering designs for
infrastructure improvements are undertaken.

Proposed electrical improvements for the Kakaako
District do not include 138KV lines.

HCDA will comply with all of HECO's requirements
relating to construction in proximity to existing
energized HECO facilities.

Please note that the engineering design currently
underway for improvements to the electrical system in the
Increment 1 area of the Kakaako District is being
coordinated with Mr. Heade D. Wildrick of HECO's
Distribution Engineering Department. To assure that all
of your concerns are addressed in the engineering design,
please coordinate your comments through Mr. Wildrick.

Stephen L. Coles, Ph.D.
Page Two
July 30, 1984

A copy of the Draft Supplemental EIS will be provided
to HECO for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/RT:ak
cc: Mr. Frank Johnson, Environmental Officer, DHUD
H. Hogi Planning & Research, Inc.

HAWAIIAN TELEPHONE
613

Russ E. Sato
Network Engineering Director

May 30, 1984

RECEIVED

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HAWAIIAN TELEPHONE
DEVELOPMENT
AUTHORITY

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
Suite 1001
677 Ala Moana
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Preparation Notice for a Supplemental
EIS for the Kakaako Community
Development District Plan

We have reviewed the supplemental EIS for the Kakaako Community Development District Plan and have no further comments to offer.

Since this plan calls for the conversion of existing overhead lines to underground, we have been coordinating our requirements directly with the consultants on this project. The plan has appropriately addressed our concerns.

Thank you for the opportunity to review the EIS.

Sincerely,

Walter M. Matsumoto

Walter M. Matsumoto
Acting Network Engineering Director



State of Hawaii

Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813
(808) 548-7180

June 27, 1984

Mr. Walter M. Matsumoto
Acting Network Engineering Director
Hawaiian Telephone Company
P. O. Box 2200
Honolulu, Hawaii 96841

Dear Mr. Matsumoto:

Re: Supplemental EIS Preparation Notice
for the Kakaako Community Development
District Plan

Thank you for your letter of May 30, 1984 concerning the subject Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided to your Company for review and comment when it becomes available.

Very truly yours,

Rex D. Johnson

Rex D. Johnson
Executive Director

RDJ/KT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

HAWAIIAN TELEPHONE
GTE

RECEIVED
JUL 10 AM 9 48

COMMUNITY
DEVELOPMENT
AUTHORITY

Russ K. Saito
Assistant Engineering Director

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
677 Ala Moana Blvd., Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Preparation Notice for a Supplemental
EIS for the Kaka'ako Community
Development District Plan

We have reviewed the Supplemental EIS for the Kaka'ako Community Development District Plan and have no specific environmental concerns other than those already identified in the EIS notice.

We will coordinate our requirement for the conversion of existing overhead lines to underground with your consultants on this project. The mixed use-commercial land use designation of our Central Division Headquarters property located at Keawe and Ilalo Streets will not affect our future plans and the traffic pattern from this facility can be adjusted to accommodate the proposed realignment of Keawe Street and the closing of Coral Street.

Thank you for the opportunity to review and comment on the Supplemental EIS Preparation Notice.

Sincerely,

Russ K. Saito
Russ K. Saito



State of Hawaii
Hawaii Community Development Authority
577 Ala Moana Boulevard, Suite 1001
680-Ale-Moane Boulevard, Suite 318 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

July 20, 1984

Mr. Russ Saito
Director
Network Planning and
Engineering Department
Hawaiian Telephone Company
P. O. Box 2200
Honolulu, Hawaii 96841

Dear Mr. Saito:

Re: Supplemental EIS Preparation Notice for the
Kaka'ako Community Development District Plan

Thank you for your letter concerning the subject
Supplemental EIS Preparation Notice.

A copy of the Draft Supplemental EIS will be provided
to the Hawaiian Telephone Company for review and comment
when it becomes available.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

D. COMMENTS ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT SHAFTER, HAWAII 96813-5440

December 20, 1984
RECEIVED
DEC 31 1984

MAIL ROOM

1117
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State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Atiyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
677 Ala Moana Blvd, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Thank you for the opportunity to review and comment on the Draft Supplemental EIS for the Kakaako Community Development Plan. We have no additional comments to our letter dated June 26, 1984.

Sincerely,

Kiuk Cheung
Kiuk Cheung
Chief, Engineering Division

Mr. Kiuk Cheung, Chief
Engineering Division
Department of the Army
U. S. Army Engineer District,
Honolulu
Ft. Shafter, Hawaii 96813-5440

Dear Mr. Cheung:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter dated December 20, 1984 concerning the subject Draft Supplemental EIS.

Your interest in this project is sincerely appreciated.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

100 ALA NUANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96813

Mr. Rex Johnson
Executive Director
Hawaii Community
Development Authority
Suite 1001
677 Ala Nuana Boulevard
Honolulu, Hawaii 96813

Re: Draft Supplemental EIS for the
Kakaako Community Development
District Plan

Dear Mr. Johnson:

Due to current manpower and budget restrictions, the Office of Environmental Services cannot devote the time necessary to conduct a thorough review of fish and wildlife concerns associated with the referenced action at this time. We strongly recommend that you consult directly with the State of Hawaii, Department of Land and Natural Resources, Division of Aquatic Resources and consider their recommendations in your project planning.

Please be advised that this notification does not abrogate your responsibilities to comply with the requirements of the Fish and Wildlife Coordination Act, nor does it represent Service approval of, or support for, the proposed activity. The Service may review future actions related to this proposal should administrative constraints be alleviated or if adverse impacts to significant fish and wildlife resources are identified. Please continue to keep this office apprised of the project's status.

Sincerely yours,

Ernest Kosaka
Ernest Kosaka
Project Leader
Office of Environmental Services

cc: NMFS-UPPO
HDFAW
HDAR
EPA, San Francisco
Mr. Robert E. Fuhda, Area Manager, HND



State of Hawaii
Hawaii Community Development Authority

677 Ala Nuana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 8, 1985

Mr. Ernest Kosaka
Project Leader
U. S. Department of the
Interior
Fish and Wildlife Service
P. O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of November 23, 1984 concerning the subject Draft Supplemental EIS.

During the preparation of the Draft SEIS, contact was made with the Department of Land and Natural Resources as to the potential impact on aquatic wildlife. We have also solicited their comments on the Draft SEIS.

We are aware that all applicable provisions of the Fish and Wildlife Coordination Act must be complied with.

Your review and comments are sincerely appreciated.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KTiak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGIONAL

215 Fremont Street
San Francisco, Ca 94105

JAN 21 1985

Mr. Rex Johnson
Executive Director
Hawaii Community Development Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

The Environmental Protection Agency (EPA) has reviewed the Draft Supplemental Environmental Impact Statement (DS) titled KAKA'AKO COMMUNITY DEVELOPMENT DISTRICT PLAN.

As with the earlier EIS for Kaka'ako, we are concerned about the potential air quality impacts resulting from the 55% increase in traffic by the year 2000. Specifically, the DS states that, using a "worst case" analysis, violations of the eight-hour standard for carbon monoxide (CO) will occur at several locations. EPA considers the violation of a national ambient air quality standard a very significant adverse effect and one which must be mitigated.

The principal omission of the DS is the lack of specific commitments to mitigation measures that can be demonstrated to be effective in avoiding these potential violations. We strongly urge that a specific mitigation plan be developed and committed to which elaborates upon the possible mitigation measures identified in the DS. By closely linking the phased development of Kaka'ako with the development of the regional transportation plan, many of the direct air quality impacts from increased traffic and the indirect impacts resulting from the parking garages could be avoided. We have enclosed more detailed comments on this issue.

Because of these concerns, we have rated this DS as Category EO-2, Environmental Objections--Insufficient Information (see attached "Summary of Rating Definitions and Follow-Up Action"). The classification and date of EPA's comments will be published in the Federal Register in accordance with our public disclosure responsibilities under Section 309 of the Clean Air Act.

-2-

We appreciate the opportunity to review this DS. Please send three copies of the Final Supplemental Environmental Impact Statement (FS) to this office at the same time it is officially filed with our Washington, D.C. office. If you have any questions, please contact Mr. Rick Hoffmann, Federal Activities Branch, at (415) 974-8191 or FTS 454-8191.

Sincerely yours,

Charles W. Murray, Jr.
Assistant Regional Administrator
for Policy and Management

Enclosure (3 pages)

cc: Mr. Robert K. Fukuda, Area Manager
US Department of Housing and Urban Development

Mr. Melvin Kolzumi, Deputy Director for Environmental Health
Hawaii Department of Health

Mr. Dave Wasden, Regional Transportation Planner
Federal Highway Administration, San Francisco Office

Gordon Lum, Executive Director
Oahu Metropolitan Planning Organization

Enclosure

Air Quality Comments

1. We are pleased to note that your agency coordinated its analysis with the Oahu Metropolitan Planning Organization (OMPO) and based many of the traffic projections upon their data.

We recommend that any significant written correspondence with OMPO be included in the FS. It is also important to consult with them in devising a mitigation approach to offset the CO problems resulting from the traffic and the parking garages.

2. As we noted in the cover letter, EPA considers the potential violations of the federal CO standards to be a significant problem. We recognize that these exceedences generally occur downwind of the parking garages and are considered "worst case" projections. However, if modeling locations had been selected for busy intersections, this likely would have shown even higher maximum concentrations of CO, rather than the "general air quality occurring throughout the area." Accordingly, the air quality analysis, though conservative in certain assumptions, is not entirely a worst case analysis. As you know, this was the case in the Kaka'ako FHS; the microscale analysis for the Kapiolani-Hard intersection showed some of the highest CO concentrations in the air quality study.

3. Because of the concerns noted above, EPA feels it is very important that a specific air quality mitigation strategy be developed and closely linked with the development of the regional transportation plan for Oahu. The Kaka'ako plan should be committed to before completion of the FS. Until a mitigation plan is completed, we consider the air quality impacts to be an "unresolved issue."

There are a variety of transportation control measures which have been considered and used, as appropriate, in other areas. We have listed below some examples which you might consider in developing a mitigation plan.

1. Traffic flow improvements
 - a. One-way streets
 - b. Reversible lanes
 - c. Elimination of unnecessary traffic signals
 - d. Computerized traffic flow

2. Elimination of on-street parking on major streets
3. Restriction of peak-period truck deliveries
4. Auto-free zones
5. Limiting portions of the metropolitan area road system to the use of common carriers, both as to time and place
6. Increasing the cost of parking
7. Improvement of transit service quality
 - a. long-range improvements
 - b. extension of service
 - c. reduction of rates
 - d. Park and Ride express service
8. High Occupancy Vehicle lanes on major streets
9. Carpool programs
10. Vanpool programs
11. Encouragement of pedestrian and bicycle traffic
12. Employer participation programs to encourage carpooling, mass transit, bicycling, and walking.

SUMMARY OF FINDING DEFINITIONS AND FOLLOW-UP ACTION*

Environmental Impact of the Action

10—Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

11—Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

12—Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

13—Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CDO.

Adequacy of the Impact Statement

Category 1—Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2—Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3—Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CDO.

*From: EPA Manual 1610 Policy and Procedures for the Review of Federal Actions Impacting the Environment



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813 Ref. No.: PL EIS 6.11.6
(808) 548-7180

March 7, 1985

George R. Ariyoshi
Governor

Kenneth F. Brown
Chairman

Rex D. Johnson
Executive Director

Mr. Charles W. Murray, Jr.

Page Two

March 7, 1985

Mr. Charles W. Murray, Jr.
Assistant Regional Administrator
Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, California 94105

Dear Mr. Murray:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of January 21, 1985 concerning the subject Draft Supplemental EIS.

In light of your comments, we have reevaluated our plans and the assumptions on which the air quality prediction model was based. Of principal concern was the receptor locations which indicated violations of the 8-hour ambient air quality standard. As noted in the Draft Supplemental EIS (Appendix C), the predictions for CO was based on the worst case scenario given maximum utilization of each parking garage site for parking. However, we do not intend to maximize the utilization of each site for parking.

We envision each parking garage site to be part of a mixed-use development which may include light industrial uses, commercial uses, and residential uses. These uses may take up more than 30 percent of the available floor area of the site. Because the programming of these sites is to be in future development phases (beyond 1987), we do not have definitive plans for the sites at this time. The use(s) (other than parking) will be compatible with the surrounding planned uses.

Further, we had based the utilization of the garages on a 100 percent turnover per hour. We have given this

rate further consideration and, based upon utilization rates of parking garages of similar types, we found that the utilization is much lower, except in CBD areas. We feel that a projected turnover rate of 50 percent per hour or lower during peak periods would be realistic. Given these new parameters the projected CO levels are predicted to be below the 8-hour maximum levels. We have discussed these findings with Mr. Monte Kresse at a meeting on February 21, 1985. The analysis and findings will be reported in a revised Air Quality Study which will be included in the Final Supplemental EIS.

We further conducted a separate study, at the suggestion of Mr. Kresse, to determine impacts to air quality at the intersection of Ward Avenue and Ala Moana Boulevard. This intersection was selected for detailed study because it had the greatest loading factor. Our findings indicate that there were no violations of the 1-hour standard; however, there was a violation of the 8-hour standard in the order of 13 mg/m³. We will also determine the probability of occurrence based on known meteorological data, and these findings will be reported in the Final Supplemental EIS. It should be noted, however, that traffic at this intersection is based on 75 percent being through traffic, as opposed to Kakaako-generated traffic. The State Highways Department will determine means to mitigate impacts in the area. Proposed traffic engineering measures are discussed in a revised Traffic Impact Study which will be incorporated in the Final Supplemental EIS.

We appreciate your examples of potential mitigation measures which could be used to mitigate degradation of ambient air quality standards. We have incorporated many of your suggestions in the Kakaako Plan as follows:

1. Traffic Flow Improvements. A major feature of the Kakaako Plan is the implementation of one-way street couplets (Queen-Pohukaina and Punchbowl-South Streets) as described in the Final EIS (HUD-R09-EIS-82-5F).

Another major traffic engineering proposal that is currently being studied by the City

Mr. Charles W. Murray, Jr.
Page Three
March 7, 1985

and County of Honolulu is a computer-assisted traffic signalization program which is scheduled for implementation under the City's Fiscal Year 1985-86 Capital Improvements Program budget.

2. Elimination of On-Street Parking. The Kakaako Plan calls for the eventual elimination of on-street parking on all major streets as discussed in the Draft Supplemental EIS.

3. Restriction of Peak-Period Truck Deliveries. This option was not considered in our planning, but will be given further consideration.

4. Auto-Free Zones. This alternative was not considered in our planning because of the diverse nature of land ownership in the planning area.

5. Limiting Use of Road Systems by Common Carriers. This alternative is outside of our jurisdiction.

6. Increasing the Cost of Parking. Given the current scarcity of funds for many public improvements and the continuing likelihood of this situation, it is anticipated that public parking structures will of necessity be financed with revenue bonds. This will require that parking revenues be maximized to generate the needed funds to repay the bonds issued to finance the construction of these facilities. This will additionally affect movements in the structure as the attendant controlled facilities are generally physically unable to turn over rapidly, thus disbursing this high turnover demand to other parking choices.

7. Improvement of Transit Service. Any improvement to the local transit system will

Mr. Charles W. Murray, Jr.
Page Four
March 7, 1985


be done in concert with the County's Department of Transportation Services. The Plan does provide for an internal transit (shuttle) system, but we have not determined a threshold level at which time this system would need to be implemented.

8. High Occupancy Vehicles (HOV). Car Pool, Van Pool. The State currently has a program which encourages the use of HOVs and has provided special lanes for their operation on major corridors. This option, however, has not been put into effect in the Kakaako area. The use of car and van pools is also encouraged by the State.

9. Encouragement of Pedestrian and Bicycle Traffic. The Kakaako Plan has made provisions for pedestrian and bicycle movement via grade-separated pedestrian walkways and bicycle lanes along designated routes. These routes are described in the Final EIS. The Kakaako Plan has attempted to enhance the pedestrian environment.

Your comments are sincerely appreciated. We further appreciated the opportunity to discuss our concerns with Mr. Krese. Please feel free to call us if you have any questions or require additional information.

Very truly yours,


Rex D. Johnson
Executive Director

RDJ/AT:ak

cc: Mr. Frank Johnson, Environmental Officer
Department of Housing and Urban
Development

Mr. Gordon G. W. Lum, Oahu Metropolitan
Planning Organization

Mr. Melvin Kofuzumi, Deputy Director for
Environmental Health, Department of
Health

H. Mogi Planning & Research, Inc.

SPARK M. MATSUNAGA
SENATOR

LEGISLATIVE OFFICE
100 PRINCE KUHIO BUILDING
HONOLULU, D.C. 96810
HONOLULU, HAWAII 96810

United States Senate

WASHINGTON, D.C. 20510

November 26, 1984

CHIEF DEPUTY
DEMOCRATIC WHIP

COMMITTEE ON FINANCE
COMMITTEE ON EMERGENCY AND
NATURAL RESOURCES
COMMITTEE ON LABOR AND
HUMAN RESOURCES
COMMITTEE ON
VETERANS AFFAIRS

Mr. Rex D. Johnson
Executive Director
Hawaii Community Development Authority
State of Hawaii
677 Ala Moana Blvd., Suite 1001
Honolulu, Hawaii 96813

Dear Rex:

Thank you for sending me a copy of the Draft Supplemental Environmental Impact Statement (EIS) for the Kakaako Community Development District Plan.

I appreciate your offering me the opportunity to comment on the supplemental EIS. Although I have no formal comments to submit, I would like to commend the Hawaii Community Development Authority and the Honolulu Area Office of the Department of Housing and Urban Development for developing this document which discloses the impacts from implementing the Makai Area Plan. The Kakaako District Plan is indeed an ambitious one to redevelop and revitalize the area. I particularly made note of the steps that will be taken to minimize noise, adverse air quality, and dislocation of existing businesses, while maximizing housing opportunities, historic preservation, and infrastructure improvements.

Please keep me apprised of the progress of the Kakaako District Plan and let me know if I can assist you in your efforts.

Aloha and best wishes.

Sincerely,

Spark
Spark Matsunaga
U.S. Senator



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 518-7180

January 9, 1985

George R. Ariyoshi
Governor
Kenneth F. Bruhn
Chairman
Rex D. Johnson
Executive Director

The Honorable Spark Matsunaga
United States Senate
3104 Prince Kuhio Building
Honolulu, Hawaii 96850

Dear Senator Matsunaga:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of November 26, 1984 concerning the subject Draft Supplemental EIS.

We appreciate your interest in the Kakaako redevelopment project and will send you a copy of the Final Supplemental EIS when it becomes available.

Very truly yours,

Rex

Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hogi Planning & Research, Inc.

SPARK M. MATSUNAGA
HAWAII
WASHINGTON OFFICE
1100 K STREET, N.W.
WASHINGTON, D.C. 20004
HONOLULU OFFICE
1100 K STREET, N.W.
HONOLULU, HAWAII 96813

United States Senate

WASHINGTON D.C. 20510

December 18, 1984

Mr. Rex Johnson, Exec. Dir.
Hawaii Community Development Authority
State of Hawaii
677 Ala Moana Blvd., Ste. 1001
Honolulu, Hawaii 96813

Dear Rex:

This is just to acknowledge receipt of
your recent communication addressed to
Senator Spark Matsunaga.

Please be assured that your
communication will be brought to the
Senator's attention at the earliest possible
moment.

Yours truly,

Cherry Matsunaga
Cherry Matsunaga (Ms.)
Administrative Assistant
to Senator Matsunaga

CHIEF DEPUTY
DEMOCRATIC whip

SENATOR

COMMITTEE ON FINANCE

COMMITTEE ON ENERGY AND

NATURAL RESOURCES

COMMITTEE ON LABOR AND

HUMAN RESOURCES

COMMITTEE ON

ARMED SERVICES



State of Hawaii Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 9, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Ms. Cherry Matano
Administrative Assistant
Office of the Honorable
Spark Matsunaga
United States Senate
109 Hart Building
Washington, D. C. 20510

Dear Ms. Matano:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of December 18, 1984
concerning the subject Draft Supplemental EIS.

We are in receipt of comments from the Senator and
appreciated your bringing it to his attention.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDS/KT:af
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, DC 20540
OFFICE OF THE ADMINISTRATOR



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Washington, DC 20540
Rec'd 1-9-85

December 31, 1984

N/MS2:KE

January 7, 1985

PP2:JW

Mr. Rex Johnson
Executive Director
Hawaii Community
Development Authority
Suite 1001
677 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Johnson:

This is in reference to your draft supplemental environmental impact statement for Kahalo Community Development District Plan. Enclosed are comments from the National Oceanic and Atmospheric Administration.

We hope our comments will assist you. Thank you for giving us an opportunity to review the document. We would appreciate receiving two copies of the final environmental impact statement.

Sincerely,

David C. Johnson
Joyce M. Wood
Chief, Ecology and
Conservation Division

Enclosure
DC:lg

TO: PP2 - Joyce M. Wood
FROM: M - Paul M. Wolff
SUBJECT: DEIS 8411.13 - Kahalo Community Development District Plan
(Honolulu, Hawaii)

The subject DEIS has been reviewed within the areas of the National Ocean Service's (NOS) responsibility and expertise, and in terms of the impact of the proposed action on NOS activities and projects.

Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation required for NOS monuments. For further information about these monuments, please contact Mr. John Spencer, Chief, National Geodetic Information Branch (N/GIB), or Mr. Charles Hovak, Chief, Network Maintenance Section (N/GN162), at 6001 Executive Boulevard, Rockville, Maryland 20852.





State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 22, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Ms. Joyce H. Wood, Chief
Ecology and Conservation Division
National Oceanic and Atmospheric
Administration
U. S. Department of Commerce
Washington, D. C. 20230

Dear Ms. Wood:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

We have received your letter of January 7, 1985
transmitting comments from the National Oceanic and
Atmospheric Administration on the subject Draft
Supplemental EIS.

We have identified five (5) geodetic control survey
monuments in the Kakaako Increment 1 project area and will
comply with the requirements of the National Oceanic and
Atmospheric Administration to notify them not less than 90
days if proposed improvements necessitate the relocation
of any monument. Furthermore, we will make provisions for
the cost of relocating any monument within the project
area.

Your comments are sincerely appreciated. Please feel
free to call us should you have any questions.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:af
cc: Mr. Frank Johnson, Environmental Officer
H. Hogg Planning & Research, Inc.
Mr. Paul M. Wolff, National Oceanic and
Atmospheric Administration



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 22, 1985

George R. Aiyushi
Chairman

Kenneth F. Brown
Chairman

Rex D. Johnson
Executive Director

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
Hawaii Division
Box 50206
Honolulu, Hawaii 96850



January 11, 1985

HDA-HI
(574)

RECEIVED
DEPT. OF HHD
CM AREA OFFICE
JAN 16 1985

Mr. Robert K. Fukuda, Area Manager
HUD Honolulu Area Office
U.S. Department of Housing and
Urban Development
Box 50007
Honolulu, HI 96850

Dear Mr. Fukuda:

Subject: Draft Supplemental EIS for the Kakaako Community
Development District Plan

Many of the streets in the Kakaako Community area are on the Federal-aid Urban System. Improvement of these streets would be eligible for Federal-aid Urban Highway funding subject to availability of funds and selection by the City of Honolulu. Ala Moana Boulevard is on the Federal-aid Primary Highway system and improvements would be eligible for Federal-aid Primary funds subject to availability of funds and selection of a project by the State Department of Transportation.

Honolulu Department of Transportation Services is currently conducting an areawide study for interconnect of Traffic Signal Systems under Project HC-0001(12).

Thank you for the opportunity to review the document.

Sincerely yours,

[Signature]
H. Kusumoto
Division Administrator

Mr. H. Kusumoto
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
Region Nine
Hawaii Division
P. O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Your comments dated January 11, 1985 regarding the subject Draft Supplemental EIS has been transmitted to us by the Department of Housing and Urban Development for response.

We appreciate being informed of Federal funding assistance which may be available for improvements to eligible streets within the Kakaako District. Federal funds will help reduce the costs to the local government, and we intend to pursue these possible sources of Federal funds for street improvements.

Traffic signalization systems included in HCDA's engineering design plans for street improvements are reviewed and approved by the City and County Department of Transportation Services. All streets improved by HCDA will be dedicated to the City and County for operation and maintenance.

Thank you for your interest in the Kakaako redevelopment project. Please feel free to call us should you have any questions.

Very truly yours,

[Signature]
Rex D. Johnson
Executive Director

RDJ/KTraf
cc: Mr. Robert K. Fukuda, Area Manager
U. S. Department of Housing and
Urban Development

/ H. Hogi Planning & Research, Inc.

CLERICAL SECTION
CONTINUED



STATE OF HAWAII
DEPARTMENT OF EDUCATION

P. O. BOX 2360
HONOLULU, HAWAII 96804

December 10, 1984

OFFICE OF THE SUPERINTENDENT

Francis M. Hatanaka
SUPERINTENDENT



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

January 8, 1985

Ms. Letitia H. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

SUBJECT: Draft Supplemental EIS for Kaka'ako Community
Development District Plan

The Department of Education does not have any comments to offer at this time on the subject Draft EIS.

Thank you for the opportunity to review the material.

Sincerely,

Francis M. Hatanaka
Francis M. Hatanaka
Superintendent

The Honorable Francis M. Hatanaka
Superintendent
Office of the Superintendent
Department of Education
State of Hawaii
P. O. Box 2360
Honolulu, Hawaii 96804

Dear Mr. Hatanaka:

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

Thank you for your letter of December 10, 1984 concerning the subject Draft Supplemental EIS. We appreciate your interest in this project.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

FHM:j1 (HL)

cc: V. Honda, OBS
R. Johnson, Hawaii Comm. Dev. Auth.
F. Johnson, U.S. Dept. of Housing & Urban Dev.

AN EQUAL OPPORTUNITY EMPLOYER



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Leslie S. Matsubara
Deputy Director for
Environmental Health



STATE OF HAWAII
DEPARTMENT OF HEALTH

P. O. BOX 3378

HONOLULU, HAWAII 96813

RECEIVED

December 19, 1984

COMMUNITY

December 19, 1984

COMMUNITY

December 19, 1984

COMMUNITY

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekuanani St., Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Request for Comments on Proposed Environmental Impact Statement
(EIS) for Kakaako Community Development District Plan, Oahu

Thank you for allowing us to review and comment on the subject proposed EIS.

Noise

Concerns toward noise impacts resulting from the multiple land uses within the project location were addressed in previous comments to the EIS Preparation Notice Reference to memorandum dated October 29, 1981).

The following additional comments should be considered:

1. It should be stressed that mixing of land uses could result in severe noise problems. The proposal of utilizing vertical separation may be ineffective as a means of mitigating noise impacts.
2. The Kakaako Community Development District Plan Noise Regulations must be effectively enforced by its land agency, the Hawaii Community Development Authority.

Wastewater Treatment

The EIS does not address whether the Sand Island Sewage Treatment Plant, Ala Moana pump station, can handle the projected increase in sewage flow.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

Sincerely,

Leslie S. Matsubara
Deputy Director for
Environmental Health

cc: Mr. Rex Johnson
Mr. Frank Johnson

Mr. Melvin K. Koizumi
Deputy Director for
Environmental Health
Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Koizumi:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of December 19, 1984 concerning the subject Draft Supplemental EIS.

The noise study indicates that while the predicted levels of noise will increase, they are within acceptable standards. Care will be taken in the review of development projects to minimize adverse noise impacts. We welcome any suggestions you may have regarding the design of mixed-use projects to minimize potential noise impacts.

The performance standards in the Kakaako Rules which govern noise in the Kakaako District were adopted from the Department of Health regulations and take into account the effects of mixed-use zoning. These noise regulations, as well as the permit system for temporary variances, were intended to be administered by the State Department of Health in order to avoid unnecessary duplication of government services. In addition, unless specifically stated otherwise, all Department of Health rules and regulations continue to apply within the Kakaako District as provided in Sections 15-17-9(g) and 15-17-127 of the Kakaako Rules. If you feel that the means of administering the Kakaako noise regulations are


Mr. Melvin K. Kolzumi
Page Two
January 21, 1985

Inappropriate, we would be pleased to discuss this matter with you.

The Sand Island Sewage Treatment Plant (STP) services a large tributary area that extends beyond the Kakaako District. The ability of the plant to accommodate future sewage flows is contingent on development activities within this service area. For this reason and because plant capacity is predicated on many factors, of which sewage flow volume is but one, the effects of future developments within the Kakaako District on the STP will be evaluated on a project-specific basis. The Sand Island STP and Ala Moana Pump Station, however, were designed to ultimately accommodate future projections of population and contributing sewage flows through the year 2020.

Your review and comments are sincerely appreciated. Please feel free to call us should you have any questions or need additional information.

Very truly yours,


Rex D. Johnson
Executive Director

RBJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hogg Planning & Research, Inc.

PA 6.11.2



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 21, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

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January 1, 1985

HAWAII COMMUNITY
DEVELOPMENT
AUTHORITY

Ref. No. P-810

MEMORANDUM

TO: Ms. Letitia N. Ayunara, Director
Office of Environmental Quality Control

FROM: Kent M. Keith, Director

SUBJECT: Draft Supplemental EIS for Kaka'o Community Development District
Plan

We have reviewed the subject supplemental environmental impact statement (EIS) and have no comment on the document.

Thank you for the opportunity to review this EIS.

cc: ✓ Mr. Rex Johnson, Executive Director
Hawaii Community Development Authority
Mr. Frank Johnson
U.S. Department of Housing and Urban Development

MEMORANDUM

TO: The Honorable Kent M. Keith, Director
Department of Planning and Economic Development

FROM: Rex D. Johnson, Executive Director
Hawaii Community Development Authority

SUBJECT: Draft Supplemental Environmental Impact
Statement for the Kaka'o Community Development
District Plan

We have received your January 4, 1985 memorandum concerning the subject Draft Supplemental EIS.

Your interest in this project is sincerely appreciated.

cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Arizono
Kenneth F. Brown
Rex D. Johnson

The Honorable Wayne J. Yamasaki,
Director
Page Two
February 4, 1985

MEMORANDUM

TO: The Honorable Wayne J. Yamasaki, Director
Department of Transportation

FROM: Rex D. Johnson, Executive Director
Hawaii Community Development Authority

SUBJECT: Draft Supplemental EIS for the Kakaako Community
Development District Plan

V-72

We have reviewed your January 16, 1985 memorandum concerning the subject Draft Supplemental EIS. The following responds to your specific concerns:

1. Page II - 68, 70

Under the agreement reached, the Kakaako Relocation Corporation will clear, grade, and pave the central parcel in exchange for use of the site fronting Ala Moana Boulevard for temporary relocation purposes. The DOT will then be able to use the central parcel for maritime purpose. We will revise this section to address your concern.

2. Page III - 8

The effects of stormwater discharge into Kewalo Basin have been described in Appendix A of the Final EIS and on pages IV-7 and IV-9 of the Draft SEIS. The water quality in

Kewalo Basin is not expected to deteriorate due to the reduction of pollutants into storm drains and the diversion of about 167 cfs of peak discharge from Kewalo Basin to the Keawe Street drainage channel.

3. All improvements to Ala Moana Boulevard undertaken or authorized by HCDA will be coordinated with the DOT.

Your review and comments are sincerely appreciated. Please call us should you have any questions or need additional information.

cc: Mr. Frank Johnson, Environmental Officer
U. S. Department of Housing and Urban
Development

✓ H. Mogi Planning & Research, Inc.



**State of Hawaii
Hawaii Community Development Authority**

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Atiyoshi
Chairman
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

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GSA GEN. REG. NO. 27



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY
110 HALEKAUWILA STREET
ROOM 301
HONOLULU, HAWAII 96813

17th Dec 13 AM 9 46

December 11, 1984

LETTER
JAN 2 1985

Mr. Rex Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Blvd., Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Comments to the Supplemental EIS for the
Kaka'ako Community Development District Plan

We request more information on your superblock concept including a list of streets that will be closed and a narrative behind the concept.

The area covered in the traffic study is primarily mauka of Ala Moana Boulevard and does not include the impacts of traffic generated in the makai area and how this will affect the major thoroughfares.

Sincerely,

Letitia M. Uyehara
Letitia M. Uyehara
Director

Ms. Letitia M. Uyehara
Director
Office of Environmental Quality
Control
State of Hawaii
Room 301
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

Thank you for your letter of December 11, 1984 concerning the subject Draft Supplemental EIS.

The concept of the superblock is described in the Kaka'ako Community Development District Plan (see page 9) and in the Final EIS (page 11-23). The streets that are to be closed are shown in the Plan (page 12) and also in the Final EIS (page 11-6) and the Draft SEIS (page 11-35). Street closures would facilitate land consolidation and make available more land to support large and cost-efficient developments. It should be noted, however, that the closure of any street is subject to our review and must be coordinated with the appropriate State and City agencies. The closure of major roadways and certain minor streets may require amendment to the City and County's Development Plan Map.

The traffic study incorporated in the SEIS includes data on both the mauka and makai areas with regard to existing levels of traffic and future traffic conditions.

Your review and comments are sincerely appreciated. Should you have any questions or need additional information, please feel free to call us.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/MT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.



University of Hawaii at Manoa

Environmental Center
Crawford 317 - 2350 Campus Road
Honolulu, Hawaii 96822
Telephone (local) 944-7281

25 JAN 10 PM 10 09

UNITY
CENT
JAN 7, 1985

RE:0409

Ms. Letitia N. Uyehara
Office of Environmental Quality Control
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Draft Supplemental EIS
Kaka'ako Community Development District Plan
Honolulu, Oahu

The above cited Draft Supplemental Environmental Impact Statement (DSEIS) has been prepared to address the potential environmental impacts associated with the development of the added Makai Area Plan of the Kaka'ako Community Development Plan as well to update information and analysis on certain specific environmental parameters and infrastructure improvements for the entire Kaka'ako District. We have been assisted in our review of the DSEIS by Peter Flachsbart, Urban and Regional Planning, Jacquelin Miller and Julianne Mansur, Environmental Center.

One issue raised by our reviewers concerns the air quality analysis described in Appendix C. We note that the "receptors" for which carbon monoxide levels have been estimated using EPA's PAF model are in mid-block locations. The levels have been computed for peak traffic hours and, simply by the use of a constant "persistence" factor, for the 8-hour period 10:00 am-5:00 pm. "Worst case" (low wind speed) and "average case" conditions have been assumed, but only northwest, north, and northeast wind directions. The calculated pattern of CO pollution is what might be expected given the assumed conditions, with high concentrations at the mid-block "receptors" south of proposed parking structures. A different pattern should be expected with light southerly winds, but perhaps the maximum levels of pollution would be roughly the same. However, we suggest that the pollution should also be estimated downwind of major street intersections, particularly those with traffic lights, as well as for mid-block locations, and that the effects of the mitigation measures indicated in Appendix B (p. B-35) should be investigated.

Other concerns expressed by our reviewers include: the potential for cultural deposits in those parts of the makai area not formed by fill; the use of 1980 prices in the economic analyses; and the economic relationship between encouraged development and expansion of the proposed Honolulu Harbor waterfront industrial area and the Barbers' Point Harbor industrial areas.

Ms. Letitia N. Uyehara

-2-

January 7, 1985

It would seem appropriate for these issues to be addressed in the Final Supplemental EIS.

Yours truly,

Doak C. Cox
Director

cc: Rex Johnson, Hawaii Community Dev. Authority
Frank Johnson, U.S. Dept. of Housing & Urban Dev.
Peter Flachsbart
Jacquelin Miller
Julianne Mansur



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 538-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Doak Cox, Ph.D.
Page Two
January 21, 1985

January 21, 1985

Doak Cox, Ph.D.
Director
University of Hawaii
Environmental Center
2550 Campus Road
Honolulu, Hawaii 96822

Dear Dr. Cox:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of January 7, 1985
concerning the subject Draft Supplemental EIS.

The air quality measurements for carbon monoxide that
were noted and analyzed in the SEIS represent the "worst
case" conditions. Therefore, readings in a southerly
(opposite) direction are expected to be less than those
reported.

The potential for uncovering cultural deposits during
construction is uncertain at this time. It should be
noted that since the infrastructure improvements proposed
by HCDA for the most part will replace existing
substandard roadway and utility systems, and will be
constructed within the road rights-of-way, it is unlikely
that cultural deposits will be uncovered. However, should
any significant cultural or archaeological remains be
discovered during the construction of infrastructure
improvements under HCDA's Improvement District program,
the State Historic Preservation Office will be notified.

The 1980 figures used in the economic analyses
represent a baseline from which all calculations were
made. Therefore, we do not feel it is necessary to
reestablish the baseline to more current figures.

The Kakaako Plan does not call for the expansion of
the Honolulu Harbor waterfront industrial area. The
economic relationships between development of Kakaako and
development of other areas of Oahu, such as Barbers Point
Harbor industrial area, are described in the Final EIS in
Chapter IV (pages IV-9 to IV-27). In general, development
in Kakaako would not significantly change the amount of
growth on Oahu, but will affect the distribution of
growth. Kakaako can accommodate a significant amount of
growth in private employment and in most kinds of private
nonresidential floor area. Growth within Kakaako will do
much to further the goals of both the State Plan and the
County General Plan, in terms of guiding population growth
to the urban core, creating employment opportunities, and
increasing the supply of moderate-income housing. Also,
the accommodation of growth in Kakaako will mean a greater
ability to preserve agricultural and open space areas,
reduced transportation and infrastructure demands, and
increased energy efficiency.

Your comments are sincerely appreciated. Please feel
free to call us should you have any questions or need
additional information.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/MT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Hogg Planning & Research, Inc.



University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 203 • 2540 Dole Street
Honolulu, Hawaii 96822

15 January 1985

COMMUNITY
DEVELOPMENT
AUTHORITY

Ms. Leticia M. Uyehara, Director
Office of Environmental Quality Control
350 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

SUBJECT: Draft Supplemental Environmental Impact Statement, Kakaako
Community Development District Plan, November 1984

We have reviewed the subject Draft Supplemental EIS and have no comment to offer. Thank you for the opportunity to comment. This material was reviewed by WRC personnel.

V-76

Sincerely,
Edwin T. Murabayashi
Edwin T. Murabayashi
EIS Coordinator

ETH:jw
cc: Rex Johnson
Frank Johnson



State of Hawaii Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

February 4, 1985

Mr. Edwin T. Murabayashi
EIS Coordinator
Water Resources Research Center
University of Hawaii
2540 Dole Street, Holmes Hall
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of January 15, 1985
concerning the subject Draft Supplemental EIS.

Your interest in this project is appreciated.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:af
cc: Mr. Frank Johnson, Environmental Officer
U. S. Department of Housing and Urban
Development

✓ H. Mogi Planning & Research, Inc.

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

AN EQUAL OPPORTUNITY AGENCY

OIMPO

January 3, 1985

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Draft Supplemental EIS for Kaka'ako Community

We have reviewed the above-mentioned draft supplemental EIS and offer the following comments:

Page **Comment**
II-13 The information presented on this page gives the impression that the parking requirements are too low and will not help prevent "haphazard street parking". Comments made in the second paragraph of page II-17 of the final EIS (6/83) should be included. This paragraph mentions that the RCDA Rules require about 10% fewer parking spaces than the County Comprehensive Zoning Code, and the parking plan will permit reduction of on-site parking for developers who purchase stalls in proposed public parking garages.

V-77

II-14 Development of bike lanes on Ala Moana Blvd. should not wait for implementation of bike lanes beyond the District. Rather, they should be implemented as an integral part of roadway improvements and lead adjacent development. The objective of diverting travel from the auto to non-auto modes such as bikes (see page B-17 and B-34) will be more readily achieved if residents and users of the area are provided with appropriate options, such as bike lanes and signalized crossings of major barriers between the makai and mauka areas.

III-11 Table III-2 should include the following footnotes:
P - Partially or entirely privately roads.
N - Partially or entirely no curbs or sidewalks.

IV-16 The assessment of traffic conditions in the year 2000 appears sketchy. More data and narrative describing the level of service of roadway conditions should be included. This information is available in Appendix B. (e.g. Table 9).

Oahu
Metropolitan
Planning
Organization

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COMMUNITY
DEVELOPMENT
DIVISION

Ms. Letitia N. Uyehara, Director
January 3, 1985

Page 2

An attempt should be made to assess the degree to which those sections of major arterials which currently experience congestion and delays will worsen.

Figure 2 should be labeled.

B-5 Year 2000 estimates of public transit person trips should be consistent. Page B-19 indicates 15,000 person trips to, from or within Kaka'ako, while page B-38 shows 18,000 weekday passenger trips on public transit.

B-28 Besides indicating the traffic volumes on the transportation system, Table B should also indicate the percent of the increase attributable to the Kaka'ako area. This would result in an additional column which divides the increase in total traffic volume from 1984 to 2000 by the increase in Kaka'ako traffic. One function of the EIS is to identify project impacts as well as net conditions.

B-32 Table 10 should also indicate the percent of traffic increase from 1980 to 2000 attributable to Kaka'ako. Again, this would help identify the project's impact to the system, as well as net conditions.

B-38 The summary to the traffic study states "without mitigation measures, many trips would be required to seek alternative routes or time of travel through the Kaka'ako area." It should be noted that even with the mitigation measures, Table II identified several intersections with a V/C ratio equal to or greater than 1.00 which will also cause the redistribution of trips.

If you have any questions regarding these comments, please call Steve Pickrell at 548-2638.

Sincerely,

John G.W. Lum

Gordon G.W. Lum
Executive Director

GGW:pjc

cc: Mr. Rex Johnson, HCDA
Mr. Frank Johnson, U.S. Dept. of HUD



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Mr. Gordon G. W. Lum
Executive Director
Oahu Metropolitan Planning
Organization
Suite 1509
1164 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Lum:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of January 3, 1985
concerning the subject Draft Supplemental EIS.

We have carefully reviewed your comments and will
revise the Draft Supplemental EIS accordingly.

1. Parking Requirements. We will revise this
section to reflect your concerns.

2. Bike Lanes on Ala Moana Boulevard. The
Kakaako Community District Plan provides for
the development of bike lanes along Ala Moana
Boulevard. For the most part, however,
roadway improvements will be implemented
incrementally. Therefore, it would not be
prudent to incorporate the bike lanes with
each roadway improvement segment until an
operational bikeway system can
be implemented. Therefore, we will coordinate
the implementation of the bike lanes along
Ala Moana Boulevard with the Department of
Transportation.

3. Table III-2. We will include the footnotes
to this table per your suggestion.

Mr. Gordon G. W. Lum
Page Two
January 22, 1985

4. Traffic Assessment (page IV-16). We will
revise this section to include additional
information contained in the Appendix.
Roadway segments that are currently
experiencing congestion or delays will be
discussed further.

5. Figure 2, Appendix B. This figure refers to
signalized intersection and will be so
labeled.

6. Year 2000 Transit Estimates. We will revise
these two pages to make the year 2000
estimates of public transit person trips
consistent.

7. We will add an additional column to Table 8
and Table 10 of Appendix B which will
indicate the percent increase in traffic that
is attributable to the Kakaako area.

8. Page B-28 will be reworded to more accurately
reflect traffic conditions with the
mitigation measures.

Your interest in the Kakaako redevelopment project is
sincerely appreciated. Please feel free to call us if you
have any questions.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KTiaf
cc: Mr. Frank Johnson, Environmental Officer
H. Hogg Planning & Research, Inc.



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

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DEC 9 4 AM 9 29

UNITY
DEC 9 1984
AUTHORITY

State of Hawaii
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 Diamond Head Road
Honolulu, Hawaii 96816

MEMO

Mr. Letitia E. Uyehara, Director
Office of Environmental Quality Control
550 Eleventh Street, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Kaka'ako Community
Development District Plan

Thank you for providing us the opportunity to review your proposed project,
Kaka'ako Community Draft Supplemental Environmental Impact Statement.

We have completed our review and have no comments to offer at this time.

Yours truly,

JERRY M. MATSUDA
Major, HANG
Contr & Engr Officer

cc: Mr. Conrad D. L. Auth
(Mr. Rex Johnson)
US Dept of Reg & Urban Dev.
(Mr. Frank Johnson)
Env Quality Control 9/11/84

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Mr. Jerry M. Matsuda
Major, HANG
Construction & Engineer Officer
Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, Hawaii 96816

Dear Mr. Matsuda:

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

Thank you for your letter of December 3, 1984
concerning the subject Draft Supplemental EIS. We
appreciate your interest in this project.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hogg Planning & Research, Inc.

GEORGE R. ARIYOSHI
GOVERNOR



JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE
SUZANNE D. PETERSON
DEPUTY TO THE CHAIRMAN

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

Mailing Address:
P.O. Box 22159
Honolulu, Hawaii 96822



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

January 8, 1985

RE: ARIYOSHI

To: Honorable Jack K. Suwa
Chairman, Board of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814

Subject: Draft Supplemental Environmental Impact Statement (EIS) for Kakaako Community Development District Plan
Hawaii Community Development Authority
Fax: 548-7180
Acres: 450

The Department of Agriculture has reviewed the subject draft EIS and does not have any comments to offer.

Thank you for the opportunity to comment.

cc: HICUA
U.S. Dept. of Housing & Urban Development

Jack K. Suwa
Jack K. Suwa
Chairman, Board of Agriculture

The Honorable Jack K. Suwa
Chairman, Board of Agriculture
Department of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814

Dear Mr. Suwa:

Re: Draft Supplemental Environmental Impact Statement for the Kakaako Community Development District Plan

Thank you for your letter of December 12, 1984 concerning the subject Draft Supplemental EIS. We appreciate your interest in this project.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KTRak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

"Support Hawaiian Agricultural Products"

 COPY



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

December 21, 1984
RECEIVED
DEC 28 AM 9 41

Ms. Letitia M. Uyehara
Director
Office of Environmental
Quality Control
Room 301
550 Halekauwila Street
Honolulu, Hawaii 96813

HAWAIIAN COMMUNITY
DEVELOPMENT
AUTHORITY

Dear Ms. Uyehara:

Subject: Your Letter Dated November 21, 1984 on the Draft
Supplemental Environmental Impact Statement (EIS)
for Kaka'ako Community Development District Plan,
Kaka'ako, Oahu


Thank you for the opportunity to comment on the proposed
District Plan EIS.

We offer the following comments:

1. In the description of Increment I, water
improvements, please note that the existing water
mains are not all substandard (page II-59, c.).
2. There appears to be a discrepancy between the
maximum development demand of 4.0 mgd from page
IV-17, c., and 6.3 mgd on page II-73, last
paragraph (6.3 mgd given separately as 5.5 mgd and
0.8 mgd).
3. A water master plan of the Makai Area should be
submitted for our review and approval.

If you have any questions, please call Lawrence Whang at
527-6138.

Very truly yours,


KAZU HAYASHIDA
Manager and Chief Engineer

cc: Rex Johnson (Hawaii Community Development Authority)
Frank Johnson (U. S. Dept. of Housing and Urban
Development)

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

January 9, 1985

The Honorable Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

We have reviewed your comments dated December 21, 1984
concerning the subject Draft Supplemental EIS.

Thank you for pointing out the errors on page II-59,
V-17, and II-73. We will make the appropriate corrections
to these sections to address your comments.

The Makai Area Plan indicates the type of water
improvements planned to bring substandard mains and
distribution lines to County standards. A "water master
plan" for the makai area will be developed by the Hawaii
Community Development Authority and submitted for your
review and approval.

Your comments are sincerely appreciated. Please call
us if you have any questions.

Very truly yours,


Rex D. Johnson
Executive Director

RDJ/KT:af
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

510 SOUTH KING STREET
HONOLULU, HAWAII 96813



RECEIVED
JAN 3 14

WILLARD T. CHOW
UNIT PLANNING OFFICER
HONOLULU, HAWAII 96813

December 14, 1984
UNITY
COMMUNITY

DGP11/84-4177

Ms. Letitia M. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Draft Supplemental EIS for
Kakako Community Development District Plan

We have the following observations.

1. The Department of General Planning recently finalized its FY 1984-85 Development Plan/Public Facilities Map (PUC). Among the many proposed amendment requests contained in this package, includes the following:

Add Auaiki Street Connections (to Pohukaina and Queen Streets)
Delete Halekauwila Street Widening (Punchbowl to Cooke Streets)
Delete Ilianiwai Street Widening (Cooke to Queen Streets)
Add Pohukaina Street Widening (Punchbowl to Ward Avenue)
Delete Queen Street Widening (Punchbowl to South Streets)
Accelerate South Street Widening (Ala Moana Blvd. to King Street)

(See attached Exhibit C.) All of these six local roadways, it is noted, are located within the Kakako Community Development District (KCDD).

Final action on these amendments to the PUC Development Plan/Public Facilities Map is anticipated by City Council either in April or early May of 1985.

Ms. Letitia M. Uyehara
Page 2
December 14, 1984

If future plans call for widening/closing/deletion/extension of other major arterial and collector streets within the KCDD, other than those being considered at this time, conformity to the DP/Public Facilities Map will be required. Also, closing of minor streets will require amendment to the DP/Land Use Map.

For any information or details on the FY 1984-85 Annual Review of the DP package, please call Lon Polk, Development Plan Branch Chief, at 527-6051.

2. For reasons cited below, it is uncertain at this point in time whether the City and County of Honolulu will be able to participate in a future program to help defray the infrastructure improvement costs scheduled for Kakako.

- the City's limited financial resources;
- the need to budget critical capital improvements for other areas on Oahu

Furthermore, federal spending cuts and tax-reform plans being proposed by the Reagan administration could affect the Hawaii Community Development Authority's (HCDA) objective of having at its disposal some \$200 million which it requires to finance the infrastructure improvements for the area.

As a consequence, it is possible that HCDA may have to implement the Kakako infrastructure improvements without federal/county appropriations.

Sincerely,

Joseph Barrientos
JOSEPH BARRIENTOS
Planner

APPROVED:

Willard T. Chow
WILLARD T. CHOW

Attach.

cc: Rex Johnson, HCDA
Frank Johnson, HUD/HAO

EXHIBIT C
PRIMARY URBAN CENTER
PUBLIC FACILITIES MAP AMENDMENT APPLICATIONS
BEING PROPOSED
1984-85 ANNUAL REVIEW

AMEND NO. S1/PUC-	PROJECT	SOURCE	TYPE OF CHANGE
1001	Auehi Street (Connections to Puhukaina and Queen Extension)	DTS	Add: Improvements with additional right-of-way, 2-6 years
1002	Halekauwila Street Widening (Punchbowl/Cooke)	DTS	Delete: Improvements with additional right-of-way, 7 years and beyond
1004	Lanakila Avenue Improvements (Keola/Kunawai)	DTS	Change to improvements with additional right-of-way from improvements within existing right-of-way
1005	Ilanival Street Widening (Cooke/Queen)	DTS	Delete: Improvements with additional right-of-way, 2-6 years
1006	Puhukaina Street Widening (Punchbowl/Mard)	DTS	Add: Improvements with additional right-of-way, 2-6 years
1007	Queen Street Widening (Punchbowl/South)	DTS	Delete: Improvements with additional right-of-way, 2-6 years
1008	Co-Disposal of Solid Waste and Sewage Sludge at Sand Island Wastewater Treatment Plant	DPM	Add: Site determined, 7 years and beyond
1010	Port Street Wall Reconstructed Sewer (Merchant to Queen Street)	DPM	Add: 2-6 years
1011	Port Street Wall Reconstructed Sewer (Paahli to Hotel Street)	DPM	Add: 7 years and beyond

C-1

EXHIBIT C
PRIMARY URBAN CENTER
PUBLIC FACILITIES MAP AMENDMENT APPLICATIONS
BEING PROPOSED
1984-85 ANNUAL REVIEW

AMEND NO. S1/PUC-	PROJECT	SOURCE	TYPE OF CHANGE
1010	Halawa Valley Development Collector Street	Prvt	Add: Improvement with additional right-of-way, 2-6 years
1031	Halawa Valley Development Drainage Channel #1	Prvt	Add: 2-6 years
1032	Halawa Valley Development Drainage Channel #2	Prvt	Add: 2-6 years
1033	Halawa Valley Development Water Reservoir	Prvt	Add: Site undetermined, 2-6 years
1034	Halawa Valley Development Water Pump Station	Prvt	Add: Site determined, 2-6 years
1035	Halawa Valley Development Water Main	Prvt	Add: 2-6 years
1038	South Street Widening (Ala Moana Blvd-King Street)	CPO	Change to 2-6 years from 7 years and beyond
1040	Kalihi Street Improvements (Lehua/Kalaepaa)	CPO	Change to 2-6 years from 7 years and beyond
1041	Likelike Highway Widening (Kalihi Street/Kula Koles)	CPO	Add: Roadway improvement within existing right-of-way, funds appropriated
1045	Iwilei Park	CPO	Delete from P7 Map
1047	Computerized Traffic Control Signal Building	CPO	Add: Government building, site determined, 2-6 years
1050	East Manoa Road-Oahu Avenue Relief Drain	CC	Add: Drainage improvement, site determined, 7 years and beyond (modified request)

C-3



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 536-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Lieutenant Governor
Rex D. Johnson
Executive Director

The Honorable Donald Clegg
Page Two
January 8, 1985

The Honorable Donald Clegg
Director
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

We have received your Department's letter of
December 14, 1984 concerning the subject Draft
Supplemental EIS.

Thank you for apprising us of the roadway amendments
for the Kakaako District which are included in the FY
1984-85 Development Plan/Public Facilities Map Annual
Review package for the Priority Urban Center. The proposed
amendments relate to street right-of-way width and
implementation schedule changes in the Kakaako District
and were initiated as a result of discussions held between
the City Department of Transportation Services and the
Hawaii Community Development Authority. The Kakaako
Community Development District Plan has been amended to
reflect these changes. The proposed amendments to the
public facilities map items will make the City's and
HCD's transportation circulation plan and schedule of
implementation consistent. We would appreciate being
informed of the final action on these amendments.

At this time, we do not anticipate any widening/
closing/deletion/extension of major arterial and collector
streets within the Kakaako District other than those being
proposed for amendment. We recognize, however, that
should future plans call for such changes, conformity to

the DP/Public Facilities Map will be required. We further
understand that the closure of any minor street shown on
the DP/Land Use Map will require an amendment to that map.

We recognize the City's financial limitations which
will affect its participation in the funding of
infrastructure improvements scheduled for Kakaako.
However, we ask for your cooperation in actively seeking
Federal funds and developing alternative financing
programs, such as Tax Increment Financing, that will not
adversely affect the City's ability to pay for services it
provides, but could generate a considerable amount of
funds to pay for some of the costs of improvements. The
City's participation in the funding of infrastructure
improvements for the Kakaako District is strongly
justified in view of the substantial benefits to be
realized by the general public in terms of increased
property tax revenues, capital improvements, and
employment opportunities. The City's participation will
also do much to further the goals of the County General
Plan. We look forward to working with you in providing
infrastructure improvements which are needed for private
redevelopment to occur in Kakaako.

We appreciate your review and comments. We would be
pleased to discuss these matters with you in more detail
if you have any questions or need additional information.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KTtak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

410 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 534-1111



Frank F. East
Director

JAN 05 1985

Michael Moon
Director

JAN 04 1985
HAWAII COMMUNITY DEVELOPMENT AUTHORITY

Ms. Letitia Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Draft Supplemental EIS for
Kakaako Community Development District Plan

We have reviewed the subject document and have the following comments.

We understand that all impacts (social, physical and economic) of the total development cannot be assessed at this time since all activities have not yet been identified. However, based on the land area allocated for each use, the EIS should be able to address the impacts on public facilities and services more specifically. Funding sources, particularly for activities undertaken in Phase I of the first increment, should also be identified.

Thank you for the opportunity to comment on the draft SEIS. We will retain this document for our files.

Sincerely,

Alvin K. H. Pang
ALVIN K. H. PANG

cc: Mr. Rex Johnson, Executive Director
Hawaii Community Development Authority

Mr. Frank Johnson
U. S. Department of Housing
and Urban Development



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 21, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

The Honorable Alvin K. H. Pang
Director
Department of Housing and Community
Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Pang:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of January 4, 1985 concerning the subject Draft Supplemental EIS.

We feel that the Draft Supplemental EIS provides sufficient detail in the description of probable impacts on public facilities and services. However, we would be pleased to address any specific concern you feel needs to be discussed more fully.

Funding sources for the Increment 1 improvements are identified in the Draft Supplemental EIS in Chapter II, pages II-74 through II-76. Please be advised that these figures are estimates and will be finalized prior to the holding of the final assessment area rules.

Your comments are sincerely appreciated. Please feel free to call us if you have any questions or need additional information.

Very truly yours,

Rex
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813-1010

FRANK F. FASI
DIRECTOR



JOHN P. WHALEN
DIRECTOR
BENJAMIN B. LEE, AIA
SENIOR ARCHITECT
LUII/84-6004 (JON)

January 9, 1985

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Draft Supplemental Environmental Impact Statement (EIS)
For Kaka'ako Community Development District Plan

In reviewing the subject EIS, we determined that the Kaka'ako Community Development District Makai Area - up to the centerline of Ala Moana Boulevard - is in the Special Management Area (SMA). Pursuant to Chapter 205A, HRS, and City Ordinance No. 84-4, all development occurring in the SMA is subject to review and approval by this Department.

If there are any questions, please contact John Hakagawa of our staff at 523-4648.

Very truly yours,

John P. Whalen
JOHN P. WHALEN
Director of Land Utilization

JPW:s1

cc: Mr. Rex Johnson, HCSO
Mr. Frank Johnson, H.U.D.



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 21, 1985

The Honorable John P. Whalen
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

Thank you for your comments dated January 9, 1985 regarding the subject Draft Supplemental EIS.

We are aware of the need to comply with the requirements of Chapter 205A, HRS, and Ordinance No. 84-4 relating to developments within the Special Management Area located makai of Ala Moana Boulevard. Plans for specific development projects within this area will be transmitted to your department for review and approval.

Your comments are sincerely appreciated. Please feel free to call us should you have any questions or need additional information.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KTrak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

George R. Aiyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU

150 SOUTH KING STREET
HONOLULU, HAWAII 96813



RECEIVED
JAN 10 AM 10 09

JANUARY 4, 1985
COMMUNITY

DAVID L. STUBBS
DIRECTOR
JAN L. CARL
DEPUTY DIRECTOR
DORIS M. ASHMAN
ASSISTANT DIRECTOR

Ms. Letitia M. Uyehara, Director
Office of Environmental Quality Control
350 Halekuala Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Draft Supplemental Environmental Impact Statement (EIS)
Kakaako Community Development District Plan

Thank you for the opportunity to comment on the Draft Supplemental EIS for the Kakaako Community Development District Plan. The Department of Parks and Recreation's comments are as follows:

MAKAI AREA PLAN

1. Parks and Recreation Needs. The EIS states that approximately 1,547 dwelling units could be built and that no public recreation facilities are proposed within the makai area boundaries. The proposed Waterfront Park will serve the needs of the Kakaako residents.

The Department of Parks and Recreation believes that when community recreation needs are provided in a regional park, such as the proposed Waterfront Park, community use is often limited. It is, therefore, suggested that public recreation facilities to serve the residents, particularly when low-income groups are being considered, be located within the service area.

2. No street tree plans are mentioned.

INCREMENT 1 IMPROVEMENT PROGRAM

1. Mother Waldron Park. The fact that Mother Waldron Park will be severely affected by the proposed street and sewer improvement plans should be clearly stated and discussed. The proposed alternative of expanding the park in a new configuration should be discussed in detail.

Ms. Letitia M. Uyehara, Director

-2-

January 4, 1985

2. Street Trees. Street tree plans should be discussed and existing street trees that will be affected should be identified.
3. Elevated Parks. The EIS states that design criteria, procedures and other requirements relating to the dedication of these parks to the City for operation and maintenance will be established in collaboration with the appropriate city agencies. This unresolved issue needs to be seriously discussed with the City.

OTHER COMMENTS

The Department believes that a comprehensive review of the Kakaako plan's provisions for parks and recreation should be undertaken and a supplemental detailed EIS conducted.

Thank you again, and if you have any questions, please contact Steve Sallis, Planner, at 523-4696.

Sincerely yours,

Tom Moxley
TOM MOXDIA, Director

TH:vc

cc: Mr. Rex Johnson, HCDAG
Mr. Frank Johnson, HUD



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

January 15, 1985

The Honorable Tom T. Nakota
Director
Department of Parks and Recreation
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Nakota:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

We have received your comments dated January 4, 1985 concerning the Draft Supplemental EIS.

As stated in the Draft SEIS, the proposed 60-acre Waterfront Park, adjacent to the makai area, will serve the needs of Kakaako residents for active and passive recreation. Additional recreation space, exclusive of required yards, setback areas, and parking areas, will be provided in private developments within the MIZ-C and MIZ-R zones. At full development, the makai area will have a total of about 3 acres of private recreational space. Furthermore, every private development in Kakaako which increases floor area and/or number of employees or residents on the development lot by 25 percent is required to dedicate land (or fee equal to the value of dedicated land) for public facilities, such as parks, equal to 7.5 percent of floor area to be constructed. We believe that given the total amount of recreational space planned to service future makai area residents, the expenditure of limited public funds for acquiring land and developing additional recreational facilities in the area cannot be justified.

The Makai Area Plan (page 17) includes provisions for street tree species and spacing along designated streets.

The Honorable Tom T. Nakota
Page Two
January 15, 1985

Section 15-17-164 of the Kakaako Rules, which applies to the mauka and makai areas of the District, includes further specifications regarding street trees.

The concerns of the Department of Parks and Recreation (DPR) relating to street tree plans for the Kakaako District were discussed between the HCDA and the DPR. Reference is made to the attached letter from the DPR. As indicated, the DPR has agreed that HCDA will require developers to plant street trees along rights-of-way and within the property lines. Where existing street trees are located within the right-of-way (i.e., between the property line and the curb), HCDA will require developers to replace, relocate, and/or plant new street trees, or allow such trees to be removed, in accordance with Section 15-17-164 of the Kakaako Rules.

Your concerns regarding the impacts of street and sewer improvement plans on Mother Waldron Park, as well as expansion plans for the park, were also discussed between the HCDA and the DPR at the same meeting mentioned above. The attached letter indicates that the DPR's concerns have been addressed satisfactorily.

As stated in the Draft SEIS and reiterated in your comments, issues relating to design criteria, procedures, and other requirements for dedicating above-grade parks to the City and County will be resolved by HCDA in collaboration with the City.

The Final EIS for the Kakaako Plan as well as the subject Draft SEIS already discusses and analyzes the Plan's provisions for parks and recreation facilities in the Kakaako District. Therefore, we feel that the preparation of another EIS to address these concerns is unnecessary. However, we would be pleased to continue working with the DPR on its proposal to designate a 10-acre community park in central Kakaako.

I trust that I have adequately responded to your concerns. I would be pleased to discuss these matters further with you should you have any additional concerns.

The Honorable Tom T. Nakota
Page Three
January 15, 1985

We look forward to continuing the dialogue with the
DPR and resolving its problem as expeditiously as possible.

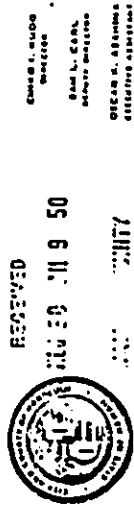
Very truly yours,


Rex D. Johnson
Executive Director

RDJ/KT:ak
Enc.

cc: Mr. Frank Johnson, HUD
H. Hogi Planning & Research, Inc.

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF PARKS AND RECREATION
610 SOUTH KING STREET
HONOLULU, HAWAII 96813



November 27, 1984

Mr. Rex D. Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Thank you for meeting with me on the issues of the proposed realignment of Halekauwila Street through a portion of Mother Waldron Park and street tree plans in the Kakaako District.

As we noted in our October 29, 1984 letter to you, we believe that the proposed realignment of Halekauwila Street would have a serious impact on Mother Waldron Park. This would cause the loss of 13,690 square feet of park area and the existing basketball court thereon. It would also totally destroy the symmetry and balance of a beautifully designed park and remove a large section of the architecturally designed wall.

However, it is now our understanding that the Hawaii Community Development Authority (HCDA) intends to purchase 53,630 square feet of land for park use located immediately Diamond Head of the existing park. If 53,630 square feet of land is added to Mother Waldron Park to replace the loss of 13,690 square feet for the proposed Halekauwila Street realignment and for the damage to the park, we believe that Mother Waldron Park can be redeveloped into a beautiful park with similar architectural style.

Although Mother Waldron Park has been an integral part of the Kakaako District, it is the sole community-oriented park in the area. We would like to reiterate our concern that the redevelopment of the Kakaako District would generate greater active recreational needs than Mother Waldron Park can provide. Our park facilities standards call for a 20-acre district park to serve approximately 25,000 people; a 10-acre community park for each community of 10,000 people; and a neighborhood park for each neighborhood of 6,000 people. Our standards also call for 2 acres of active recreation parks per 1,000 people. On the other hand, the City's Park Dedication Ordinance requires the dedication of 110 square feet of land for each unit of multi-family

Mr. Rex D. Johnson,
Executive Director

-2-

November 27, 1984

duelling developed. This is equivalent to about 1 acre per 1,000 people. On this basis, there should be two 20-acre district parks and one 10-acre community park in the Kakaako District for the projected 50,000 people in that area. However, we realize the difficulty in providing for all these active recreation parks within the Kakaako District. We have, therefore, reluctantly been recommending a bare minimum of one 10-acre community recreation park within the Kakaako District.

We would like to take this opportunity to again request a Kakaako Plan amendment to designate a 10-acre community park to alleviate park deficiencies and future recreational problems in the Kakaako District.


We feel the inclusion of a centrally located community park in the Kakaako District should replace the numerous 45-foot level public parks which are proposed in the District. As you know, the Kakaako Plan calls for the eventual dedication of these 45-foot level parks to the City. However, we believe this is unacceptable due to higher costs of maintenance, possible problems with park security and inadequate size for active recreational facilities.

The Department of Parks and Recreation is willing to plan and develop the new community park in the Kakaako District. We would request, however, that a portion of public facilities dedication fees collected by HCDA be earmarked for the community park.

With regard to street trees, we agree with your rationale to require street trees to be planted by individual developers along rights-of-way but within the property lines. This proposal requires no installation cost to the government, less maintenance cost and minimal interference with proposed underground utilities.

Thank you for keeping us apprised of your agency's concerns. If there are any other issues or questions which we may address, please feel free to contact me.

Sincerely yours,



(Mrs.) EMIKO I. KUONO, Director

EIK:vc

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
810 SOUTH KING STREET
HONOLULU, HAWAII 96813



STANDARD SPECIFICATION
1980

MICHAEL J. CHUN, P.E.
PRESIDENT AND CHIEF ENGINEER
MAJORITIES IN WATER
CONSTRUCTION

RECEIVED

DEC 15 11 59 43

ZNY 84-361

December 4, 1984
JMT
CITY
AUTHORITY

Ms. Leticia N. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Re: Draft Supplementary EIS for
Kakaako Community

We have reviewed the subject draft supplementary EIS and have the following comments.

1. The widening of the open channel culvert at the Makai end of Keawe Street (page 11-63) must be constructed carefully so that the new Ala Moana Force Main to Sand Island STP is not affected. This 78-inch force main is located on Keawe Street, along the seaward side of the drainage channel, and along the shoreline to the Honolulu Harbor entrance channel. The EIS for the East Kakaako Area Major Drains and Kapiolani Boulevard-Beretania Street Relief Drain (March 24, 1977) more fully described the proposed project.
2. Before any municipal drainage system can be used for dewatering purposes (page 1V-34), a dewatering permit must be obtained from the Division of Engineering. The discharge must meet all applicable Federal, State and City rules concerning water pollution prior to release to the City system.
3. A typographical error was noted for the recent Ala Moana Pumping Station (page 111-12). It should be ("1983") instead of ("1955").

Mr. Leticia N. Uyehara - 2 - December 4, 1984

4. Excavation and dewatering permits should be added to the construction permits required by Public Works (page 1V-5.5). Building and demolition permits are administered by the City Building Department.

Me ke aloha puuuhana.

Michael J. Chun
MICHAEL J. CHUN
Director and Chief Engineer

cc: Hawaii Community Development
Authority
HUD (Frank Johnson)



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

January 8, 1985

The Honorable Russell L. Smith, Jr.
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Smith:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your Department's letter of December 4,
1984 concerning the subject Draft Supplemental EIS.


Widening of the open channel culvert at the makai end
of Keawe Street will be constructed without adversely
affecting the new Ala Moana Force Main to Sand Island STP.

We note that a dewatering permit from the Division of
Engineering is required before any municipal drainage
system can be used for dewatering purposes.

The need for excavation and dewatering permits will be
incorporated in the Final Supplemental EIS, and the
typographical error on page III-12 will be corrected.

Your review and comments are greatly appreciated.

Very truly yours,


Rex D. Johnson
Executive Director

RDJ/KT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

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DEC 24 AM 10 C.

DEVELOPMENT
UNITY
ENVIRONMENTAL
AUTHORITY

December 20, 1984

Ms. Letitia H. Pycher, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Pycher:

Subject: Draft Supplemental EIS for Kaka'ako
Community Development District Plan

We have no comments to the Draft Supplemental EIS covering the
makai area of the Kaka'ako District.

If there are any questions, please call the Planning Section at
523-4653.

Very truly yours,

George H. Uyema
GEORGE H. UYEMA
Chief

cc: Rex Johnson, Executive Director
Hawaii Community Development Authority
Frank Johnson
U.S. HUD

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
DIVISION OF WASTEWATER MANAGEMENT
300 SOUTH KING STREET
HONOLULU, HAWAII 96813



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 8, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Mr. George H. Uyema, Chief
Division of Wastewater Management
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Uyema

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

Thank you for your letter of December 20, 1984
concerning the subject Draft Supplemental EIS. Your
interest in this project is appreciated.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KTrak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

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DEC 13 1984

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 101
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Re: Draft Supplemental EIS for Kaka'ako
Community Development District Plan

The Honolulu Police Department has reviewed the Draft Supplemental EIS for Kaka'ako Community Development District Plan. Our concerns as submitted on May 24, 1984 remain.

1. Bikeways: To insure the safety of bicyclists in designated bike lanes, we suggest utilizing the design employed by other mainland cities of situating the bike lane between the sidewalk curb and the vehicle parking lane. If parking is not permitted, additional curbing along the outside perimeter of the bike lane should be installed. This measure will protect the bikers from intruding vehicle traffic.

2. Above-grade Parks: Although we recognize the aesthetic imperative behind the concept of providing parks on the above-grade parking garages and other structures, the department would like to express its concern over potential safety hazards. If access to these parks is permitted during the evening hours, adequate attention should be paid to proper illumination and security. Above grade parks lacking proper illumination should be secured during after-dark hours.

Ms. Letitia N. Uyehara,

-2-

December 13, 1984

3. Parking: On-street parking problems continue to plague the Kaka'ako area. To relieve traffic congestion, increasing rather than decreasing the number of off-street parking stalls should be considered.

Thank you for the opportunity to comment on this draft supplemental EIS.

Sincerely,

DOUGLAS G. GIBB
Chief of Police

BY *[Signature]*
EDWIN ROSS, Jr.
Assistant Chief
Administrative Bureau

cc: Mr. Rex Johnson, Executive Director
Hawaii Community Development Authority
677 Ala Moana Blvd., Suite 1001
Honolulu, Hawaii 96813

Mr. Frank Johnson
U.S. Dept. of Housing & Urban Development
P.O. Box 50007
Honolulu, Hawaii 96850

V-94



**State of Hawaii
Hawaii Community Development Authority**

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 546-7180

January 8, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

The Honorable Douglas G. Gibb
Page Two
January 8, 1985

The Honorable Douglas G. Gibb
Chief
Police Department
City and County of Honolulu
1455 South Beretania Street
Honolulu, Hawaii 96814

Dear Chief Gibb:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your letter of December 13, 1984
concerning the subject Draft Supplemental EIS.

We appreciate your suggestions relating to the design
of bike lanes in order that bicyclists can be afforded a
greater degree of safety. Please note, however, that the
Kakaako Plan calls for the eventual elimination of
on-street parking on most streets. Additional curbing
along the outside perimeter of the bike lane would
interfere with emergency parking and right turn movements
near intersections. Furthermore, the installation of such
curbing is subject to the approval of the City and County
Department of Transportation Services.

Your comments concerning security for parks on
above-grade parking garages and other structures are well
taken. Security measures will be addressed during the
design and review of any such new project.

The Kakaako Plan calls for the development of several
public parking garages at appropriate locations to service
new mixed-use developments. These public parking garages,
together with the application of "shared parking" in
mixed-use areas, should alleviate the need to increase
parking requirements.

We appreciate your review and comments.

Very truly yours,

Rex D. Johnson
Executive Director

RDJ/KT:ak

cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1455 S. BERETANIA STREET ROOM 301
HONOLULU, HAWAII 96813

FRANK F. FASI



RECEIVED
JAN 9 AM 9 54 LIONEL E. CAMARA
FRANK K. KAHOOHANOHANO
FIRE CHIEF

HAWAIIAN COMMUNITY
DEVELOPMENT
AUTHORITY
January 7, 1985

Ms. Letitia M. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

RE: DRAFT SUPPLEMENTAL EIS FOR KAKA'AKO COMMUNITY
DEVELOPMENT DISTRICT PLAN

Thank you for the opportunity to review and comment on the EIS subject project.
We have no comments to offer at this time.

Sincerely,

Frank K. Kahoochanohano
FRANK K. KAHOOCHANOHANO
Fire Chief

FKK:sb

cc: Rex Johnson, Executive Director
Hawaii Community Development Authority

Frank Johnson
U.S. Dept. of Housing & Urban Development
Administrative Services



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 21, 1985

The Honorable Frank K. Kahoochanohano
Chief Department
City and County of Honolulu
1455 South Beretania Street
Honolulu, Hawaii 96814

Dear Chief Kahoochanohano:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

We have received your letter of January 7, 1985
concerning the subject Draft Supplemental EIS.

Your interest in this project is sincerely appreciated.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, Environmental Officer
H. Hagi Planning & Research, Inc.

ENV 2-1
NV/G

January 7, 1985



Brenner Munger, Ph.D., P.E.
Manager
Environmental Department
(808) 548-6883

RECEIVED
JAN 11 1985
HAWAIIAN ELECTRIC COMPANY
DEVELOPMENT
AUTHORITY

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Draft Supplemental EIS for Kaka'ako Community
Development District Plan

We have reviewed the above subject and we note that p. IV - 21 anticipates that one or two new substations will be necessary in the Kaka'ako District. Also, that there are sound restrictions which are tabulated in Table II, p. A - 10. Hence, low-sound level transformers are required in order to meet these sound restrictions.

The above comment is in addition to the comments previously made in our letter of July 11, 1984.

Sincerely,

Brenner Munger
Brenner Munger, Ph.D., P.E.
Manager, Environmental Department

SLC:cal

cc: Mr. Rex Johnson
HI Community Dev. Auth.

Mr. Frank Johnson
U.S. Dept of HUD



State of Hawaii
Hawaii Community Development Authority

877 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 21, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Brenner Munger, Ph.D., P.E.
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, Hawaii 96840

Dear Dr. Munger:

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

We have received your comments dated January 7, 1985 concerning the subject Draft Supplemental EIS. Thank you for informing us that low sound level transformers will be required to meet the noise standards of the Kaka'ako Rules.

Your comments are sincerely appreciated.

Very truly yours,

Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KTrak

cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.

HAWAIIAN TELEPHONE
GTS

December 27, 1984

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DEC 27 AM 9 41

Russ K. Saito
Network Engineering Director

Ms. Leticia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Draft Supplemental EIS for
Kaka'ako Community Development
District Plan

Thank you for letting us review the Draft Supplemental EIS for Kaka'ako Community Development District Plan. We have no further comments to offer.

Sincerely,
Russ K. Saito

cc: Mr. Rex Johnson
Mr. Frank Johnson



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

January 9, 1985

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Mr. Russ K. Saito
Network Engineering Director
Hawaiian Telephone Company
P. O. Box 2200
Honolulu, Hawaii 96841

Dear Mr. Saito:

Re: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

Thank you for your letter of December 27, 1984 concerning the subject Draft Supplemental EIS.
Your interest in this project is appreciated.

Very truly yours,
Rex D. Johnson
Rex D. Johnson
Executive Director

RDJ/KT:af
cc: Mr. Frank Johnson, Environmental Officer
H. Mogi Planning & Research, Inc.



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DECEMBER 10, 1984
HAWAII
COMMUNITY
DEVELOPMENT

Mr. Rex Johnson
Executive Director
Hawaii Community Development Authority
677 Ala Moana Boulevard, Suite 1001
Honolulu, Hawaii 96813

Subject: Draft Supplemental Environmental Impact
Statement for the Kaka'ako Community
Development District Plan

Dear Mr. Johnson:

Our attention was attracted by the Draft Supplement by the fact that in apparent violation of State law and a declaratory ruling by the State Environmental Quality Commission, the Hawaii Community Development Authority (HCDA) adopted the Makai Area Plan before preparing a Supplemental EIS.

While we had assumed that redevelopment of Kaka'ako was a good thing, the Supplemental EIS made us wonder if it will only amount to a massive waste of public funds. According to Page II-76 of the Supplemental EIS, the HCDA would like to spend \$60 million of the City and State funds over the next few years to improve infrastructure in the part of Kaka'ako bordered by Punchbowl Street, Cooke Street, South King Street, and Ala Moana Boulevard. According to Page B-15 of the Supplemental EIS, by the year 2000, new developments are expected to increase total building floor area by 3,763,000 square feet in this part of Kaka'ako. Hence, the HCDA is proposing to spend about \$16 of public funds per square foot of additional private floor area.

What benefits for lower and middle-class citizens will be achieved by spending \$16 of public funds per square foot of additional private floor area in Kaka'ako? According to Page IV-13 of the Supplemental EIS, most of the new housing in Kaka'ako will be high-priced luxury condominium units. According to Page IV-9 of the Supplemental EIS, redevelopment of Kaka'ako will not induce new jobs, but instead will capture growth in employment, business, floor area, and housing stock

Mr. Rex Johnson
December 4, 1984
Page 2


that would otherwise go to other parts of Oahu. According to Page IV-12 of the Supplemental EIS, redevelopment of Kaka'ako will not increase total State and County revenues from income, excise, and property taxes. And according to Page B-32 of the Supplemental EIS, redevelopment of Kaka'ako will increase morning peak hour traffic on Kalaniana'ole Highway, Pali Highway, Likelike Highway and all major roadways crossing Nuuanu Stream, Moanalua Stream, and Kalaheo Stream. The point of this: Would not public funds of \$60 million be better used to benefit the average citizen?

Public funds are not unlimited. Perhaps we would be better off if \$60 million were spent to build housing for the poor or for gap groups, or even to benefit tourism by acquiring beach parks and open space (tourism provides jobs). Have alternatives to this expenditure actually been explored?

Incidentally, while we are on the subject of public expenditures, what will the HCDA be paying consultants to prepare the Draft and Final Supplemental EIS for the Kaka'ako Community Development District Plan? Were bids taken and, if so, what were the bid results? We understand that other firms submitted proposals to the HCDA offering to prepare the Draft and Final Supplemental EIS for a total cost of \$85,000.00 (including the fees of the same subconsultants used by your present consultants). Could you please respond to this request for information?

We look forward to your reply.

Very truly yours,


Fred Paul Benco
Secretary

cc: Mr. Frank Johnson, HUD
Ms. Letitia N. Uyehara, ODQC
File



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor
Kenneth F. Brown
Chairman
Rex D. Johnson
Executive Director

Mr. Fred Paul Benco
Page Two
January 8, 1985

Mr. Fred Paul Benco
Life of the Land
Room 211
250 South Hotel Street
Honolulu, Hawaii 96813

Dear Mr. Benco:

Re: Draft Supplemental Environmental Impact
Statement for the Kakaako Community
Development District Plan

Thank you for your comments on the Draft Supplemental
EIS.

HCDA is preparing a Supplemental EIS in accordance
with Chapter 343, HRS, and a Declaratory Ruling issued by
the Environmental Council. The Declaratory Ruling notes
that a Supplemental EIS is required when changes to the
Kakaako Community Development District Plan substantially
alter the original plan. The adopted Makai Area Plan was
considered a substantial change for which a Supplemental
EIS was required.

Government is responsible for providing adequate
services and facilities to support and direct development
growth in desired areas. The development of new
large-scale projects in Kakaako is hampered by inadequate
and substandard infrastructure systems. Therefore,
improvements to the infrastructure systems would enable
high intensity development to occur in Kakaako.
Furthermore, infrastructure improvements within Kakaako
will benefit areas surrounding the District because of the
oversizing of sewerage and drainage systems to service
surrounding areas. Indeed, the high cost of
infrastructure improvements for Kakaako (which are caused
by oversizing requirements necessary to service areas
surrounding the District) has made it infeasible for the
private sector to provide these improvements on their own.

Redevelopment of Kakaako will have significant
benefits for all income groups. The increase in floor
area development will result in increased income, excise
and property tax revenues, employment opportunities, and a
positive rippling effect through the creation of
indirectly related jobs and spending in the State. There
will also be a significant increase in housing units, with
twenty percent of the privately developed housing units
available to moderate-income families through HCDA's
Reserved Housing Program.

More importantly, however, we believe that the
expenditure of public funds for public facility
improvements which are necessary to service and facilitate
private redevelopment in Kakaako will have tremendous
long-term savings to government and the general public.
Because of Kakaako's prime location and untapped
development potential, the redevelopment of Kakaako will
intensify the use of our limited urban lands, reducing the
pressure for further urbanization of agricultural lands
and environmentally sensitive rural areas. Growth in
Kakaako, which will occur nearby existing employment
centers, major residential areas and public services and
facilities, will also reduce transportation and energy
demands and additional public expense for extending
infrastructure systems to outlying areas.

As we have observed your organization's efforts over
the years, attainment of these goals seems to be basic to
the philosophy of Life of the Land. We hope that you will
recognize the many positive aspects the redevelopment of
Kakaako will have in terms of social, economic, physical,
and environmental goals for the State of Hawaii. I am
sure that we share common interests and that we can work
together toward meeting these goals.

The selection of the consultant firm for this project
was not subject to the competitive bidding process. HCDA
used the "Direct Selection" method required by the State
for selection of professional consultant firms as provided
in the manual entitled, "Criteria and Procedure for
Selecting Professional Design Consultants" (Revised May,

Mr. Fred Paul Benco
Page Three
January 8, 1985

1982). UCDA requested proposals from four consultant firms and received letters of interest and proposals from three firms. The proposals were reviewed and interviews were conducted with each firm. The final selection was based not only on the proposed fee, but also on other criteria specified in the consultant selection manual. Among the factors so considered were each firm's technical capabilities for performing the required work, staffing relative to the scope and schedule of the project, current workload, record of meeting project deadlines, experience and familiarity with similar type of work, and ability to communicate and cooperate effectively with the agency and other parties involved in the work. The negotiated contract fee for services rendered in the preparation of the Supplemental EIS is \$108,900.

I trust that this response satisfies your concerns. I would be pleased to discuss these issues with you should you have any questions.

Very truly yours,


Rex D. Johnson
Executive Director

RDJ/KT:ak
cc: Mr. Frank Johnson, HUD
H. Hogi Planning & Research, Inc.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 08-01-2001 BY 60322
UCBAW/STP

KAMEHANEHA SCHOOLS BERNICE PAUAAHI BISHOP ESTATE

January 3, 1985

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekuanila Street, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Draft Supplemental EIS for Ka'kaa'ko Community Development District Plan

In reviewing the above referenced EIS, we note that the portion covering the impacts of the Hakai Area Plan fails to address the economic feasibility of private redevelopment in the Hakai Area. All of the issues covered in the section on the "Social and Economic Environment" (pp. IV-9 to IV-15) assume that new development will occur there.

However, as we have pointed out in letters to the Hawaii Community Development Authority (HCDA) dated June 14, 1983 and August 25, 1983, no redevelopment of the privately held parcels in the Hakai Area is expected to take place under the restrictions presently imposed by the Authority. In particular, we feel that the 150-foot height limit and the 2.5 minimum floor area ratio are overly restrictive and place an undue burden on these properties. As noted in our letters, these limits are arbitrary and may well be increased without causing any significant environmental impacts.

Although the HCDA staff has reported (in an informational memorandum dated November 2, 1983) that other factors such as interest rates, rents and equity returns may also affect the feasibility of redevelopment, it goes on to note that these factors are not under the control of either the Bishop Estate or the Authority. As expressed in its enabling legislation, the HCDA must work together with private enterprise to implement its development plans. To do this, it must establish rules and regulations which encourage rather than discourage the private redevelopment of the district.

However, the controls which are presently in force for the Hakai Area are a disincentive to redevelopment and will only result in a continuation of status quo. Therefore, the impacts of redevelopment in the Hakai Area as

Ms. Letitia N. Uyehara, Director
Page 2
January 3, 1985

described in this EIS may, in fact, be moot, if the plans for private redevelopment cannot be implemented.

Thank you for the opportunity to comment on this EIS and to again express our concerns over the plans which were adopted for the Hakai Area of Ka'kaa'ko.

Very truly yours,

Myron B. Thompson
Myron B. Thompson
Secretary

cc: Rex Johnson

Frank Johnson (U.S. Dept. of Housing & Urban Dev., P. O. Box 50007, Hon., HI 96850)



State of Hawaii
Hawaii Community Development Authority

677 Ala Moana Boulevard, Suite 1001 Honolulu, Hawaii 96813
(808) 548-7180

George R. Ariyoshi
Governor

Kenneth F. Brown
Chairman

Rex D. Johnston
Executive Director

Mr. Myron B. Thompson
Page Two
January 17, 1985

Please feel free to call me if you have any questions.

Very truly yours,

Rex D. Johnston
Executive Director

RDJ/KT:af
cc: Helber, Mastert, Van Horn & Kimura
Mr. Frank Johnson, Environmental Officer
U. S. Department of Housing and Urban
Development
/H. Mogi Planning & Research, Inc.

Mr. Myron B. Thompson
Secretary
Kamohameha Schools/Bernice
Pauali Bishop Estate
Suite 200
567 South King Street
Honolulu, Hawaii 96813

Dear Mr. Thompson:

Re: Draft Supplemental EIS for the Kakaako
Community Development District Plan

Thank you for your comments dated January 3, 1985
regarding the Draft SEIS.

Your concerns about the economic feasibility of
private redevelopment in the makai area are well taken,
and we are interested in furthering discussions on this
matter. We would like to know whether there are any
changes to the economic analyses that supported the
findings and recommendations to the Authority which were
contained in the Bishop Estate's written testimony of June
14, 1983 on the draft Makai Area Plan. We are also
interested in learning how your proposed changes to the
Kakaako Plan and Rules relate, if at all, to an overall
plan for redeveloping the Bishop Estate's lands in the
makai area. We would be pleased to evaluate the economic
impacts of your proposals and to explore options that will
achieve redevelopment plans which are beneficial to all
parties concerned.

It is our sincere desire to cooperate with the
Kamohameha Schools/Bishop Estate in addressing its
concerns on redeveloping its makai area lands. Toward
this end, we look forward to continuing the dialogue with
the Estate and its consultants and resolving your problems
as expeditiously as possible. We will be contacting your
consultants to set up a meeting to discuss these matters.

MAIL ROOM
RECEIVED
JAN 3 1985
HONOLULU, HI 96813

KAMEHAMEHA SCHOOLS - BERNICE PAUAI BISHOP ESTATE

January 3, 1985

Ms. Leticia N. Uyehara, Director
Office of Environmental Quality Control
550 Kalia Drive, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Draft Supplemental EIS for Ka'kua'ko Community Development District Plan

In reviewing the above referenced EIS, we note that the portion covering the impacts of the Hukal Area Plan fails to address the economic feasibility of private redevelopment in the Hukal Area. All of the issues covered in the section on the "Social and Economic Environment" (pp. IV-9 to IV-15) assume that new development will occur there.

However, as we have pointed out in letters to the Hawaii Community Development Authority (HCDA) dated June 14, 1983 and August 25, 1983, no redevelopment of the privately held parcels in the Hukal Area is expected to take place under the restrictions presently imposed by the Authority. In particular, we feel that the 150-foot height limit and the 2.5 maximum floor area ratio are overly restrictive and place an undue burden on these properties. As noted in our letters, these limits are arbitrary and may well be increased without causing any significant environmental impacts.

Although the HCDA staff has reported (in an informational memorandum dated November 2, 1983) that other factors such as interest rates, rents and equity returns may also affect the feasibility of redevelopment, it goes on to note that these factors are not under the control of either the Bishop Estate or the Authority. As expressed in its enabling legislation, the HCDA must work together with private enterprise to implement its development plans. To do this, it must establish rules and regulations which encourage rather than discourage the private redevelopment of the district.

However, the controls which are presently in force for the Hukal Area are a disincentive to redevelopment and will only result in a continuation of status quo. Therefore, the impacts of redevelopment in the Hukal Area as

Ms. Leticia N. Uyehara, Director
Page 2
January 3, 1985

described in this EIS may, in fact, be moot, if the plans for private redevelopment cannot be implemented.

Thank you for the opportunity to comment on this EIS and to again express our concerns over the plans which were adopted for the Hukal Area of Ka'kua'ko. Very truly yours,

Hydon B. Thompson
Hydon B. Thompson
Secretary

cc: Rex Johnson
Frank Johnson (U.S. Dept. of Housing & Urban Dev., P. O. Box 50007, Honolulu, HI 96850)

APPENDIX A

KAKA'AKO SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
ACOUSTIC STUDY

PREPARED BY:

YOICHI EBISU

DARBY-EBISU & ASSOCIATES, INC.

AUGUST 20, 1984

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I. SUMMARY

The purpose of this study was to evaluate the probable impact of noise from stationary equipment, vehicular traffic, and aircraft on future residents/occupants of Kaka'ako under the Kaka'ako Community Development District Plan (KCDDP), which was adopted in 1982, its amendments as of May, 1984, and the Makai Area Plan, which was put into effect in October, 1983. Results from the original acoustic report by Darby-Ebisu & Associates, Inc., dated April 7, 1982 were extracted without change whenever applicable. Revisions and additions to the original report were also included to reflect the following:

- o The addition of the Makai Area Plan. The original report only addressed areas mauka of Ala Moana Boulevard.
- o The addition of Base Year and Year 2000 aircraft noise contributions to the total noise environment. Aircraft noise contributions are more significant in the Makai Area.
- o Revisions to the Base Year and Year 2000 traffic projections and noise levels for the mauka area.

Because of the desire to minimize redundant efforts in completing this study, and to provide a single updated version of the original acoustic study, several items were left unchanged, and the meaning of the words "existing" or "Base Year" was broadened. The following are the key items which were left unchanged:

- o Existing and future noise from stationary equipment and business activities in Kaka'ako.
- o Discussions and recommendations regarding the KCDDP Noise Regulations. Noise limits for the Waterfront Industrial (WI) zone were added.

The results of the study indicate that the horizontal and vertical zoning policies are very close to optimum in minimizing noise impacts on residential receptors. The majority of the residential emphasis areas are located away from the high traffic noise sources, and parking deck/mall structures are provided as barriers between vertically structured industrial and residential users. The plan minimizes risks of future noise impacts on residential receptors, but evaluations on a case-by-case basis are necessary to predict acceptability with noise standards and regulations.

The noise regulations in the KCDDP may tend to add to the noise abatement costs to these tenants. The KCDDP noise regulations are more stringent than current State Department of Health regulations, and both regulations may be difficult to meet by businesses which require open storefronts. An example of suggested modifications to the KCDDP noise regulations is included in this study. It is suggested that the degree of noise abatement requirements be adjusted for the uses emphasized in each MUZ district, and that enforcement procedures based upon noise levels at receptor (rather than sources) boundary locations be used.

II. NOISE DESCRIPTORS AND THE RELATIONSHIP OF NOISE LEVELS TO LAND USE COMPATIBILITY

The Day-Night Sound level, or L_{dn} , is the accepted noise descriptor for the determination of land use compatibility. The Day-Night Sound Level is a 24-hour average sound level in which nighttime noise levels occurring between 10:00 PM and 7:00 AM are increased (or penalized) by 10 dB* before calculation of the 24-hour average. A recently published American National Standard, ANSI S3.23-1980 (Reference 1), recommends use of the L_{dn} descriptor when assessing land use compatibility. Figure 1, extracted from Reference 1, provides land use compatibility determination for various levels of exterior noise as measured by the L_{dn} descriptor. It should be noted from Figure 1 that L_{dn} values of 60, 65, and 70 are considered Unconditionally Compatible for apartment, commercial, and industrial land uses, respectively. A general consensus among federal agencies has developed whereby residential housing is considered acceptable where exterior noise does not exceed 65 L_{dn} (see References 2 and 3). EPA's prior recommendation of 55 L_{dn} or less for residential housing has not been adopted by other federal agencies, but is recognized as a desirable long-term goal.

Table I (extracted from Reference 4) describes the typical variation of L_{dn} for various kinds of neighborhoods. Levels of 60 L_{dn} or greater are typical along city streets with daily traffic volumes exceeding 2,500 vehicles. 65 to 70 L_{dn} are typical values for city business districts where traffic is a dominant noise source. Figure 2 presents typical L_{dn} values obtained on Oahu.

TABLE I

TYPICAL VALUES OF YEARLY DAY-NIGHT AVERAGE SOUND LEVEL FOR VARIOUS
RESIDENTIAL NEIGHBORHOOD WHERE THERE IS NO WELL DEFINED SOURCES
OF NOISE OTHER THAN USUAL TRANSPORTATION NOISE

Description	L_{dn} - dB
Rural (Undeveloped)	35
Rural (Partially developed)	40
Quiet Suburban	45
Normal Suburban	50
Urban	55
Noisy Urban	60
Very Noisy Urban	65

*A brief description of the acoustic terminology and symbols used are provided in the Appendix to this report. All sound levels used in this report are A-weighted sound levels unless otherwise noted.

LAND USE	YEARLY DAY-NIGHT AVERAGE SOUND LEVEL IN DECIBELS				
	50	60	70	80	90
Residential - Single Family, Extensive Outdoor Use	Compatible	Marginally Compatible	Compatible	Incompatible	Incompatible
Residential - Multiple Family, Moderate Outdoor Use	Compatible	Marginally Compatible	Incompatible	Incompatible	Incompatible
Residential - Multi Story Limited Outdoor Use	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible
Transient Lodging	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible
School Classrooms, Libraries, Religious Facilities	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible
Hospitals, Clinics, Nursing Homes, Health Related Facilities	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible
Auditoriums, Concert Halls	Compatible	Marginally Compatible	Incompatible	Incompatible	Incompatible
Music Shells	Compatible	Marginally Compatible	Incompatible	Incompatible	Incompatible
Sports Arenas, Outdoor Spectator Sports	Compatible	Marginally Compatible	Incompatible	Incompatible	Incompatible
Neighborhood Parks	Compatible	Marginally Compatible	Incompatible	Incompatible	Incompatible
Playgrounds, Golf Courses, Riding Stables, Water Rec., Cemeteries	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible
Office Buildings, Personal Services, Business and Professional	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible
Commercial - Retail, Movie Theaters, Restaurants	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible
Commercial - Wholesale, Some Retail, Ind., Mfg., Utilities	Compatible	Marginally Compatible	Marginally Compatible	Marginally Compatible	Incompatible
Livestock Farming, Animal Breeding	Compatible	Marginally Compatible	Marginally Compatible	Marginally Compatible	Incompatible
Agriculture (Except Livestock)	Compatible	Marginally Compatible	Marginally Compatible	Marginally Compatible	Marginally Compatible
Extensive Natural Wildlife and Recreation Areas	Compatible	Marginally Compatible	Marginally Compatible	Incompatible	Incompatible




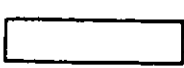
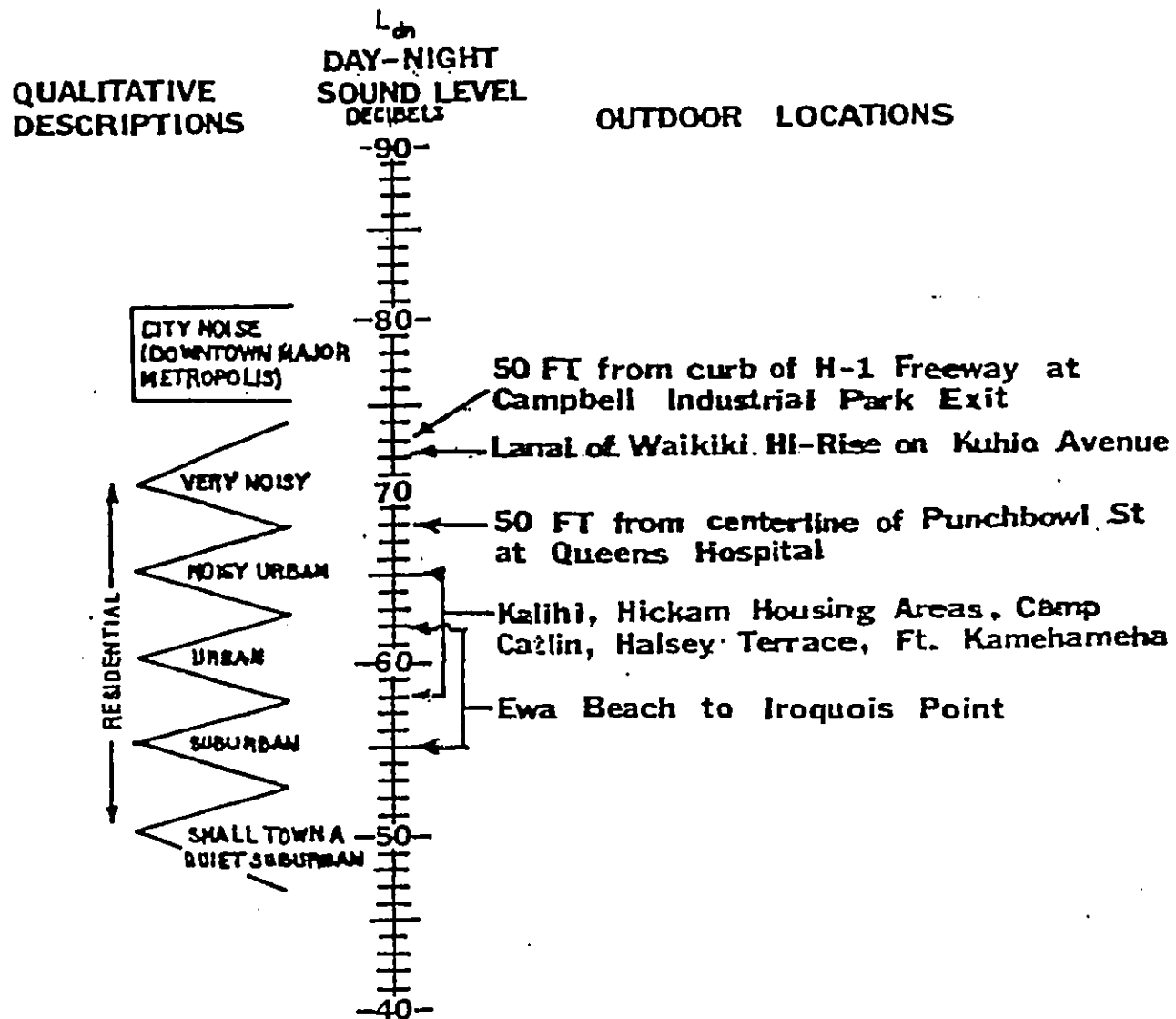
	Compatible		Marginally Compatible
	With Insulation per Section A.3		Incompatible

FIG. 1. Land use compatibility with yearly day-night average sound level at a site for buildings as commonly constructed. [For information only; not a part of American National Standard for Sound Level Descriptors for Determination of Compatible Land Use S3.23-1980.]

FIGURE 2

RANGE OF EXTERIOR BACKGROUND AMBIENT NOISE LEVELS



On Oahu, State and County noise regulations exist, and are enforced whenever noise emissions exceed specified levels and cause complaints from neighboring properties. State Department of Health (DOH) and City and County of Honolulu Comprehensive Zoning Code (CZC) noise regulations are expressed in maximum allowable noise limits rather than L_{dn} . The Kaka'ako Community Development District Plan (KCDDP) also contains noise regulations similar to the DOH regulations. They are all summarized in Table II for the cases of interest. Values shown in Table II represent short-term noise levels rather than 24-hour averages. Although they are not directly comparable to noise criteria expressed in L_{dn} , Table III has been constructed in order to make the following general comparisons of the various noise regulations:

- a. State DOH noise limits for residential district are approximately equal to 55 L_{dn} , or 10 L_{dn} units below existing federal standards (65 L_{dn}), and equal to EPA's long-term goal for residences.
- b. State DOH and KCDDP noise limits for apartment districts are approximately equal to 60 L_{dn} , or 5 L_{dn} units below existing federal standards.
- c. CZC noise limits for residential/apartment uses are approximately equal to 59 L_{dn} , or 6 L_{dn} units below existing federal standards.
- d. For industrial or non-dwelling areas, DOH noise limits equate to 76 L_{dn} and CZC limits equate to 69 L_{dn} . No explicit federal standards exist for these land uses, although existing state and local regulations are generally consistent with other criteria established for land use planning purposes. Compliance with CZC noise regulations (expressed as octave band noise limits) insure that objectionable pure tones or concentrated bands of noise are not generated.
- e. KCDDP noise limits for waterfront industrial districts are approximately 70 L_{dn} , or 6 L_{dn} units below DOH, and 1 L_{dn} unit above CZC regulations for industrial districts.

State and local noise regulations have been enforced, and have been used to effect court injunctions and remedial measures. The KCDDP noise limits are also enforceable whenever complaints regarding excessive noise are generated.

It should be noted that noise resulting from motor vehicles are regulated separately by existing DOH (Reference 8) and KCDDP regulations whenever public roadways are used.

TABLE II

COMPARISON OF EXISTING NOISE REGULATIONS

Noise Regulation*	Daytime/Nighttime Allowable Noise Level	Zoning District	Measurement Location
State Dept. of Health	60/50 dB (A-weighted) ¹	Apartment/Commercial	Lot or common property boundary.
State Dept. of Health	55/45 dB (A-weighted) ¹	Residential	Lot or common property boundary.
State Dept. of Health	70/70 dB (A-weighted) ¹	Industrial/Agricultural	Lot or common property boundary.
Honolulu CZC	See below for octave band limits ²	Apartment or Residential	At or beyond lot boundary
Honolulu CZC	See below for octave band limits ³	Any district where apartment or residence are not permitted.	At or beyond district boundary line for I-2 and I-3 lot zoning or at beyond lot boundary for I-1 lot zoning.
KCDDP	60/50 dB (A-weighted) ¹	MUZ-RA, MUZ-R, & MUZ-C	Lot or common property boundary
KCDDP	70/60 dB (A-weighted) ¹	WI	Lot or common property boundary

Notes: 1. Levels not to be exceeded for more than 10% of the time within any 20-minute period.

OCTAVE BAND CENTER FREQUENCY (Hz)								
	<u>63 or Below</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000 or above</u>
2.	72/69 dB	67/64 dB	59/56 dB	52/49 dB	46/43 dB	40/37 dB	34/31 dB	32/29 dB
3.	79/79 dB	74/74 dB	66/66 dB	59/59 dB	53/53 dB	47/47 dB	41/41 dB	39/39 dB

*See References 5, 6, and 7.

TABLE III
APPROXIMATE RELATIONSHIP OF NOISE REGULATIONS TO L_{dn}

<u>Noise Regulations</u>	<u>Zoning District</u>	<u>Approximate L_{dn} at Lot or Property Boundary</u>
State Dept. of Health	Residential	55 L_{dn}
State Dept. of Health	Apartment/Business	60 L_{dn}
State Dept. of Health	Industrial	76 L_{dn}
Honolulu CZC	Any district where resi- dences or apartments are permitted.	59 L_{dn}
Honolulu CZC	Any district where resi- dences or apartment are not permitted.	69 L_{dn}
KCDDP	MUZ-RA, MUZ-R, MUZ-C	60 L_{dn}
KCDDP	WI	70 L_{dn}

III. EXISTING NOISE FROM STATIONARY EQUIPMENT AND BUSINESS ACTIVITIES

Noise from stationary equipment and business activities within Kaka'ako are generally masked by traffic noise during the daytime periods. Measurements within work areas or at doorway openings to work areas were generally required to obtain valid noise readings of stationary noise sources in Kaka'ako. The results of these measurements are shown in Figures 3a thru 3h and are summarized in Table IV. Due to the enclosed nature of business establishments, and possibly due to a lower level of activity within Kaka'ako, it was difficult to find shops which were operating noisy machinery. In general, auto repair shops were the most audible and consistent source of noise within Kaka'ako. Air handling and refrigeration equipment were audible and were also measured.

In general, it can be said that workplace noise measured were very transient and impulsive in nature, with 10 to 20 dB level changes occurring within a few seconds. Public address (PA) system sound levels were generally equal to or louder than workplace noise levels, and were also of short duration. Because of the transient nature of the louder noise sources (those exceeding 65 dB), the average noise level within a workplace was highly dependent upon the level of activity. During busy periods, loud, transient noise sources would tend to occur more frequently and cause the average noise level to increase. During slow periods, these noise sources would be equally loud, but would occur less frequently, and have a lesser effect on increasing the average workplace noise level.

Also measured in Kaka'ako were machinery noise levels from outdoor refrigeration and air handling equipment, which are characterized as steady and continuous (rather than transient) noise sources. These equipment were the dominant sources during the nighttime periods when traffic noise had subsided. The following sound levels were recorded for these equipment:

Outdoor Refrigeration Equipment @ 15 FT	65 dB
Refrigeration Equipment in Covered Loading Area	80 dB
Refrigeration Container Van @ 15 FT	78 dB
Centrifugal Fans @ 20 Ft	69 dB
Office Window Air Conditioner @ 15 FT	60 dB

It should be noted that although some technical violations of State and City noise regulations are probably occurring within Kaka'ako, the problem is not widespread. Property line noise levels were generally below the DOH limit of 70 dB for industrial zoning. The lack of residences close to these commercial and industrial noise sources has also been beneficial in minimizing the actual noise impacts and complaints. Overall, the existing noise environment is compatible for industrial and commercial activities. Within the interior portions of the area, the existing noise environment is also compatible for residential development. Interior lots of Kaka'ako are relatively quiet at ground level during the nighttime period, with background ambient levels ranging between 40 and 50 dB. This is due to the reduction in local traffic during non-working hours, and the shielding effect afforded by the industrial/commercial structures fronting the major streets. At higher elevation on the interior lots, line-of-sight conditions to major streets (Ala Moana, Kapiolani, Ward, Punchbowl) could occur, and background ambient levels could increase by 5 to 15 dB.

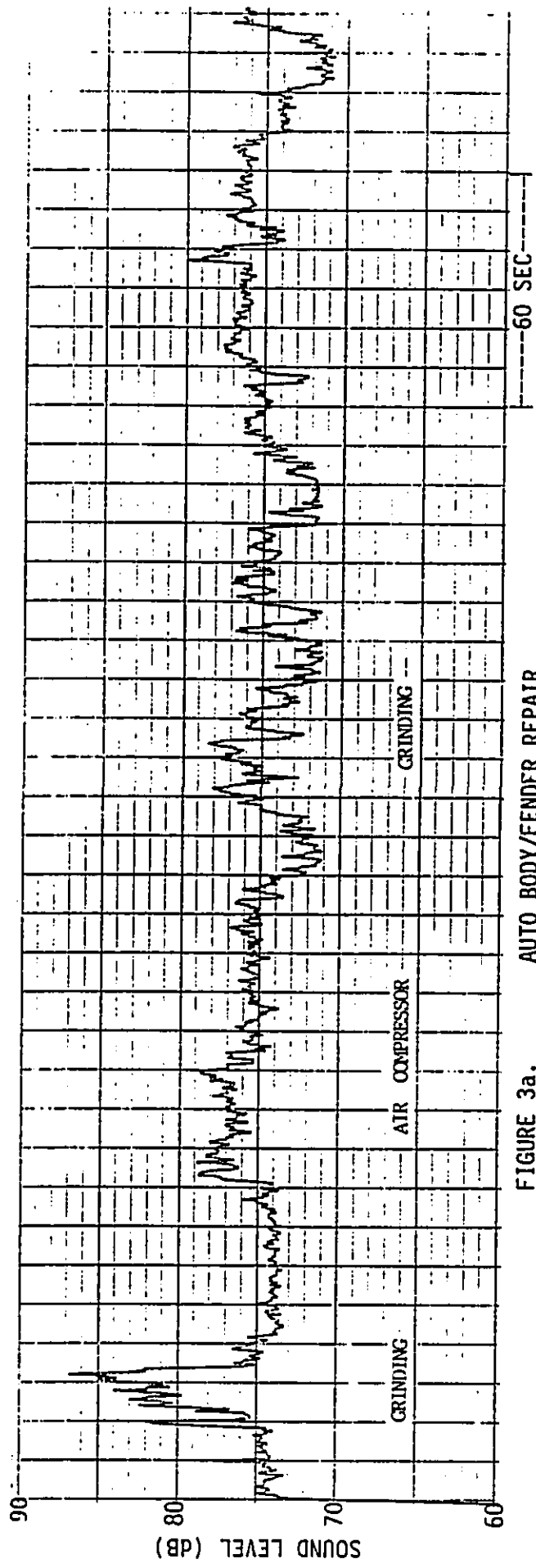


FIGURE 3a. AUTO BODY/FENDER REPAIR

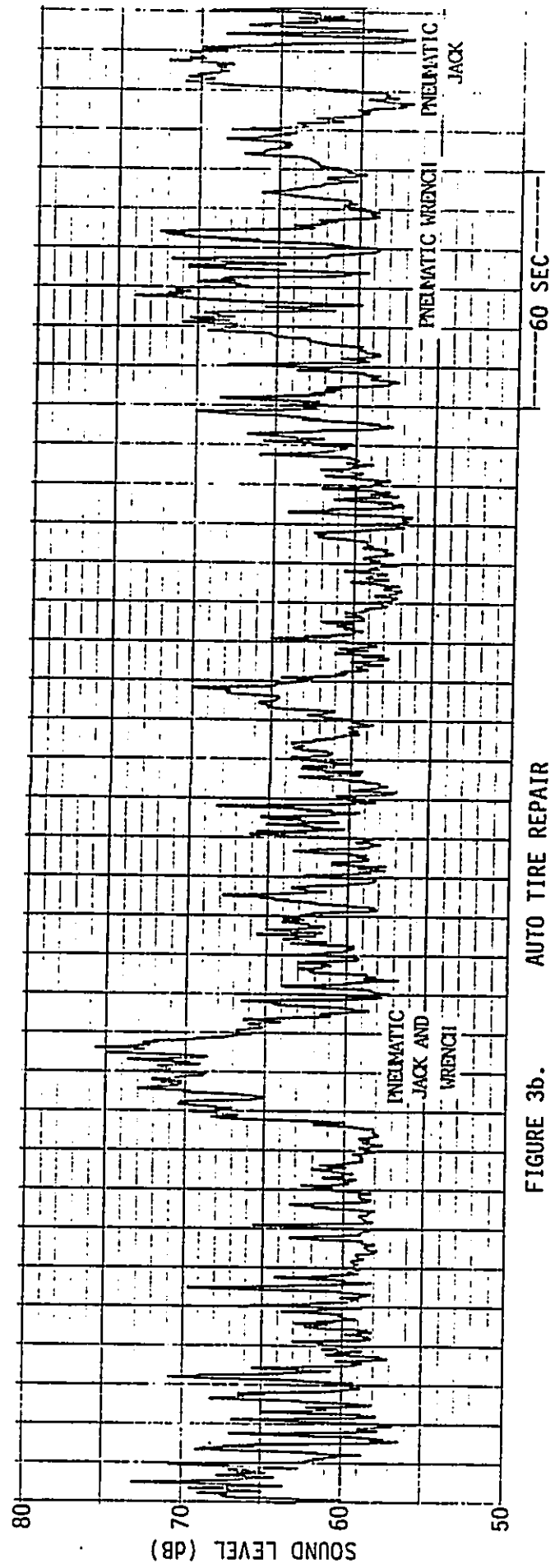


FIGURE 3b. AUTO TIRE REPAIR

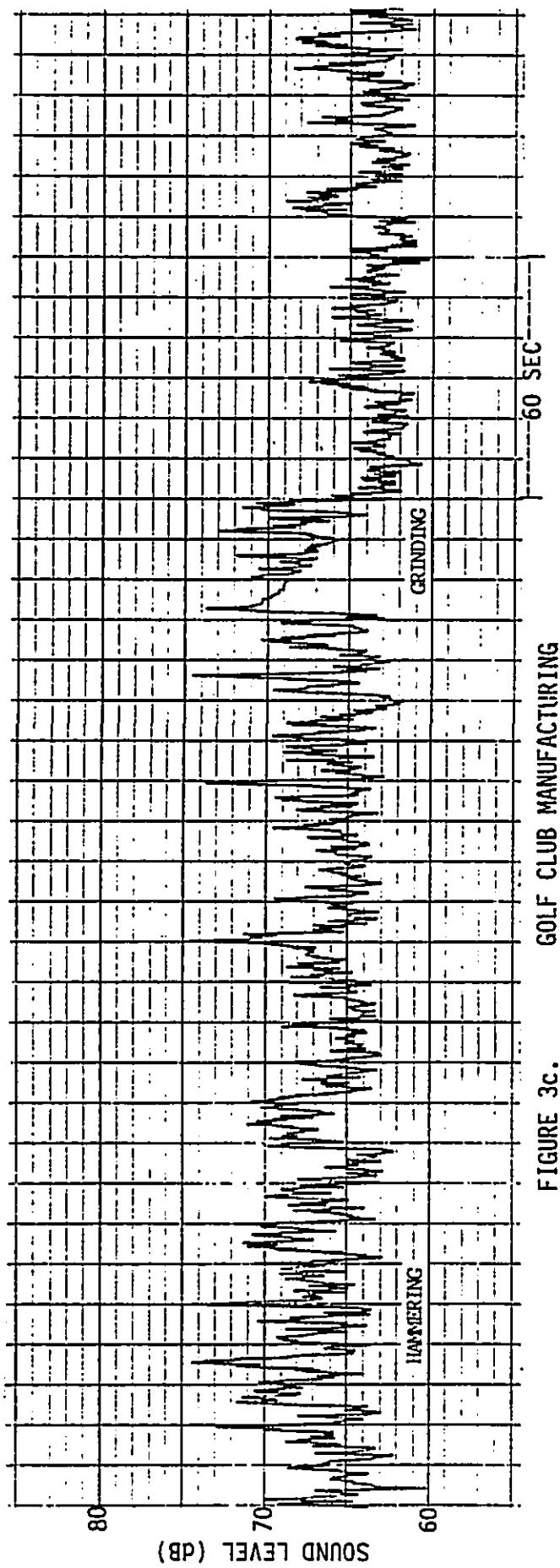


FIGURE 3c. GOLF CLUB MANUFACTURING

A-14

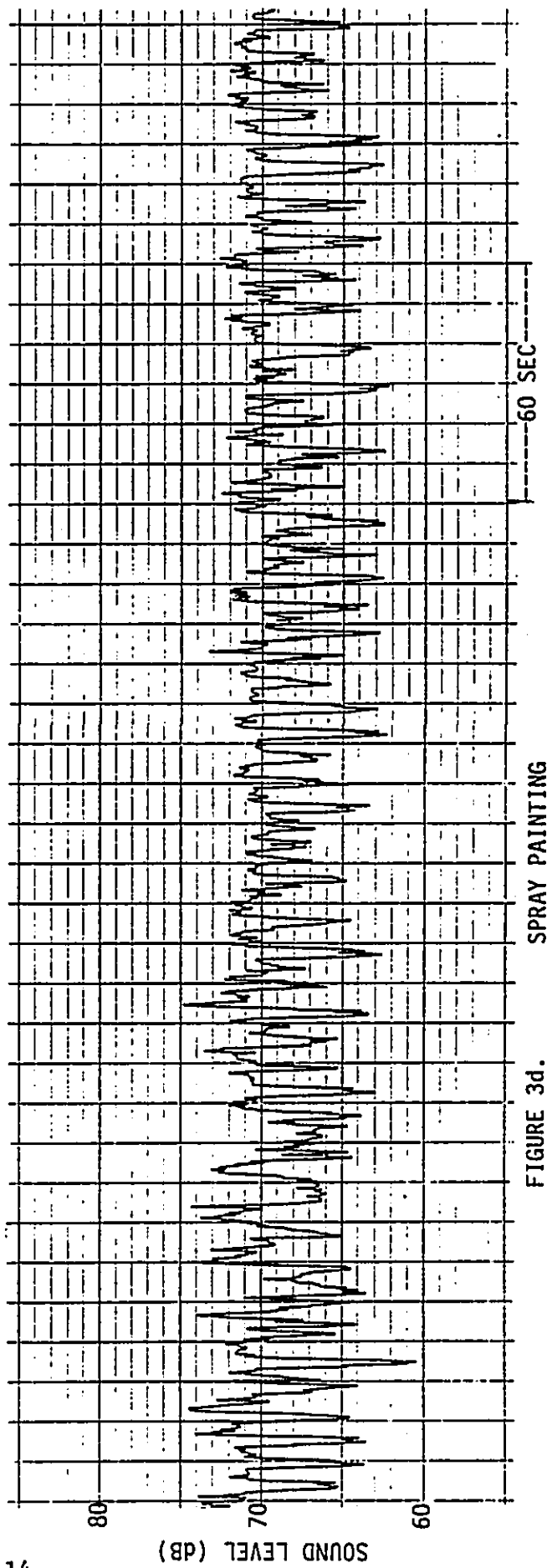


FIGURE 3d. SPRAY PAINTING

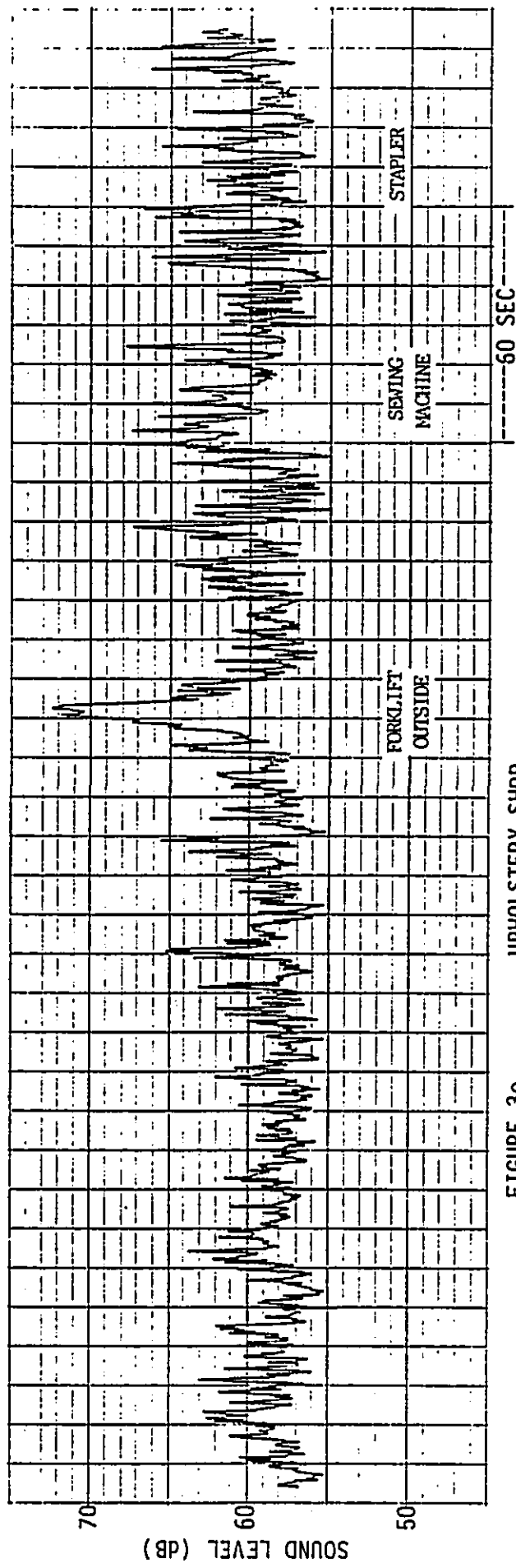


FIGURE 3e. UPHOLSTERY SHOP

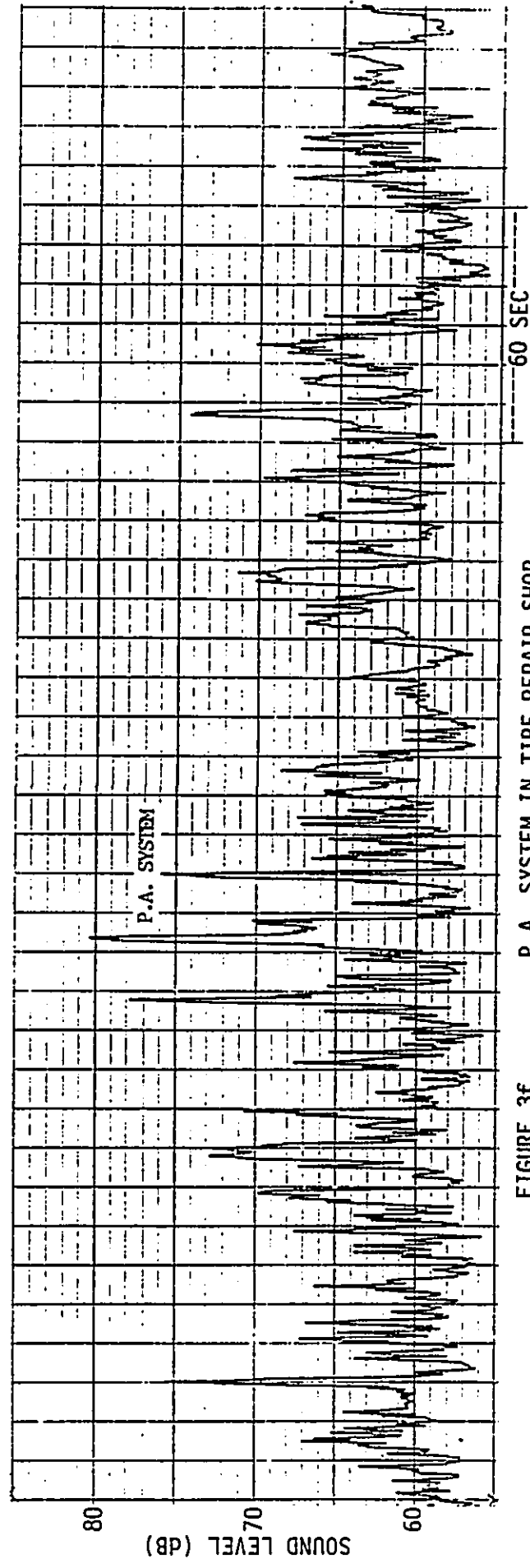


FIGURE 3f. P.A. SYSTEM IN TIRE REPAIR SHOP

8000 1000 100 10 1

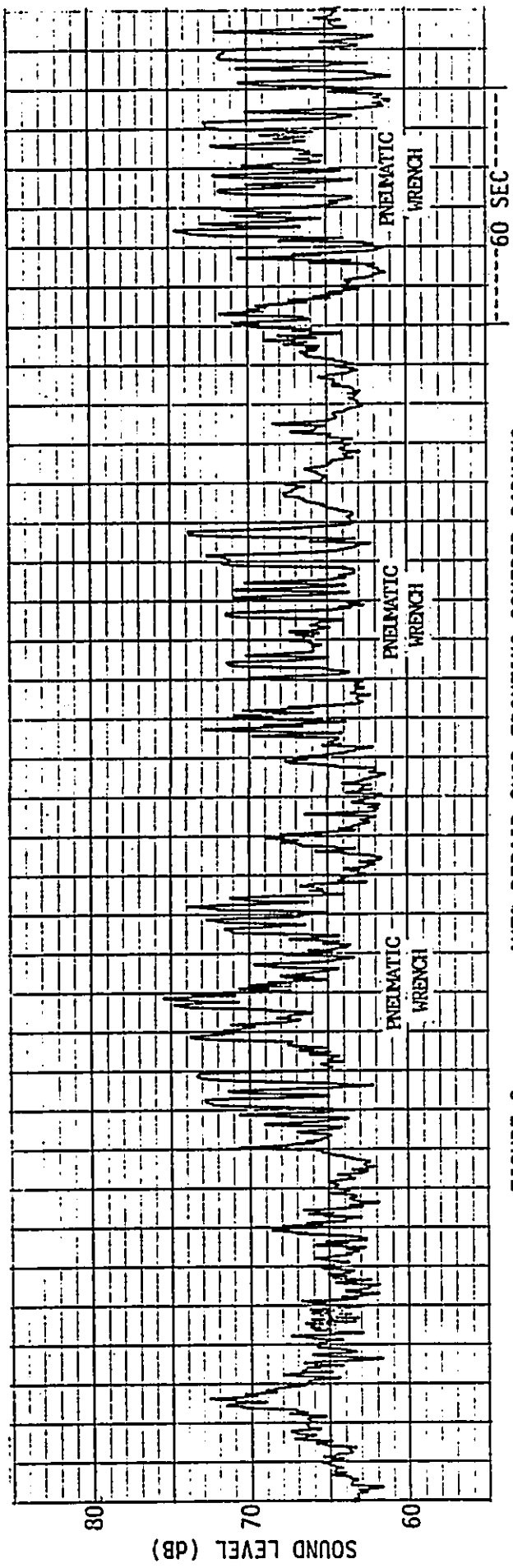


FIGURE 3g. AUTO REPAIR SHOP FRONTING COVERED PARKING DECK OF SHOPPING CENTER

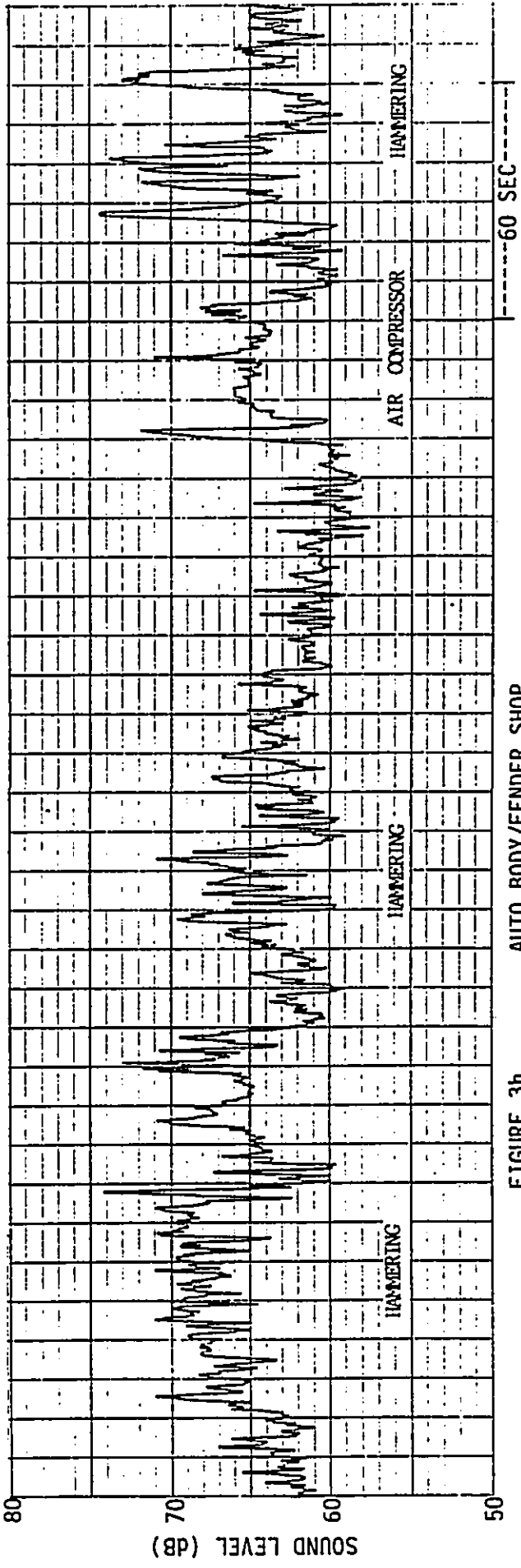


FIGURE 3h. AUTO BODY/FENDER SHOP

TABLE IV
SUMMARY OF MEASURED WORKPLACE SOUND LEVELS

<u>Business Establishment (Measurement Location)</u>	<u>Background Ambient Noise Level</u>	<u>Transient Noise Sources</u>
Auto Body Repair & Paint Shop (At Doorway)	71	Air Compressor: 78dB Grinding: 85dB Hammering: 75dB
Tire Repair (Outside Entrance)	57	PA System: 80dB Pneumatic Wrench: 75dB Pneumatic Jack: 72dB Hammering: 70dB
Golf Club Manufacturing (At Doorway)	61	Grinding: 70dB Spray Painting: 68dB Hammering: 74dB
Spray Paint Shop (At Doorway)	61	Air Gun: 74dB
Upholstery Shop (At Doorway)	55	Stapler: 67dB Sewing Machine: 63dB
Auto Repair Shop Below Parking Deck (30 Ft from Entrance)	62	Pneumatic Wrench: 74dB Hammering: 72dB
Auto Body Repair Shop (Outside and 8' from Entrance)	58	Hammering: 74dB PA System: 75dB Grinding: 65dB
Warehouse (Outside on Sidewalk)	60	Container Loading: 75dB

A few noise complaints have been filed within the Kaka'ako area by residents to the State Department of Health. In these cases, residences were adjacent to industrial/commercial establishments without adequate buffer zones or shielding by structures. However, noise conflicts are not considered to be a serious problem within Kaka'ako at the present time.

IV. OTHER POTENTIAL MACHINERY NOISE SOURCES FROM INDUSTRIAL AND COMMERCIAL ACTIVITIES

Practically all workplace activities, which involve the use of powered tools or machinery, will generate noise levels in excess of 65 dB at the operator position. Noise levels in excess of 65 dB are considered more likely to occur in workplace than are levels below 65 dB* when powered equipment is operated. Figure 4 and Table V present typical ranges of noise levels for various equipment which may be used in an individual workplace environment. The ultimate effect of noisy equipment on the spatial and temporal noise level distributions within a particular workplace depends upon a number of factors such as: the loudness, physical location, and frequency of operation of the noisy equipment; the interior architectural finishes and furnishings used in the workplace; and the extent to which partitions or enclosures are used to contain highlevel noise sources. The use of electronic paging system will generally result in intermittent sound levels which are higher (by design) than the workplace noise levels.

Hearing damage criteria for the workplace is approximately 85 dB, and it is possible that noise levels in the workplace environment may ultimately be at or below the 85 dB level. However, it is not likely that equipment of the industrial types shown in Table V will be quieted to levels below 85 dB due to economic considerations. Therefore, it is reasonable to assume that workplace noise levels do and will continue to occur within a band of values, of approximately 65 to 85 dB with possible levels exceeding 85 dB for industrial operations.

The extent to which noise from one industrial or commercial activity leaks out to adjoining properties depends upon the construction and openness of intervening partitions (including floors and ceilings) and the setback distances to the property boundaries. It is possible to totally enclose a noisy business establishment with properly designed wall and ceiling/floor systems to prevent workplace noise from escaping to adjoining properties. However, considerations such as ventilation, material flow and customer servicing can make total enclosure impractical.

*Sound levels below 65 dB are more typical of business offices or outdoor locations removed from transportation noise sources.

FIGURE 4

RANGE OF INDUSTRIAL MACHINERY/EQUIPMENT SOUND LEVELS*

		Sound Levels - dB							
		80	85	90	95	100	105	110	115
1.	Pneumatic Power Tools (grinders, chippers, etc.)				+++++	+++++	+++++	+++++	+++++
2.	Air Blown-Down Devices (painting, cleaning, etc.)				+++++	+++++	+++++	+++++	+++++
3.	Air Compressors (reciprocating, centrifugal)				+++++	+++++	+++++	+++++	+++++
4.	Metal Forming (punch, shearing, etc.)				+++++	+++++	+++++	+++++	+++++
5.	Pumps (water, hydraulic, etc.)				+++++	+++++	+++++	+++++	+++++
6.	Industrial Trucks (LP gas)				+++++	+++++	+++++	+++++	+++++
7.	Saws				+++++	+++++	+++++	+++++	+++++
8.	Laundry Equipment				+++++	+++++	+++++	+++++	+++++
9.	Electric Motors				+++++	+++++	+++++	+++++	+++++
10.	Blowers (forced, induced, fan, etc.)				+++++	+++++	+++++	+++++	+++++

*Measured at operator positions.

TABLE V
MEASURED SOUND LEVELS OF INDUSTRIAL EQUIPMENT

<u>Operation</u>	<u>Sound Level (dB)</u>
Steam cleaning	109-114
Buffing and polishing	103-104
Use of bed planer	95-97
Use of compressed air for blowdown	102
Use of abrasive cut-off saw	104-108
Operation of paint spray booth	92
Use of large bandsaw	96-97
Operation of Motor Generator sets, Battery Shop	95-102
Use of portable pneumatic sander	96-98
Operation of abrasive cut-off wheels	92-96
Use of pneumatic wire brushes	94-98
Use of 4" belt sander	96-97
Use of saw	100-106
Use of pneumatic hoists	98
Use of surface planer	100
Use of table saw	96-98

V. EXISTING TRAFFIC NOISE

Traffic noise measurements were obtained at six locations, during the month of December, 1981, to describe existing traffic noise along major and local streets of the mauka side of Kaka'ako. The measurement locations are shown in Figure 5. Traffic noise measurements were obtained over continuous 24-hour periods in order to directly measure the Day-Night Sound Level (L_{dn}). Additionally, available traffic counts for the streets of interest were used to compare calculated traffic noise with measurement results.

Figures 6 through 11 present the resulting traffic noise measurements at the six locations of interest. Minimum, maximum, and average sound levels recorded during each hour are shown as a group of two dots and a horizontal bar line, respectively. It should be noted that along the existing major streets (Ala Moana, Kapiolani Boulevard, and Ward Avenue), the noise measured was predominantly due to motor vehicular traffic. However, along the low volume local streets (Auahi, Halekauwila, or Queen), other noise sources (aircraft, distant traffic, industrial activity, etc.) also contributed to the total noise levels measured. This was true, particularly at night when traffic volumes on local streets were very small.

Figures 12a and 12b present local traffic noise levels at a multi-deck shopping center to show the differences in traffic noise characteristics between open and covered parking lots. Due to reverberant buildup in the covered parking lot of Figure 12a, average traffic noise levels were approximately 10 dB higher than those of the open lot of Figure 12b. Also, the open lot was on the uppermost parking level, and distant traffic noise was being shielded by the parking structure. As a general rule, local traffic noise in covered parking structures are higher than those in open parking structures. An example of this effect can be experienced when travelling into the Wilson or Pali Highway tunnels.

In order to verify the reasonableness of the existing traffic noise data obtained at Sites 1 thru 6, and to form a basis for predicting future traffic noise within Kaka'ako, the measured noise was compared with predicted values using the methodology of Reference 9. Assumed vehicle mix used for all streets was 95% Autos, 2.7% medium Trucks, and 2.3% Heavy Trucks and Buses. Table VI presents the additional assumptions used in the calculations, and the results of the comparisons at the six measurement locations. Available Kaka'ako traffic counts obtained during the 1979 thru 1981 were used to obtain daily and peak hour traffic volumes. The measurement results at Site 3 (open parking lot at Halekauwila Street) were determined to be influenced by traffic noise on both Halekauwila and South Streets, and calculated noise levels from both streets were summed prior to comparison with measured data. Predicted L_{dn} values were obtained by applying the difference between measured Peak Hour L_{eq} and L_{dn} to the predicted Peak Hour L_{eq} results. In general, this difference was less than 2 dB, except for the Kapiolani Boulevard Site, where the measured L_{dn} was 2.9 dB greater than the Peak Hour L_{eq} , due to the nighttime noise contributions.

For the remainder of this report, traffic data obtained from Reference 10 was used to define the Base Year traffic noise condition for the area mauka and makai of Ala Moana Boulevard and for Ala Moana Boulevard. This was done to be consistent with the update of the KCDDP Final Environmental Impact Statement.

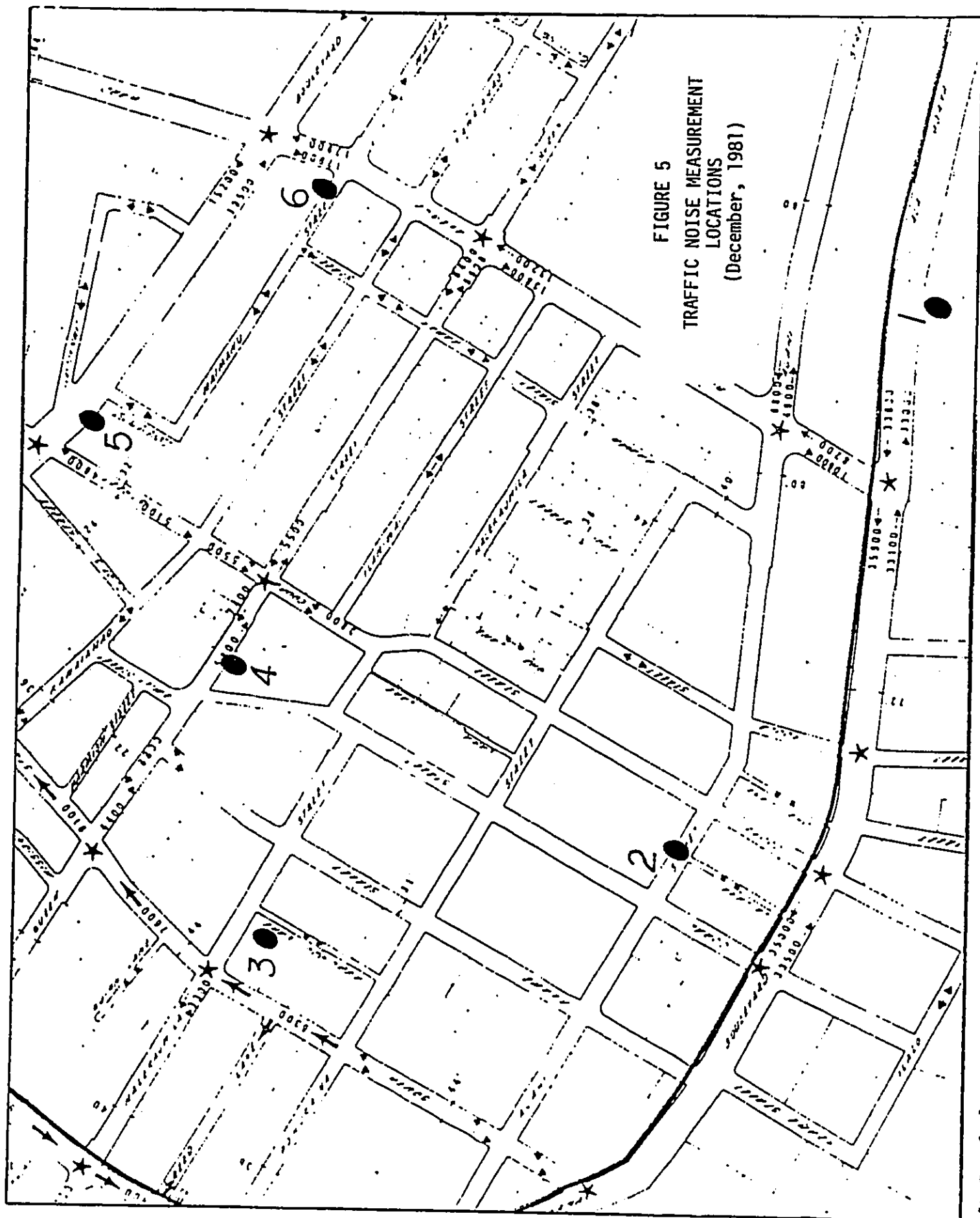
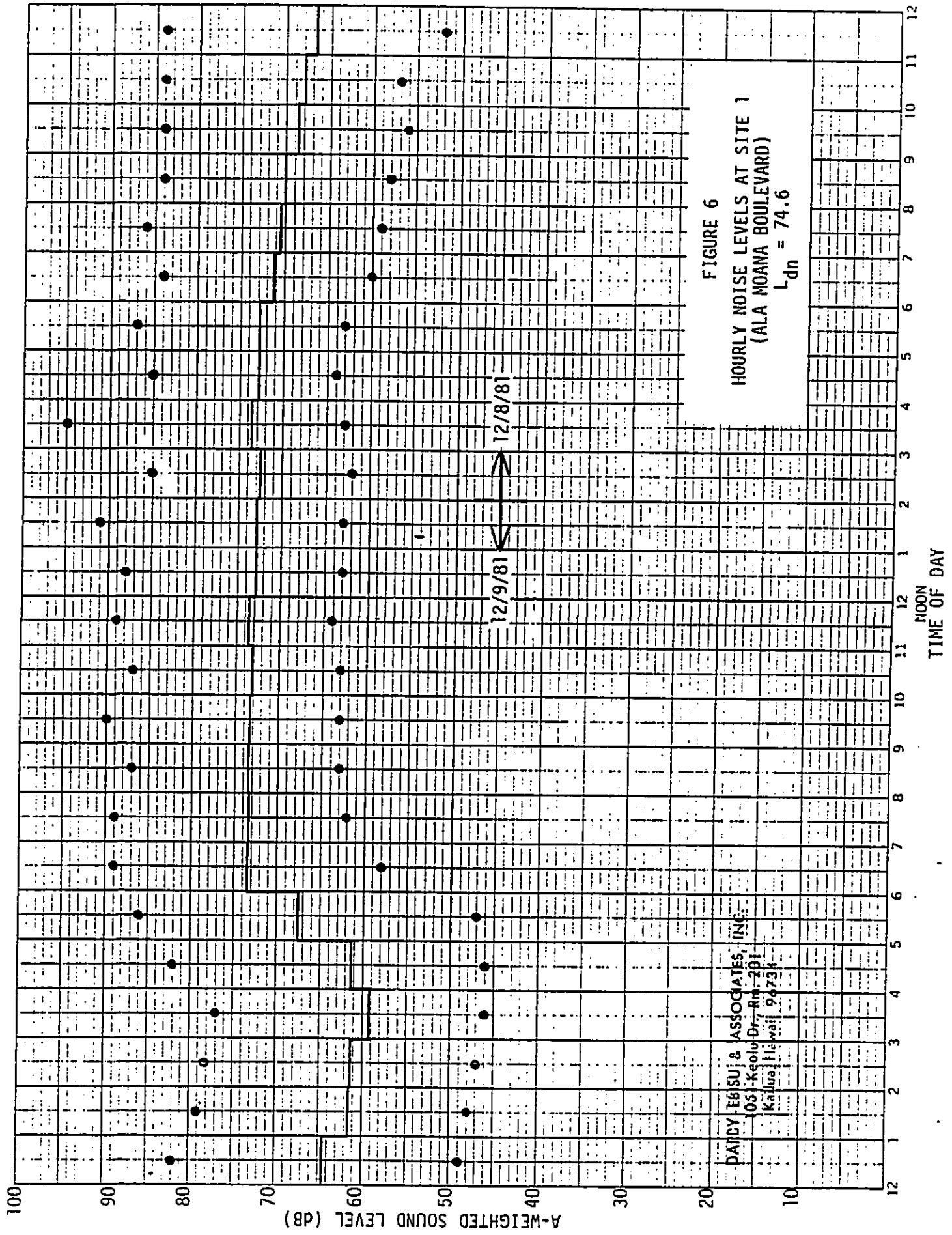
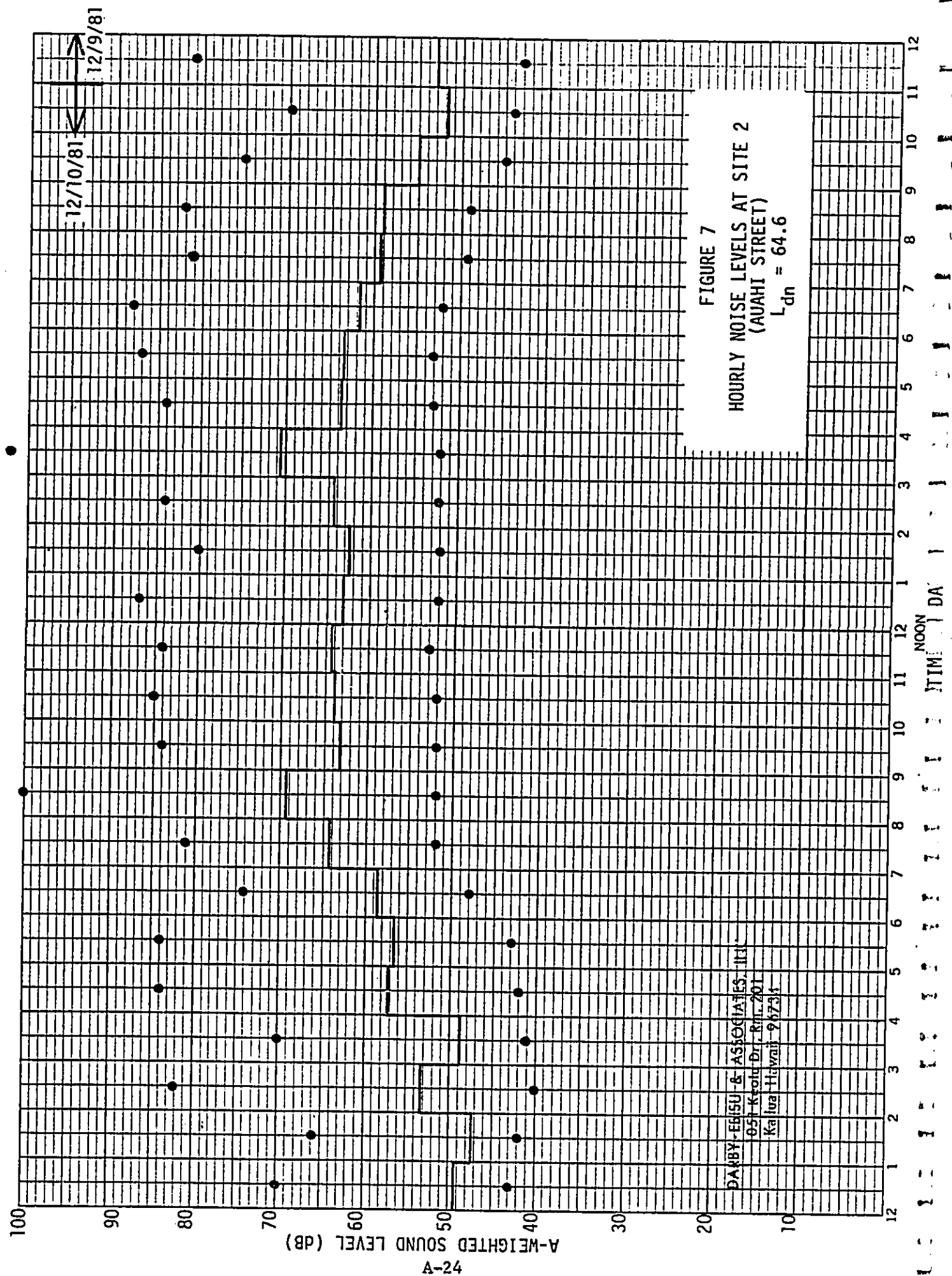
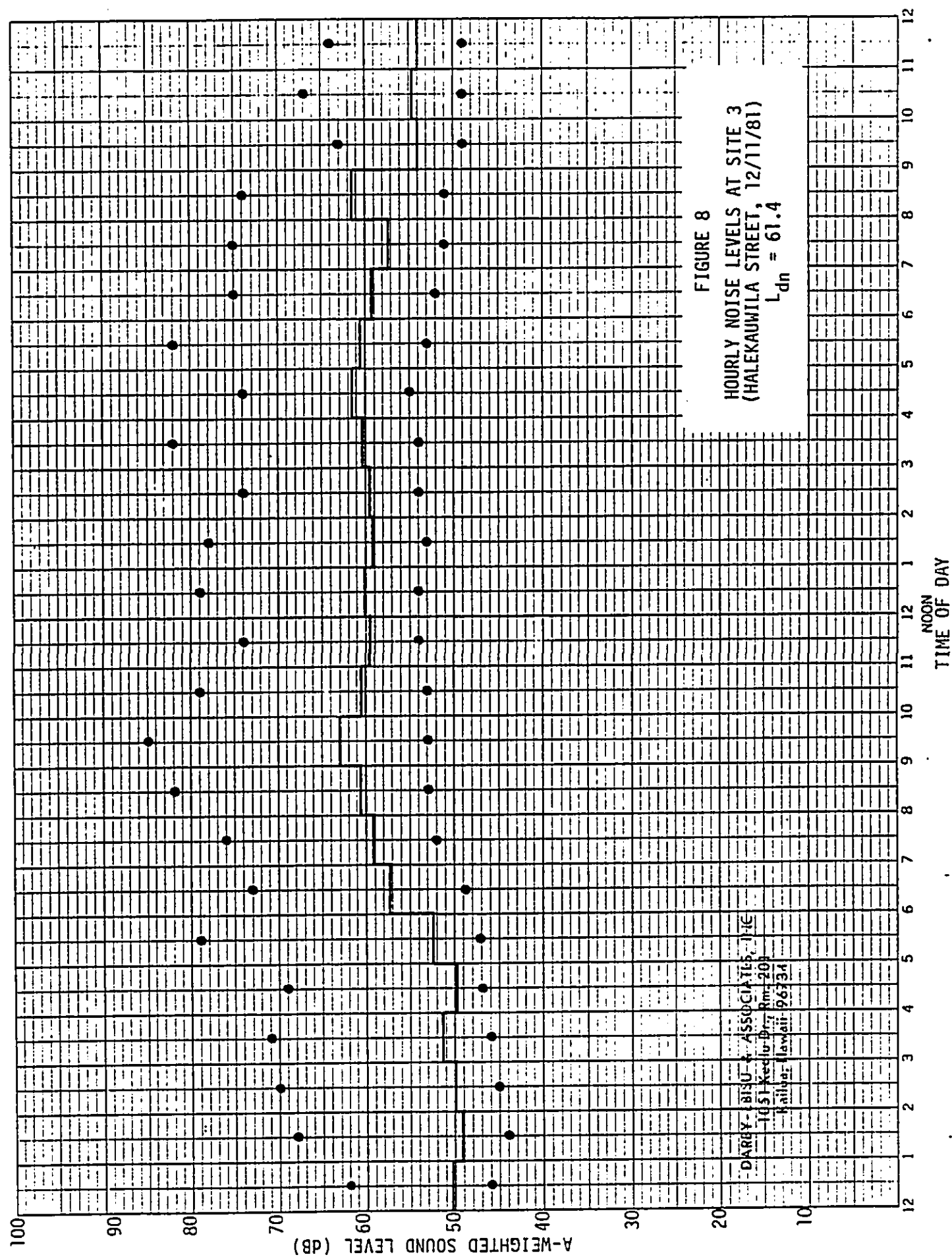


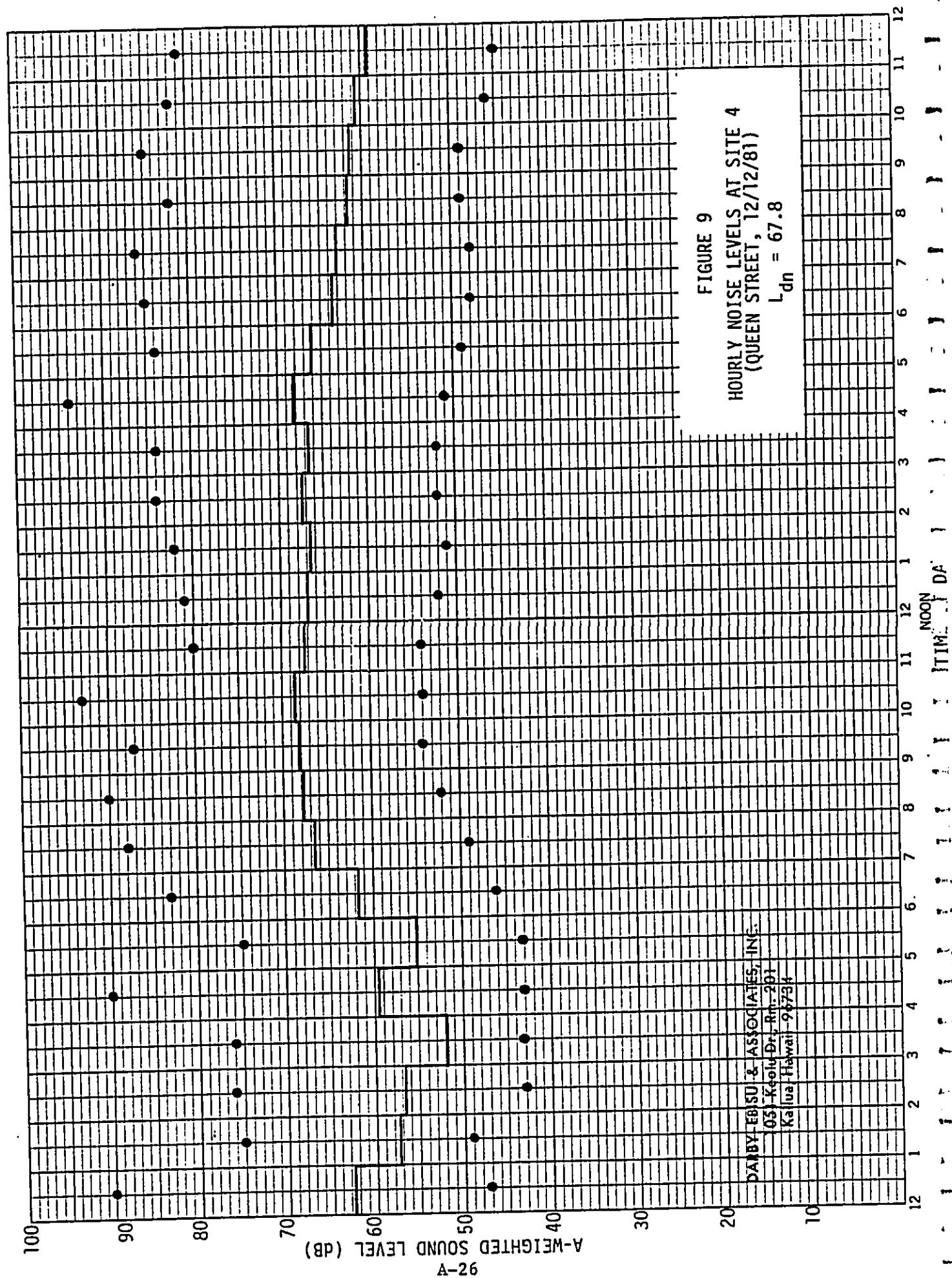
FIGURE 5
TRAFFIC NOISE MEASUREMENT
LOCATIONS
(December, 1981)

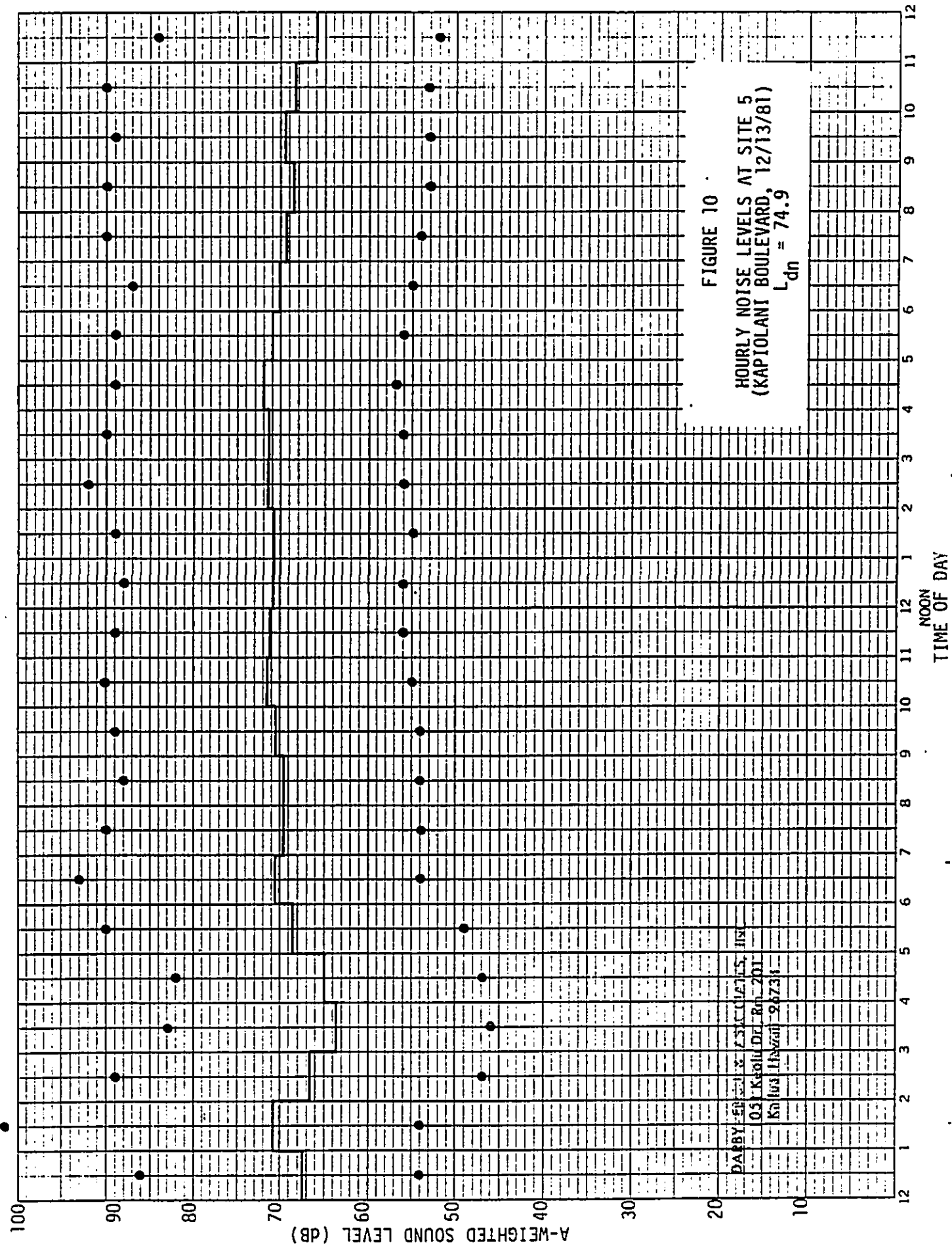
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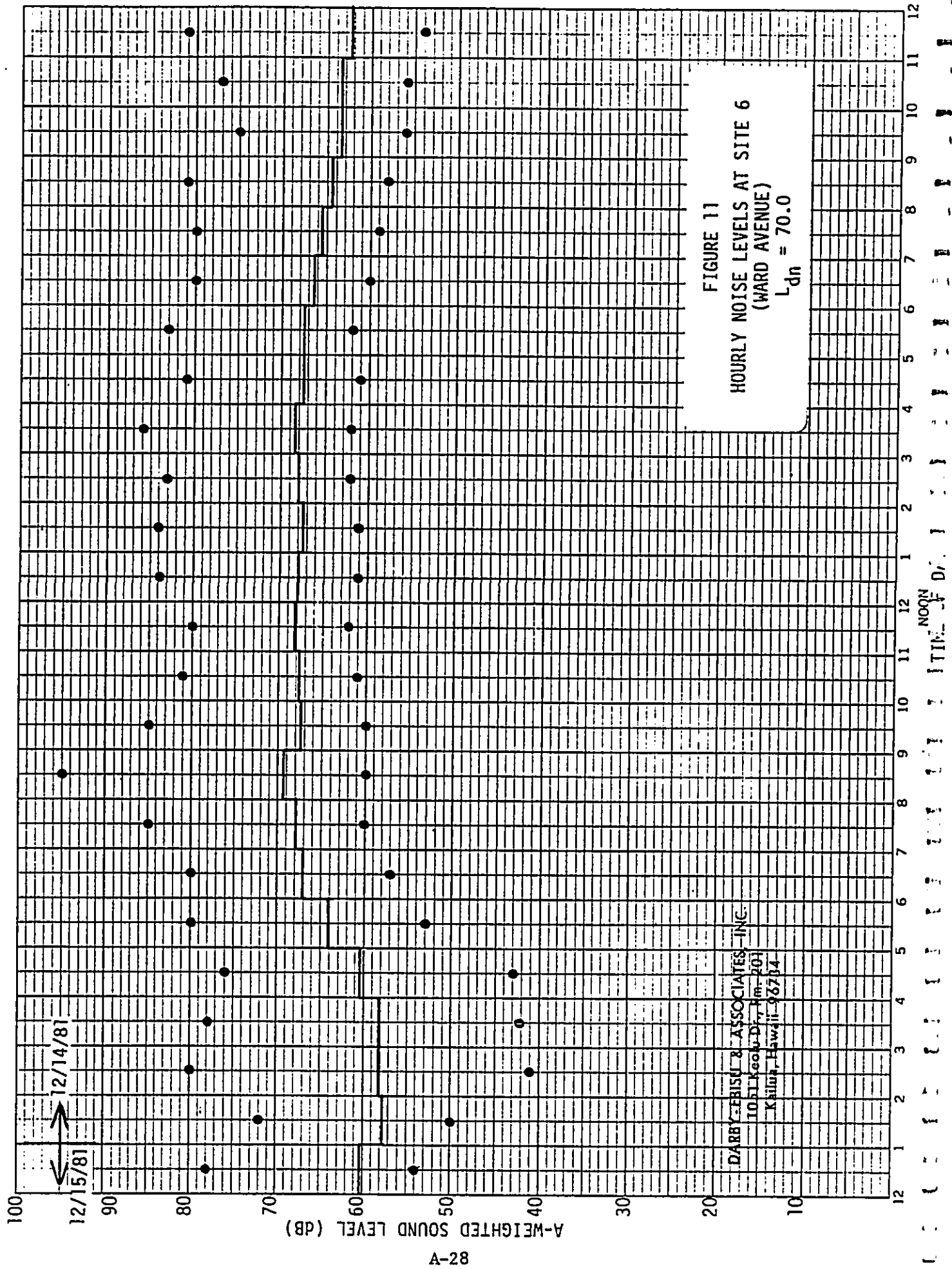












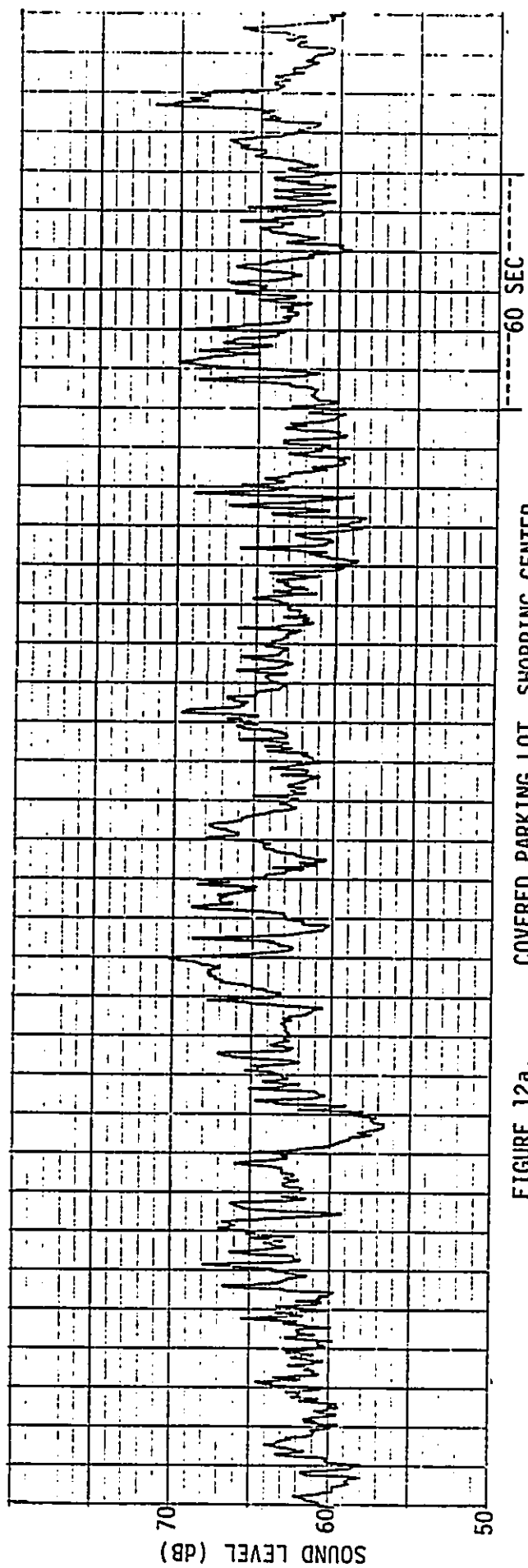


FIGURE 12a. COVERED PARKING LOT, SHOPPING CENTER

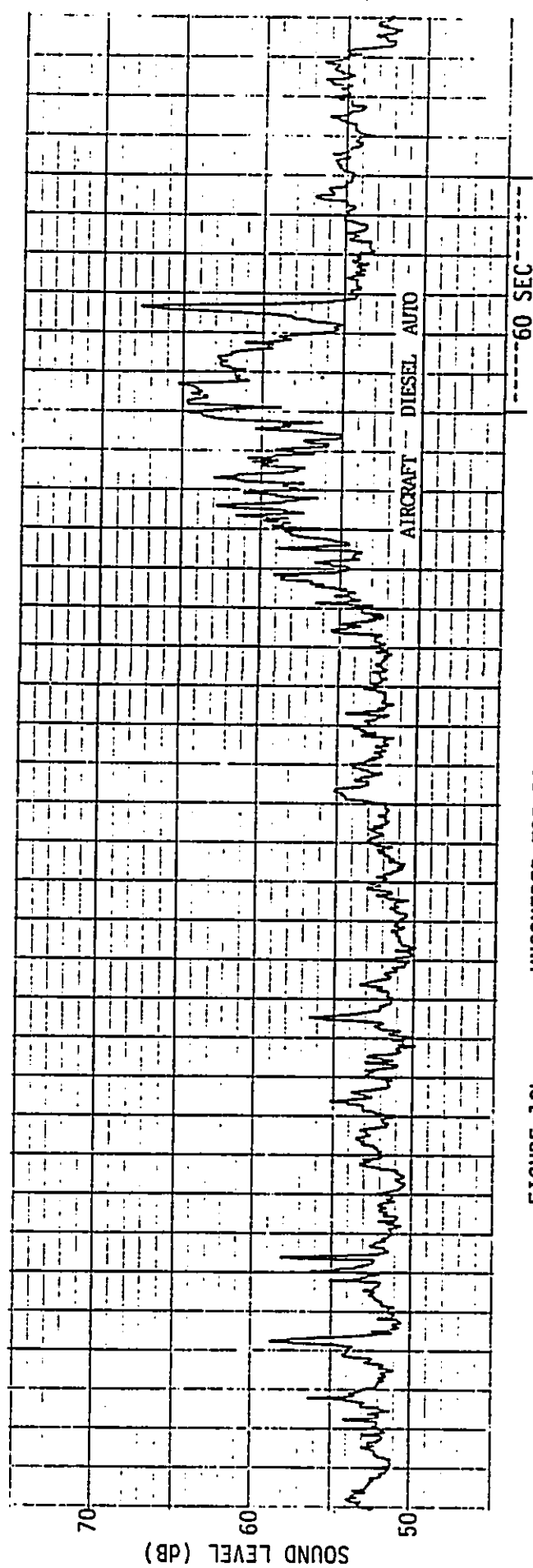


FIGURE 12b. UNCOVERED TOP PARKING DECK, SHOPPING CENTER

TABLE VI

COMPARISON OF MEASURED WITH PREDICTED TRAFFIC NOISE AT SIX MEASUREMENT LOCATION (DECEMBER, 1981)

Street Segment	ADT	Hourly Peak (VPH)	Assumed Ave. Speed	Distance from Centerline	At Measured Location			
					Predicted Ldn	Measured Ldn	Predicted Peak Hr. Leq	Measured Peak Hr. Leq
Ala Moana Boulevard (Ward to Piikoi)	65,983	5,278	32 MPH	50 FT	75.1	74.6	74.1 (PM)	73.6 (PM)
Auahi Street (Coral to Cooke)	6,088	469	22 MPH	20 FT	63.6	63.6	64.3 (PM)	64.3 (PM)
Halekauwila Street (South to Cooke)	2,577	266	25 MPH	75 FT)))))))	60.5*	61.4*	60.5 (PM)*	61.6 (PM)*
South Street (Ala Moana to Halekauwila)	4,598	526	27 MPH	150 FT)))))))				
Queen Street (South to Cooke)	11,114	1,032	25 MPH	20 FT	68.0	67.8	68.8 (AM)	68.6 (AM)
Kapiolani Boulevard (Cooke to Ward)	32,241	2,527	30 MPH	30 FT	75.4	74.9	72.5 (PM)	72.0 (PM)
Ward Avenue (Queen to Kapiolani)	35,800	3,222	20 MPH	40 FT	70.5	70.0	68.9 (PM)	68.4 (PM)

*Measured traffic noise at Halekauwila Street site was probably controlled by both South and Halekauwila traffic.

Base Year traffic noise levels were then computed at 50 FT distance from the centerlines of streets within Kaka'ako as shown in Table VII. Since existing Rights-of-Way for the higher volume streets shown (Ala Moana, King, Punch-bowl, Ward, Kapiolani, Pensacola, and Piikoi) are between 70 to 100 FT, the noise levels shown in Table VII are representative of Base Year conditions along the property lines fronting these high volume streets. For the narrower streets of Table VII, property line noise levels are approximately 3 dB higher than the L_{eq} and L_{dn} values shown in Table VII. It should be noted that in practically all cases, property line noise levels due to traffic exceed 65 L_{dn} , or the HUD acceptability threshold for residences. Also, because of the relatively high traffic noise levels (in excess of 70 L_{dn}) along the high volume streets such as Ala Moana, King, and Kapiolani, extremely large setbacks (in excess of 150 FT) are required before traffic noise levels decrease to 65 L_{dn} . These results are not unusual, since traffic noise is generally the most dominant noise source in urbanized areas.

From July 30 thru August 1, 1984, additional noise measurements were obtained in the area makai of Ala Moana Boulevard. The location of the three sides (Makai 1-3) are shown in Figures 13a, and 24-hour measurements were performed at each site in order to directly measure the L_{dn} . The results of the noise measurements are shown in Figure 13b thru 13d, and the symbols used are identical to those used in the mauka-side Figures 6 thru 11. The L_{dn} values shown with each figure represent the total contributions from aircraft, traffic, and fixed machinery.

At the "Makai 1" location (parking lot of existing park), traffic noise was minimal and was approximately 55 L_{dn} . At the "Makai 2" location (50 Ft from the centerline of Olomehane Street), traffic noise was approximately 59 L_{dn} due to the passage to tour buses and heavy trucks. At the "Makai 3" location (30 FT from the centerline of Ilalo Street), traffic noise was approximately 62 L_{dn} , due to heavy truck and automobile traffic. The results indicate that existing traffic noise within the Makai Area is approximately 60 L_{dn} at 50 FT distance from the centerlines of streets makai of Ala Moana Boulevard.

VI. EXISTING AIRCRAFT NOISE

The existing aircraft noise environment within Kaka'ako is believed to be similar to that depicted by the noise contours developed for Honolulu International Airport (HIA) for the 1979 time period. The 1979 aircraft noise contours are shown in Figure 13a. More recent (1984) aircraft noise measurements obtained at the Kewalo Basin noise monitoring station (RMS 14) of the HIA Noise Monitoring System, indicate that significant changes in aircraft noise have not occurred in the Kaka'ako area (Aircraft noise has remained at 60 L_{dn} at RMS 14). From Figure 13a, it can be seen that the southern portion of the Makai Area is exposed to aircraft noise levels of 60 to 65 L_{dn} , with the remainder of Kaka'ako exposed to levels below 60 L_{dn} .

Aircraft noise measurements were also obtained during July 29 to August 1, 1984 at locations (Makai 1, 2, and 3) shown in Figure 13a. The measurements occurred during tradewinds conditions. At the "Makai 1" site, the aircraft noise contribution was approximately 60 L_{dn} and aircraft noise was the dominant noise source at that site. Military jet aircraft (F-4 and KC-135) were the loudest events recorded at 82 to 84 dB (L_{MAX}). At the

TABLE VII
BASE YEAR TRAFFIC NOISE LEVELS @ 50 FT DISTANCE FROM CENTERLINE

Street Segment	ADT (Averaged Over Segment Length)	PM Hourly Peak (VPH)	Assumed Ave. Speed	Peak Hr. Leq (dB)	Base Year Ldn
Ala Moana Boulevard (Punchbowl to Piikoi)	60,900	5,221	32 MPH	74.0	75.0
<u>Mauka Area:</u>					
Aushi Street (Ala Moana to Ward)	19,700	1,158	22 MPH	64.2	63.5
Cooke Street (Ala Moana to Halekauwila)	3,100	218	22 MPH	57.0	57.0
Cooke Street (Halekauwila to Kapiolani)	9,600	530	22 MPH	60.8	60.8
Halekauwila Street (Punchbowl to Ward)	3,350	318	25 MPH	59.7	59.7
Kapiolani Boulevard (South to Piikoi)	39,900	3,157	30 MPH	71.2	74.1
King Street (Punchbowl to South)	34,900	3,470	25 MPH	70.1	71.1
King Street (South to Piikoi)	26,800	2,798	30 MPH	70.7	71.7
Pensacola Street (King to Waimanu)	16,000	1,180	25 MPH	65.4	66.4
Piikoi Street (Ala Moana to Kapiolani)	21,300	2,275	22 MPH	67.2	68.2
Piikoi Street (Kapiolani to King)	23,600	2,195	25 MPH	68.1	69.1
Pohukaina Street (Punchbowl to Ward)	1,750	470	25 MPH	61.4	61.4
Punchbowl Street (King to Ala Moana)	10,250	812	25 MPH	63.8	64.8
Queen Street (Punchbowl to Ward)	11,350	818	22 MPH	62.7	61.9
South Street (Ala Moana to Queen)	3,600	587	22 MPH	61.3	61.3
South Street (Queen to King)	8,400	965	22 MPH	63.4	63.4
Ward Avenue (Ala Moana to King)	28,000	2,093	20 MPH	66.0	67.6
<u>Makai Area:</u>					
Cooke Street (Ala Moana to Ilalo)		335	22 MPH	58.9	58.9

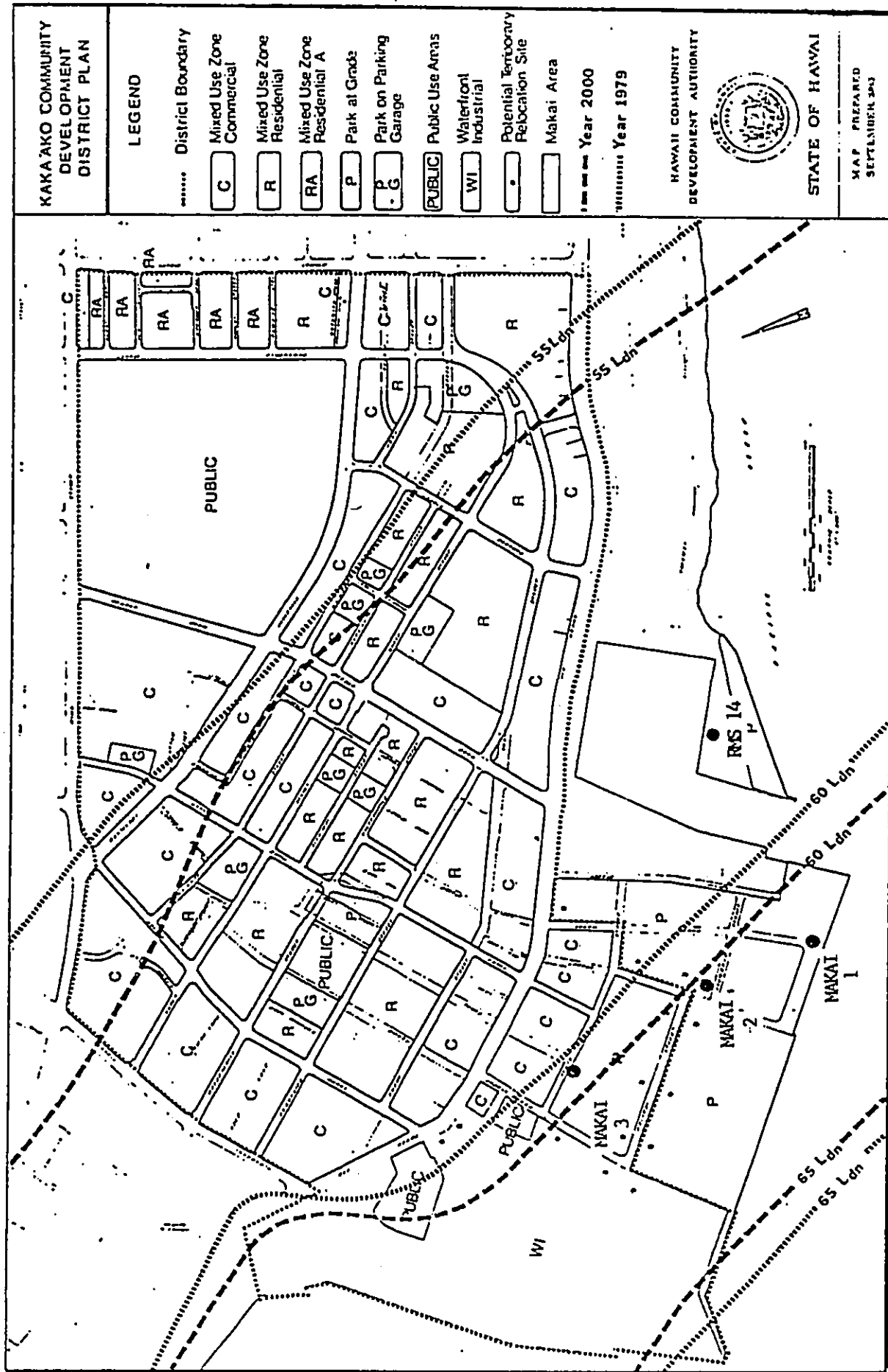
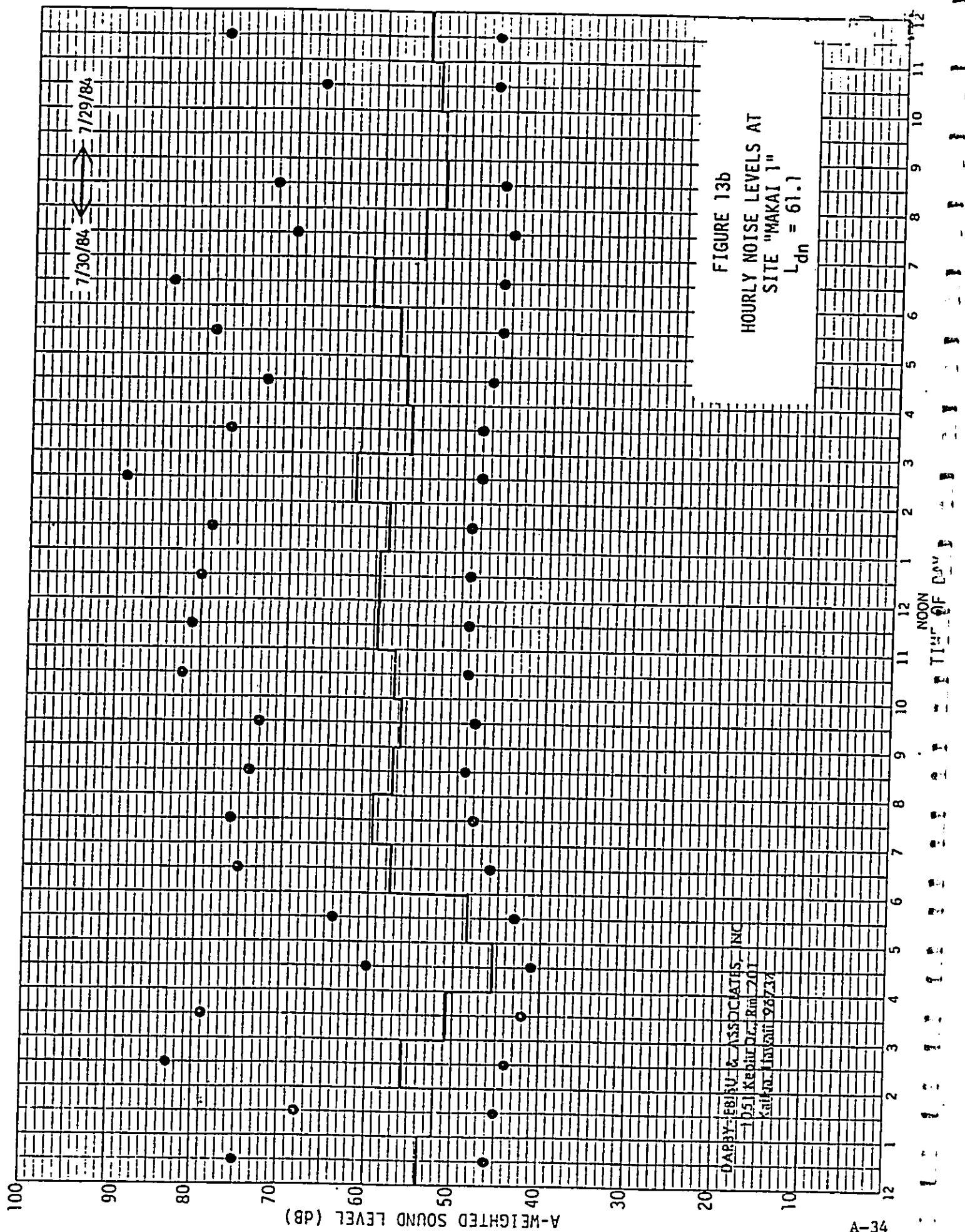


FIGURE 13a
HIA AIRCRAFT NOISE CONTOURS
WITHIN KAKA'AKO



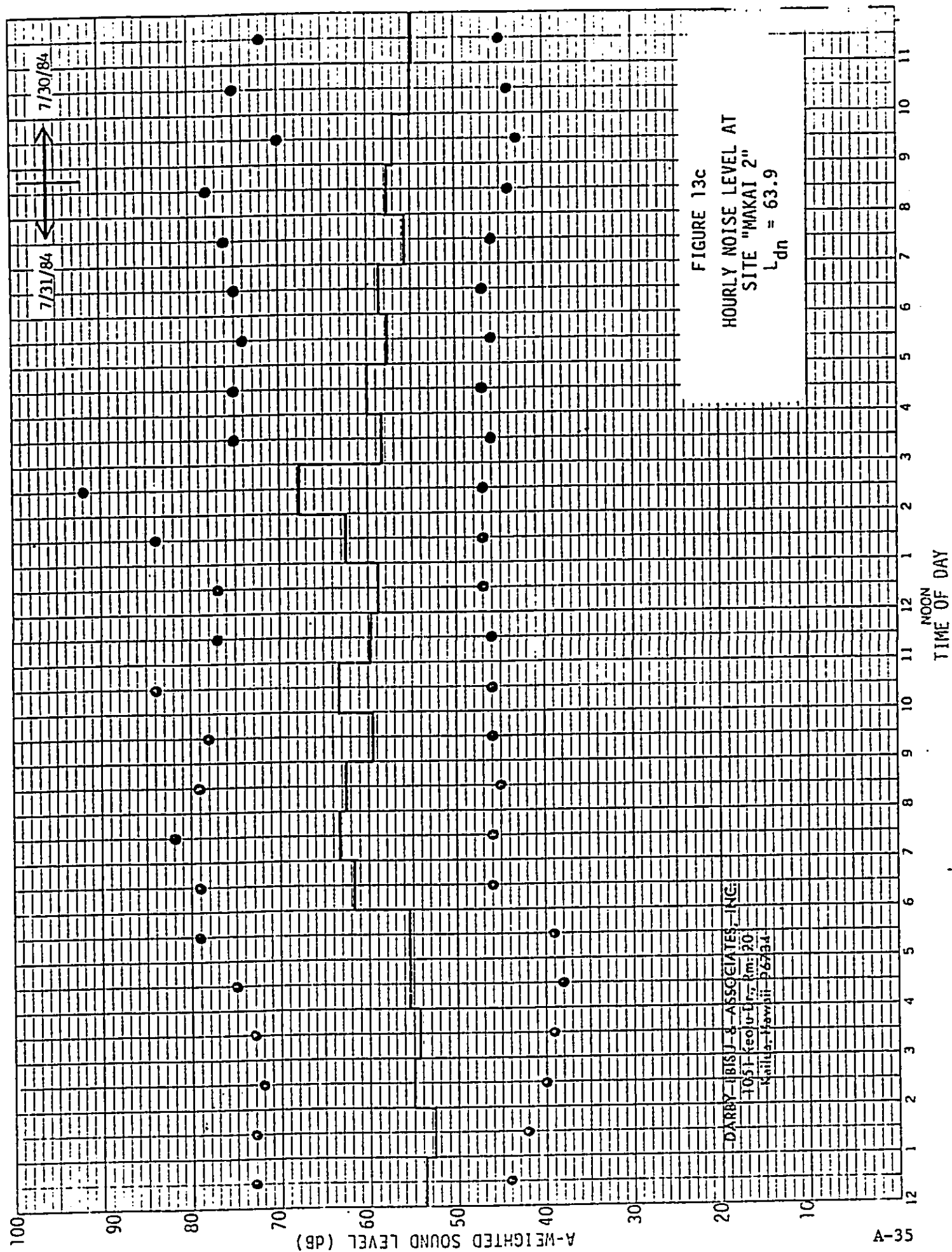
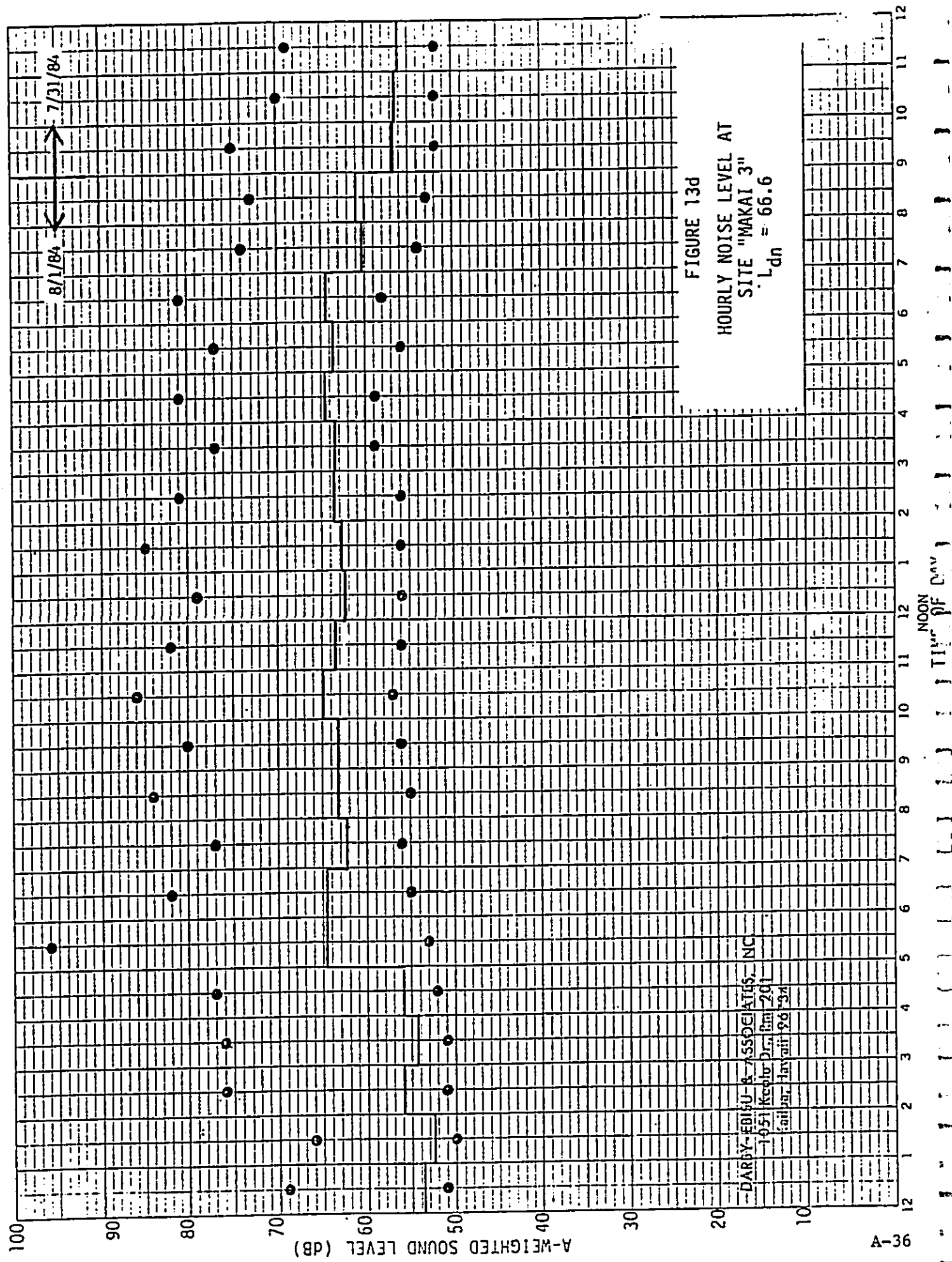


FIGURE 13c
HOURLY NOISE LEVEL AT
SITE "MAKAI 2"
 $L_{dn} = 63.9$

DARBY-IBIS J-8 ASSOCIATES, INC.
1051 Keolu Dr., Rm. 201
Kailua-Hawaii 96734



"Makai 2" site, aircraft noise was approximately 60 L_{dn} with military jet aircraft recorded at 81 to 92 dB (L_{MAX}). Aircraft noise contributes approximately 41% to the total noise environment at "Makai 2". At the "Makai 3" site, aircraft noise was approximately 60 L_{dn} , with military jet aircraft recorded at 81 to 85 dB (L_{MAX}). Aircraft noise contributed only 22 percent to the total noise environment due to the higher relative contributions from traffic and machinery (reefer vans) noise sources. The noise measurements at three sites in the Makai Area, plus the data from RMS 14 of the HIA Noise Monitoring System, suggest that the 60 L_{dn} aircraft noise contour crosses through the Makai Area as generally depicted in Figure 13a. The contours of Figure 13a are believed to be accurate to within 2 L_{dn} units.

VII. FUTURE TRAFFIC AND AIRCRAFT NOISE

Future traffic noise at 50 FT distance from the roadway centerlines were predicted for Kaka'ako streets using traffic projections to the Year 2000 (Reference 10) and the methodology of Reference 9. These future noise levels are shown in Table VIII, as are shown the increases in traffic noise over the Base Year values of Table VII. Significant increases (in excess of 3 L_{dn} units) in traffic noise are expected to occur along Halekauwila, Cooke, and Queen Streets, due to traffic volume increases in excess of 100 percent. Moderate increases (1 to 2 L_{dn}) in traffic noise are projected for Auahi Street and for South Street. For all other streets, traffic noise increases will be less than 1 L_{dn} and will be difficult to measure.

Future traffic noise characteristics within Kaka'ako will resemble that of other areas on Oahu which are urbanized and which are characterized by high-rise developments. These areas include Waikiki, downtown Honolulu, and Makiki. Traffic noise levels generally increase with elevation of the high-rise unit due to increased field-of-view to streets and reflected building surface with elevation. Traffic noise sources probably tend to radiate more noise upward than horizontally, due to hard pavement surfaces below the vehicles and due to the use of vertical exhaust systems by some heavy vehicle (trucks and buses). Urban traffic noise prediction is extremely complicated, particularly in a high-rise environment. The noise level at any individual high-rise unit is dependent upon a number of site specific factors such as: layout and noise levels associated with all streets within the field-of-view, the presence of intervening low- and high-rise structures which completely or partially restrict the field-of-view to streets, and the presence of reflective building surfaces which cause additional traffic noise contributions. As a general rule, as the elevation of the high-rise unit increases, the resulting traffic noise level also increases. Traffic noise levels in excess of 65 L_{dn} are not uncommon in high-rise development on Oahu.

Figure 14 presents a two-dimensional prediction of traffic noise contributions from an adjacent view corridor street and from a distant view corridor street. Traffic noise predictions along one face of the high-rise unit are provided for the two streets which run parallel to the building face. It should be noted that traffic noise contribution from local and distant streets which run perpendicular to the building face have been ignored for simplicity, but will also contribute to the total noise level. A vertical dipole model was assumed for the traffic noise sources.

TABLE VIII
PROJECTED YEAR 2000 TRAFFIC NOISE LEVELS @ 50 FT DISTANCE FROM CENTERLINE

Street Segment	ADT (Averaged Over Segment Length)	PM Hourly Peak (VPH)	Assumed Average Speed	Peak Hr. Leq (dB)	Year 2000 Ldn	Ldn Increase Over Base Year
Ala Moana Boulevard (Punchbowl to Piikoi)	74,633	6,968	28 MPH	74.1	75.1	+0.1
<u>Mauka Area:</u>						
Auahi Street (Ward to Ala Moana)	25,800	1,535	22 MPH	65.5	64.8	+1.3
Cooke Street (Ala Moana to Halekauwila)	8,000	700	19 MPH	60.9	60.9	+3.9
Cooke Street (Halekauwila to Kapiolani)	8,000	1,380	21 MPH	64.6	64.6	+3.8
Halekauwila Street (Punchbowl to Ward)	6,800	620	25 MPH	62.6	62.6	+2.9
Kapiolani Boulevard (South to Piikoi)	51,800	3,923	30 MPH	72.2	75.1	+1.0
King Street (Punchbowl to South)	44,300	4,220	25 MPH	70.9	71.9	+0.8
King Street (South to Piikoi)	32,250	3,390	30 MPH	71.6	72.6	+0.9
Pensacola Street (King to Waimanu)	24,600	1,555	25 MPH	66.6	67.6	+0.2
Piikoi Street (Ala Moana to Kapiolani)	25,100	2,730	15 MPH	64.9	65.9	-2.3(1)
Piikoi Street (Kapiolani to King)	30,400	2,750	20 MPH	67.2	68.2	-1.9(1)
Punchbowl Street (King to Ala Moana)	14,000	1,155	18 MPH	62.6	63.6	-1.2(2)
Queen Street (Punchbowl to Ward)	20,350	1,595	20 MPH	64.8	65.8	+3.9
Queen Street (Ward to Kamakee)	8,900	710	25 MPH	63.2	64.2	(3)
South Street (Ala Moana to Queen)	14,700	920	20 MPH	62.5	62.5	+1.2
South Street (Queen to King)	20,500	1,830	20 MPH	65.4	65.4	+1.20
Ward Avenue (Ala Moana to King)	38,000	2,503	15 MPH	64.5	66.1	-1.5(1)
<u>Makai Area:</u>						
Cooke Street (Ala Moana to Olalo)	----	500	22 MPH	61.2	61.2	+2.3
Coral Street, Ilalo Street and Keawe Street (4)		580	22 MPH	61.2	61.2	+2.3

Notes:

- (1) If intersection improvements on Ala Moana Boulevard occur by the Year 2000, Ldn increase could be + 1 Ldn.
- (2) If intersection improvements on Ala Moana Boulevard occur by the Year 2000, Ldn increase could be +1.5 Ldn.
- (3) No direct comparison possible with Base Year.
- (4) Projections for these streets are rough estimates based upon Cooke Street projection.

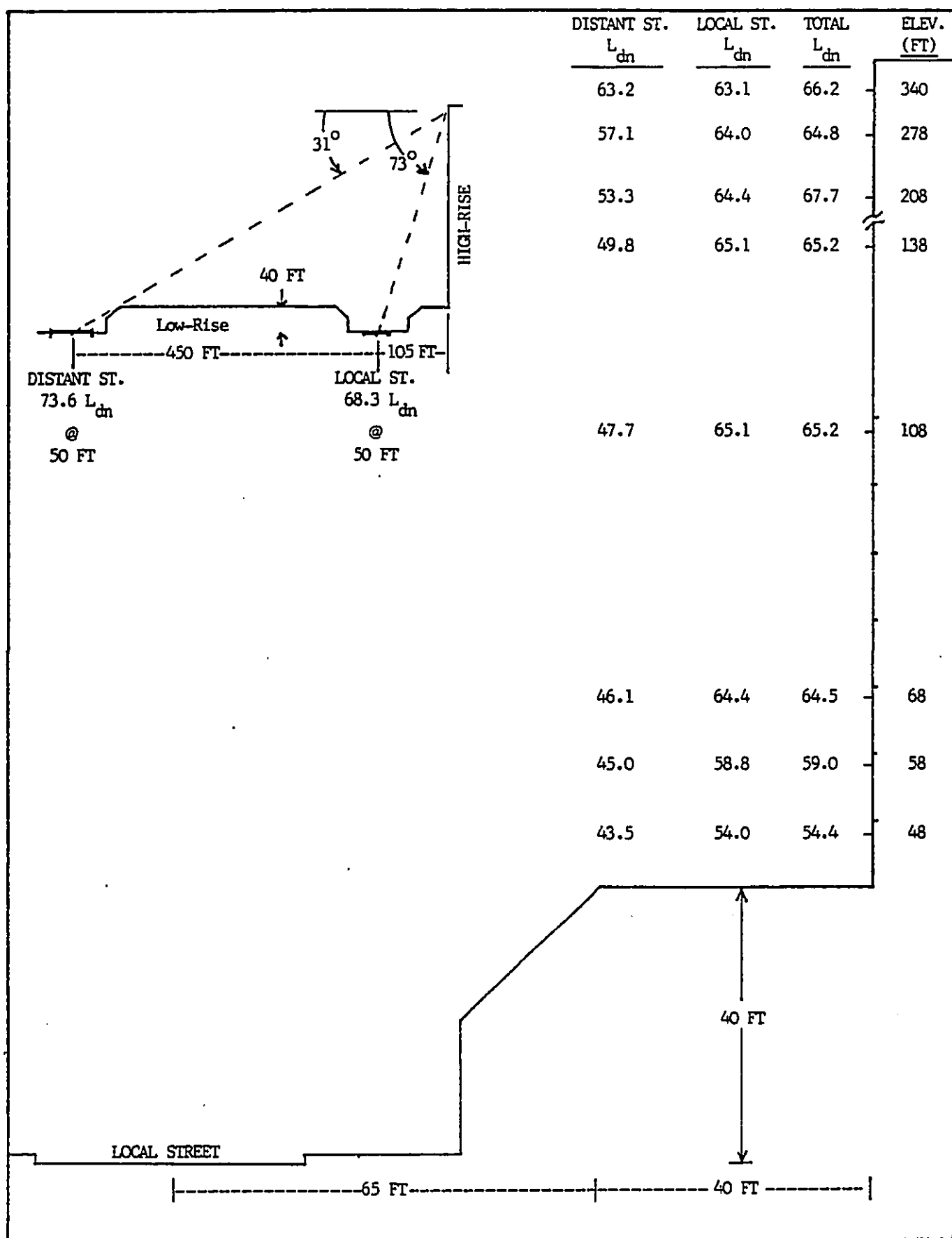


FIGURE 13

VARIATION OF TRAFFIC NOISE WITH HIGH-RISE ELEVATION

From Figure 14, it can be said that the lower floors (at 45 through 60 FT elevation) would be the quietest, since shielding of both local and distant traffic noise will occur for these units. Above the 60 FT elevation, shielding of local traffic noise would not occur, but shielding of distant traffic noise would occur up to the 210 FT elevation. Above 200 FT elevation, distant traffic noise would gradually increase as the shielding effects on distant traffic diminish entirely at 330 FT elevation. Total traffic noise level from the two streets shown would vary from 54 Ldn at the lowest elevation to 65 Ldn at the highest elevation.

The noise impacts resulting from traffic in the Kaka'ako area will depend upon the location and height of buildings within the area. Because traffic noise exposure varies with elevation and line-of-sight conditions, contours of equal noise exposure are difficult to construct without prior knowledge of actual development conditions. However, in order to provide some estimates of future traffic noise within the area, and particularly with respect to high-rise elevation, noise predictions at 8 receptor locations within Residential Emphasis Zones were made. These locations are shown in Figure 15 as Locations A through H, with the arrows indicating view direction from the high-rise unit.

Table IX presents the results of these calculations at the 8 receptor locations of interest. Assumptions used in performing these calculations were as follows:

- a. In the vicinity of each location, no other high-rise building was present to shielding or reflective surfaces.
- b. All streets considered in the analysis except Halekauwila Street were assumed to be view corridor streets. A noise barrier was assumed to exist along these streets, with an effective height of 45 FT, and located 40 FT from the property line.
- c. Projected Year 2000 traffic noise levels as shown in Table VIII were used to define source levels along each street segment.
- d. High-rise setback distances and field-of-view angles to the streets generating traffic noise at each high-rise location are shown in Table IX.

For each receptor location and elevation shown in Table IX, traffic noise contributions from the street segments within the field-of-view are shown separately, then totaled. The total traffic noise vs. elevations are shown for each receptor location. Locations C and D are predicted to be relatively quiet at all elevations, with traffic noise levels below the HUD threshold of 65 Ldn. At location E, which is relatively close to Ala Moana Boulevard, traffic noise will exceed 65 Ldn at all elevations except for the 4th floor level. Locations A and B are borderline cases, where traffic noise could exceed 65 Ldn at the uppermost floors. Although the results of Table IX are based on the relatively simplistic assumptions, they are meant to show the complexity of the future traffic noise fields with Kaka'ako. Locations C, G, and H are in the low-risk zone, and Locations A, B, and E are in the high-risk zone.

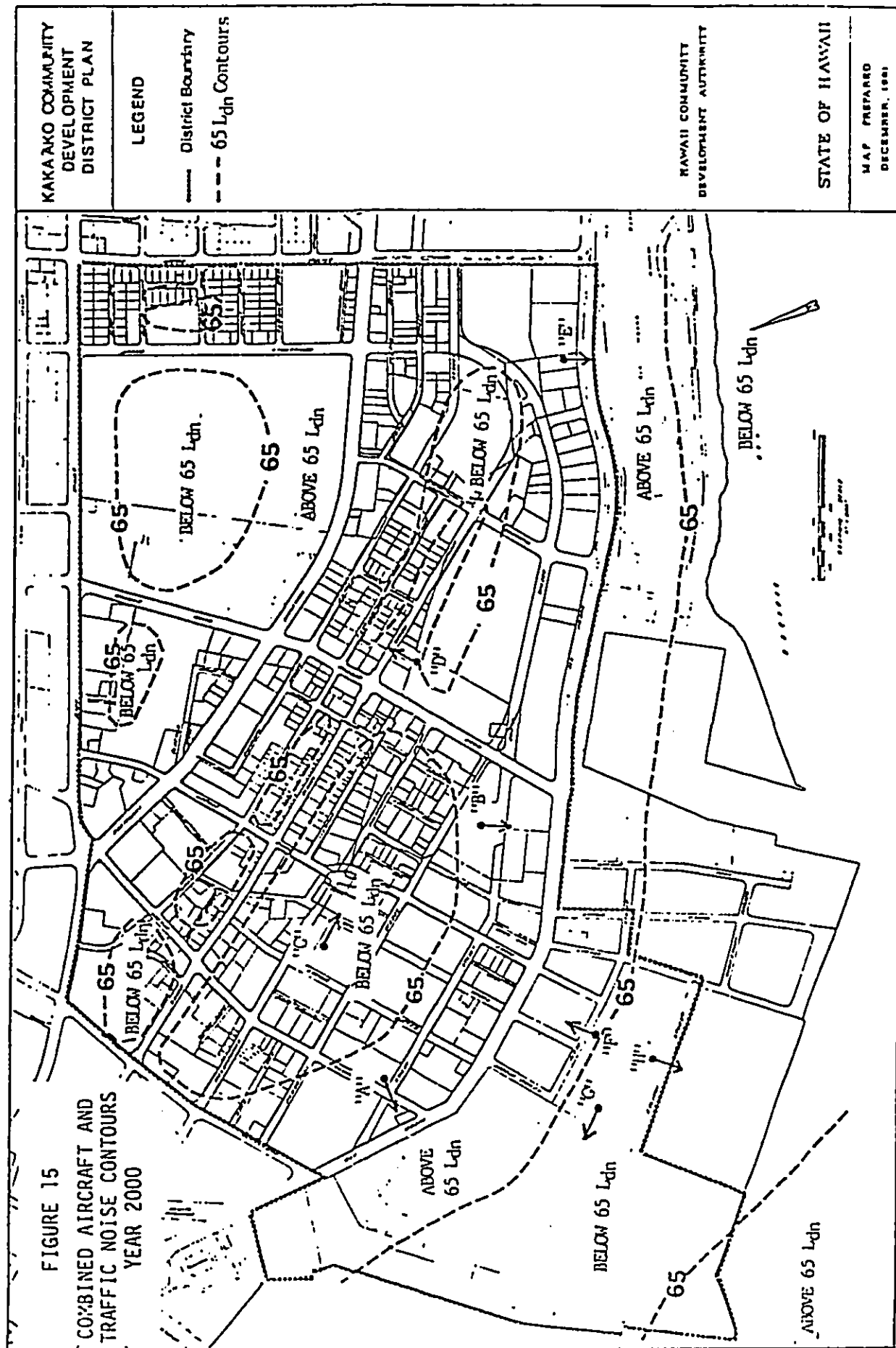


TABLE IX
CALCULATION OF FUTURE TRAFFIC NOISE WITH CHANGES IN ELEVATION

Location No.	Traffic Noise Segment & Source	Horiz. Setback Distance of Hi-Rise to Centerline	Ref. Ldn [®] Horiz. Setback Distance	Field of View Angles to Left/Right	Horiz. Distances: Hi-Rise to 40 FT Set Back Line/ Centerline to 40 FT Setback Line	Ldn vs. Elevation @ 340' / 208' / 108' / 75' / 50'
Mauka Area:						
A	Ala Moana Blvd.	400'	66.1	40°/ 90°	310' / 90'	64.2 / 64.5 / 52.1* / 49.4* / 44.6*
	Ala Moana Blvd.	500'	65.1	90°/ 0°	410' / 90'	61.8 / 56.1 / 48.8 / 45.9 / 42.1
	South St.	100'	59.4	80°/ 90°	27' / 71'	55.9 / 57.3 / 58.5 / 58.9 / 48.5
	Punchbowl St.	800	51.6	-5°/ 80°	725' / 75'	39.9 / Low
Total Traffic Noise:						67 / 66 / 60 / 60 / 51
B	Ala Moana Blvd.	500'	65.1	80°/ 90°	410' / 90'	64.5 / 58.8 / 50.8 / 48.0 / 44.8*
	Ward Ave.	500'	56.1	30°/ 30°	420' / 80'	51.0 / 43.3 / Low
	Cooke St.	650'	49.7	50°/-20°	580' / 70'	Low
Total Traffic Noise:						65 / 59 / 51 / 48 / 45
C	Cooke St.	550'	52.7	80°/ 70°	480' / 70'	48.2* / 37.9* / Low
	Halekauwila	200'	56.6	90°/ -5°	(No Shielding Assumed)	51.9 / 52.7 / 53.1 / 53.2 / 53.3
	Queen St.	700'	54.4	90°/ -5°	630' / 70'	44.3 / 38.5 / Low
	Ala Moana Blvd.	1350'	60.8	-55°/ 90°	1260' / 90'	44.4 / 41.1 / Low
	Ala Moana Blvd.	1500'	60.3	0°/ 55°	1410' / 90'	40.1 / 36.9 / Low
	Kapiolani Blvd.	1600'	60.0	90°/-20°	1510' / 90'	43.9 / 40.5 / Low
Total Traffic Noise:						55 / 54 / 53 / 53 / 53
D	Queen St.	210'	58.0	85°/ 85°	140' / 70'	54.3 / 57.1 / 50.5 / 43.9 / 39.8
	Kapiolani Blvd.	950'	62.3	65°/ 30°	860' / 90'	51.0 / 43.9 / 40.5 / 39.5 / 39.5
	Kapiolani Blvd.	550'	64.7	-65°/ 85°	460' / 90'	54.9 / 48.9 / 43.4 / 40.3 / 35.1
	Ward Ave.	300'	58.3	90°/-10°	220' / 80'	54.0 / 54.5 / 45.0 / 41.4 / 34.8
Total Traffic Noise:						60 / 60 / 52 / 48 / 44
E	Ala Moana Blvd.	125'	71.1	90°/ 90°	35' / 90'	68.4 / 69.7 / 70.6 / 70.9 / 60.8
Total Traffic Noise:						68 / 70 / 71 / 71 / 61
Makai Area:						
Location No.	Traffic Noise Segment & Source	Horiz. Setback Distance of Hi-Rise to Centerline	Ref. Ldn [®] Horiz. Setback Distance	Field of View Angles to Left/Right	Horiz. Distances: 40 FT Set Back Line/ Centerline to 40 FT Setback Line	Ldn vs. Elevation @ 150' / 108' / 75' / 50'
F.	Ala Moana Blvd.	625'	64.1	40°/ 35°	535' / 90'	44.7* / 42.1* / 40.8* / 40.3*
	Ala Moana Blvd.	425'	65.8	-60°/ 90°	335' / 90'	51.2* / 48.5* / 45.6* / 38.0*
	Iialo St.	100'	58.2	80°/ 75°	(No Shielding Assumed)	56.4 / 56.9 / 57.2 / 57.4
	Cooke St.	225'	54.7	90°/ 0°	160' / 65'	49.9* / 41.9* / 37.4* / 31.3*
	Keawe St.	525'	51.0	0°/ 90°	455' / 70'	48.0 / 48.0 / 48.0 / 48.0
Total Traffic Noise:						59 / 58 / 58 / 58
G.	Ala Moana Blvd.	425'	65.8	90°/-65°	335' / 90'	50.6* / 48.1* / 45.3* / 37.2*
	Ala Moana Blvd.	825'	62.9	35°/ 0°	735' / 90'	38.1* / 36.6* / 36.8* / 35.8*
	Keawe St.	100'	58.2	80°/ 90°	(No Shielding Assumed)	56.8 / 57.3 / 57.6 / 57.8
	South St.	600'	51.7	-60°/ 90°	527' / 73'	33.2* / 30.8* / 23.9* / 23.9*
	Punchbowl St.	1325	48.4	-50°/ 80°	1250' / 75'	Low
Total Traffic Noise:						58 / 58 / 58 / 58
H.	Kelikoi St.	100'	Negligible	85°/ 85°	(No Shielding Assumed)	Negligible Traffic Noise

* Indicates shielding from 45 FT high structure @ 40 FT setback from property line fronting roadway of traffic noise source.

Combined 65 L_{dn} contours of traffic plus aircraft noise in Kaka'ako area were also constructed as shown in Figure 15. These contours do not take into account shielding effects from high-rise structures or the barrier effects along view corridor streets. The contours of Figure 15 were constructed to define worst case, Year 2000, high- and low-risk zones for exceeding 65 L_{dn} where both traffic and aircraft noise are combined. The Year 2000 aircraft noise contours shown in Figure 13a were used to describe the aircraft noise contributions, and the contours were based upon the HIA Master Plan and Environs Study of 1980. Table X presents calculations of traffic plus aircraft noise at the 8 receptor locations. Table X results take into account barrier shielding effects along the view corridor streets, and represent the combined noise levels of Table IX (traffic) and Figure 13a (aircraft).

The results indicate that future traffic noise will be the dominant noise source in the Kaka'ako area, and will depend upon actual geometric relationships between the receptors and the streets of Kaka'ako. Shielding effects from structures will significantly alter the traffic noise levels at any specific receptor location. Future aircraft noise will be a significant factor in the southern portions of the Makai Area, but will not exceed 65 L_{dn} in noise sensitive districts of Kaka'ako.

In all cases of future development in Kaka'ako, a case-by-case evaluation of future traffic noise should be made, particularly if the development is in the high-risk zones of Figure 15. A case-by-case evaluation of aircraft noise should also be made for future residential developments in the Makai Area, particularly if the development is within the 60 to 65 L_{dn} zone of Figure 13a. High density residential, developments are not anticipated to occur in the Makai Area by the Year 2000. Beyond the Year 2000, the Residential-Mixed Use Zone in the Makai Area may become developed with residences (see Figure 13a). Aircraft noise will control the exterior L_{dn} on the makai side of the property, and traffic noise from Ala Moana Boulevard and Ilalo Street (see Figure 15) will control the exterior L_{dn} on the mauka side. If natural ventilation is used for residences in this Residential emphasis zone, risks of adverse noise impacts will exist, and noise mitigation measures may be necessary.

VIII. OTHER PROBABLE NOISE IMPACTS ASSOCIATED WITH THE PROJECT AND MITIGATION MEASURES

The proposed development plan has both positive and negative noise impact implications. These are summarized in general terms below:

1. The concentration of MUZ-RA (Residential Emphasis) zones away from the major street corridors is beneficial in minimizing traffic noise impacts.
2. The vertical separation of industrial/commercial uses from residential uses via multi-deck construction should be beneficial in minimizing noise impacts on residences. Top deck areas should be relatively quiet if they are removed from ventilation shafts or edge conditions.

TABLE X

CALCULATION OF YEAR 2000

TOTAL (AIRCRAFT PLUS TRAFFIC) NOISE LEVELS

Location	Traffic Noise (L _{dn})	Aircraft Noise (L _{dn})	Total (L _{dn})
<u>Mauka Area (340 FT Elevation):</u>			
A	67	59.3	68
B	65	58.1	66
C	55	58.4	60
D	60	56.6	62
E	68	53.8	68
<u>Makai Area (150 FT Elevation):</u>			
F	59	59.6	62
G	58	60.3	62
H	Negligible	60.5	61

3. Because of the semi-enclosed nature of the industrial/commercial storefronts and parking areas, reverberant sound build-up may present special problems.
4. Because of the noise regulations adopted for the Kaka'ako District, and the semi-enclosed nature of lower level storefronts, it may be difficult to achieve technical compliance with the adopted noise regulations. Present industrial operations within Kaka'ako which are able to operate with natural ventilation and within the current 70 dB DOH limit, may not be able to operate within the 65 or 60 dB KCDDP limit under semi-closed conditions due to reverberant sound build-up and due to the lack of buffer space between establishments. Total enclosure and air conditioning of industrial shops may be required to comply with proposed regulations.
5. Stationary mechanical equipment noise sources may present special problems due to the requirements for ventilating and air conditioning the lower deck spaces. These noise sources may need to be shielded from residential units above, or quieted with additional acoustic treatment.
6. Tire squeal noise may present problems within the large covered parking and vehicle circulation areas. This problem occurs when the pavement finish is relatively smooth.

Revision of the adopted Kaka'ako Noise Regulations may be mutually beneficial to future Kaka'ako residents and business establishments. The existing noise levels may tend to discourage industrial/commercial uses in all but the WI district because the noise limits are essentially the same (and lower) for other districts. A noise regulation, which is structured to protect residents at their property line, but is more flexible at the property line of commercial/industrial establishments, may be more appropriate for Kaka'ako to encourage mixed use. It has been our experience that most noise complaints involve residents complaining about other residents or commercial/industrial establishments, and that commercial/industrial establishments rarely complain about noise from residents or other business establishments. An example of a possible means of accomplishing this end and maintaining consistency with the land use compatibility guidelines of Figure 1, is as follows:

SUGGESTED ALLOWABLE NOISE LEVELS (DAYTIME/NIGHTTIME)

<u>Kaka'ako Zoning Districts</u>	<u>At Industrial Property Line</u>	<u>At Commerical Property Line</u>	<u>At Residential/Apartment Property Line</u>
WI	75/65	75/65	65/55
MUZ-C	75/65	70/60	65/55
MUZ-R	70/60	70/60	60/50
MUZ-RA	70/60	65/55	60/50

The noise levels would first be measured at the complainant's property line (or property plane). If the noise levels exceed the limits above for the complainant's use category, and if the noise exceedance is attributable to the source of the complaint, a second measurement at the source's property line (or plane) would be made. If the source side noise levels exceed the allowable values for the source use category, a violation would then exist.

This type of enforcement procedure would allow for exceedances of the suggested Allowable Noise Levels providing that the complaint is reasonable as determined by the complainant's land use category.

During the early design phases for each development increment, it is suggested that noise issues be considered to determine the feasibility of various design options. It is our belief that the Mixed Use Zoning concept is workable from a noise standpoint (as evidenced by the relatively low noise levels measured with Kaka'ako). However, the enclosure of industrial and commercial businesses by vertical stratification may tend to increase the current noise levels at lower elevation business storefronts due to reverberant build-up. But since the residential properties at the higher elevations can be shielded by the uppermost deck, noise compatibility should be maintainable among industrial/commercial, and residential uses.

REFERENCES

1. Sound Levels Descriptors for Determination of Compatible Land Use, American National Standards, ANSI S3.23-1980, May 30, 1980.
2. "HUD Environmental Criteria and Standards, 24 CFR Part 51, "Federal Register, Volume 44, No. 135, July 12, 1979.
3. Guidelines for Considering Noise in Land Use Planning and Control, Federal Interagency Committee on Urban Noise, June, 1980.
4. Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group 69, (CHABA), National Research Council, National Academy of Science, 1977.
5. Chapter 43 of Title 11, Administrative Rules, Community Noise Control for Oahu, State of Hawaii, Department of Health, November 6, 1981.
6. Comprehensive Zoning Code, Section 21-232, Noise Regulations, City and County of Honolulu, August 8, 1968.
7. Kaka'ako Community Development District Plan, Hawaii Community Development Authority, November 2, 1981, with revisions.
8. Chapter 42 of Title 11, Administrative Rules, Vehicular Noise Control for Oahu, State of Hawaii, Department of Health, November 6, 1981.
9. Hand-held Calculator Listings for FHWA Highway Traffic Noise Prediction Model, FHWA Technical Advisory T5040.5 (Change 1), October 17, 1978
10. Existing and Year 2000 Traffic Data and Projections, May 22, 1984.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

REFERENCES

1. Sound Levels Descriptors for Determination of Compatible Land Use, American National Standards, ANSI S3.23-1980, May 30, 1980.
2. "HUD Environmental Criteria and Standards, 24 CFR Part 51, "Federal Register, Volume 44, No. 135, July 12, 1979.
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10. Existing and Year 2000 Traffic Data and Projections, May 22, 1984.



APPENDIX A

TEXT

EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table 1. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table 1.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table 1 was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E, ...). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the L_{Cdn} with the L_{Adn} .

Although not included in the tables, it is also recommended that "LPN" and "LEPN" be used as symbols for perceived noise levels and effective perceived noise level, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (L_A) was measured before and after the installation of acoustical treatment. The measured L_A values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the

term "equivalent". Hence, L_{eq} is designated the "equivalent sound level". For L_d , L_n , and L_{dn} , "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristic of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, dBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (LPN was found to be 75 dB. $LPN = 75$ dB.) This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighted Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

TABLE 1: A-Weighted Recommended Descriptor List

Term	Symbol
1. A-Weighted Sound Level	L_A
2. A-Weighted Sound Power Level	L_{WA}
3. Maximum A-Weighted Sound Level	L_{max}
4. Peak A-Weighted Sound Level	L_{Apk}
5. Level Exceeded x% of the time	L_x
6. Equivalent Sound Level	L_{eq}
7. Equivalent Sound Level over Time (T) (1)	$L_{eq}(T)$
8. Day Sound Level	L_d
9. Night Sound Level	L_n
10. Day-Night Sound Level	L_{dn}
11. Yearly Day-Night Sound Level	$L_{dn}(y)$
12. Sound Exposure Level	L_{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq}(1)$). Time may be specified in non-quantitative terms (e.g., could be specified a $L_{eq}(WASH)$ to mean the washing cycle noise for a washing machine.)

TABLE 11: Recommended Descriptor List

TERM	A-WEIGHTING	ALTERNATIVE(1) A-WEIGHTING	OTHER WEIGHTING (2)	UNWEIGHTED
1. Sound (Pressure) (3) Level	L_A	L_{pA}	L_B, L_{pB}	L_p
2. Sound Power Level	L_{WA}		L_{WB}	L_W
3. Max. Sound Level	L_{max}	L_{Amax}	L_{Bmax}	L_{pmax}
4. Peak Sound (Pressure) Level	L_{Apk}		L_{Bpk}	L_{pk}
5. Level Exceeded x% of the time	L_x	L_{Ax}	L_{Bx}	L_{px}
6. Equivalent Sound Level	L_{eq}	L_{Aeq}	L_{Beq}	L_{peq}
7. Equivalent Sound Level Over Time(T) (4)	$L_{eq}(T)$	$L_{Aeq}(T)$	$L_{Beq}(T)$	$L_{peq}(T)$
8. Day Sound Level	L_d	L_{Ad}	L_{Bd}	L_{pd}
9. Night Sound Level	L_n	L_{An}	L_{Bn}	L_{pn}
10. Day-Night Sound Level	L_{dn}	L_{Adn}	L_{Bdn}	L_{pdn}
11. Yearly Day-Night Sound Level	$L_{dn}(y)$	$L_{Adn}(Y)$	$L_{Bdn}(Y)$	$L_{pdn}(Y)$
12. Sound Exposure Level	L_S	L_{SA}	L_{SB}	L_{Sp}
13. Energy Average value over (non-time domain) set of observations	$L_{eq}(e)$	$L_{Aeq}(e)$	$L_{Beq}(e)$	$L_{peq}(e)$
14. Level exceeded x% of the total set of (non-time domain) observations	$L_x(e)$	$L_{Ax}(e)$	$L_{Bx}(e)$	$L_{px}(e)$
15. Average L_x value	L_x	L_{Ax}	L_{Bx}	L_{px}

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,..... weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is $L_{eq}(1)$). Time may be specified in non-quantitative terms (e.g., could be specified as $L_{eq}(WASH)$ to mean the washing cycle noise for a washing machine)).

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APPENDIX B

KAKA'AKO COMMUNITY DEVELOPMENT DISTRICT

TRAFFIC IMPACT STUDY

Prepared

by

Wilbur Smith and Associates, Inc.

October 22, 1984

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INTRODUCTION

The Kaka'ako area is located in the center of the Honolulu urbanized area between the intensely developed Downtown and Ala Moana-Waikiki areas. The area is principally occupied by a mix of single-level uses -- repair shops, wholesalers, warehouse and open storage, small retail establishments -- with a few multi-story office and residential buildings located along the major streets.

In recognition of the present underutilization of the area relative to its central location, Kaka'ako was designated as a community development district by the State Legislature. The Hawaii Community Development Authority (HCDA) was assigned the role of planning and guiding the development of the Kaka'ako Community Development District. This planning effort has produced a Kaka'ako District Plan which encompasses the designation of land uses, development densities, transportation system improvements, and improvements to other infrastructure components.

Study Purpose and Scope

The purpose of this study is to forecast future travel for the increased development envisioned within the Kaka'ako area, and to identify traffic conditions with the planned roadway system improvements. Roadway traffic conditions are a critical concern given Kaka'ako's location relative to the Downtown and Ala Moana-Waikiki areas. Both the access routes to Kaka'ako and the major arterials through Kaka'ako are also used as major access routes to and from the Downtown, Ala Moana and Waikiki office, commercial and residential centers.

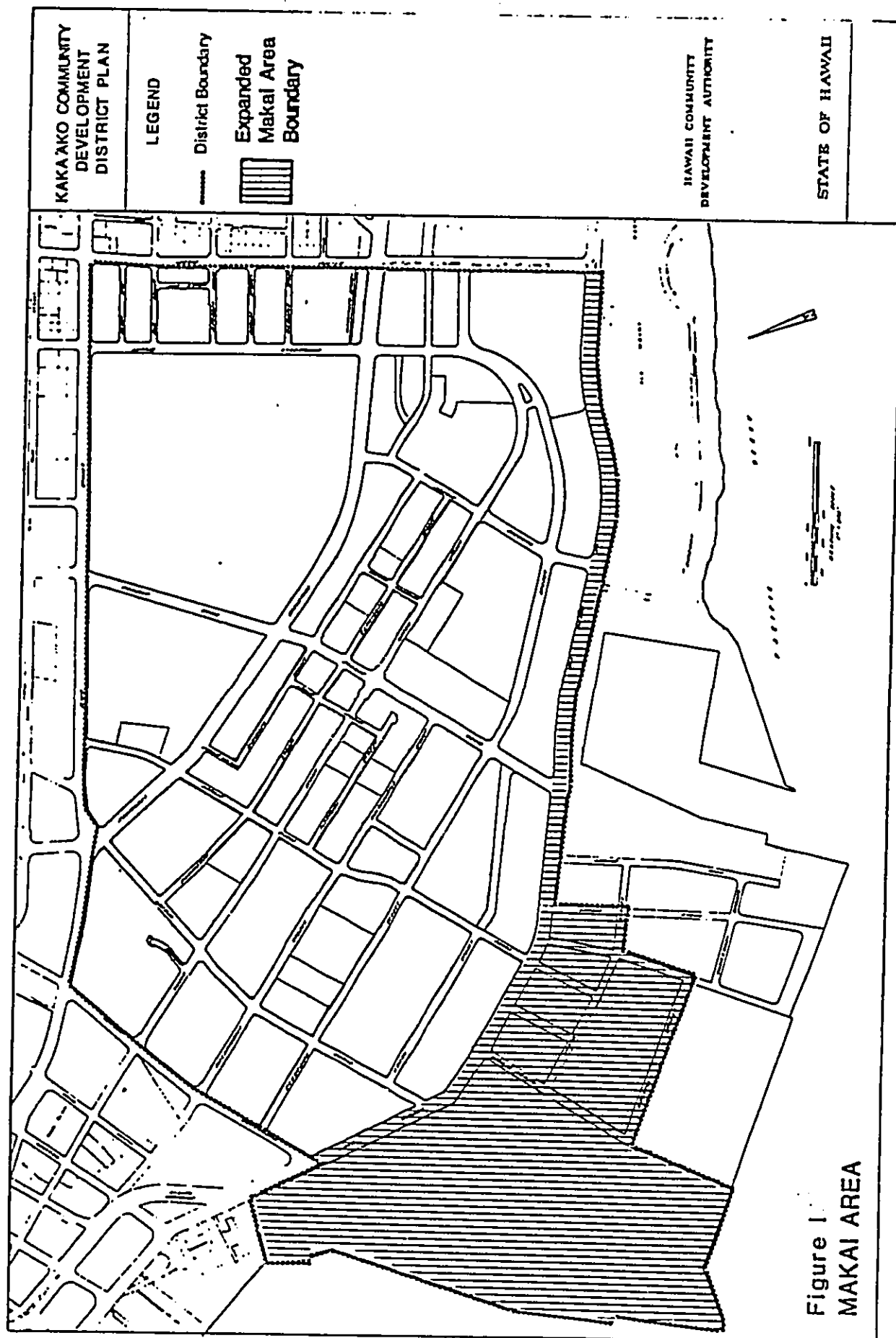
The Kaka'ako travel analyses have been conducted for the year 2000 in order to permit comparisons to and the use of Hali 2000 Study travel information. The Hali 2000 Study has developed travel forecasts and evaluated a series of islandwide transportation alternatives to assist in the update of the Oahu Long-Range Transportation Plan to the year 2000. The common analysis year permitted use of Hali 2000 Study forecast data to estimate the volume of through traffic on Kaka'ako area roadways, and permitted the assessment of the travel differences between the land uses included within the regional analysis (Hali 2000 Study) and those projected by HCDA.

HCDA estimates that development of the Kaka'ako area will have reached 55 percent of its maximum potential development by the year 2000, versus 35 percent at present.

Detailed travel forecasts and analyses have been prepared during this study for roadways within the 583-acre area included within the Kaka'ako Community Development District, encompassing both the Mauka and Makai areas (Figure 1). This included volume-capacity analyses at key intersections. Outside of the Kaka'ako District, this study has identified the general magnitude and impact of Kaka'ako trips within the major Oahu travel corridors. The corridor analysis is formatted to permit comparison to the Hali 2000 Study.

Approach and Methodology

The travel forecasts and analyses have been made for both the morning and evening peak traffic hours in year 2000. The forecasts include both increases in Kaka'ako travel and increases in travel generated by other areas which passes through the Kaka'ako area.



Future traffic on roadways within Kaka'ako were estimated by first projecting the increases in Kaka'ako-generated trips on each roadway and the increases in through traffic, and then adding these increases to the existing roadway traffic volumes. Key features of this approach include:

- o The estimated increase in the number of trips generated by new Kaka'ako developments was based on standard traffic generation rates.
- o The distribution of Kaka'ako trips to outside areas, and the routes of these trips to and from Kaka'ako were developed from the Hali 2000 Study forecasts for Kaka'ako (Hali 2000 Traffic Analysis Zones 18, 60 and 61).
- o For trips originating in or destined to Kaka'ako, the trip route on Kaka'ako area streets was based on the shortest trip paths, with consideration of impedance at congested locations.
- o The increase in through traffic was based on Hali 2000 Study forecasts with the routing modified to reflect traffic conditions on Kaka'ako streets.

Trips to and from Kaka'ako in each of the major Oahu travel corridors were estimated through use of the Hali 2000 Study forecasts. The Hali 2000 computer model estimates of Kaka'ako trips in each corridor were adjusted to reflect the increased total number of Kaka'ako trips projected in this traffic impact study.

EXISTING CONDITIONS

The Kaka'ako area is served by several mauka-makai and Ewa-Diamond Head direction arterial roadways and an extensive grid of collector and local streets. During morning and evening peak traffic periods, the arterial streets are heavily used by both through trips and Kaka'ako trips. The magnitude of the traffic volumes and the turning vehicles at major intersections result in congested traffic conditions at several key intersections and roadway segments.

Major Roadway System

The major roadways within the Kaka'ako area are depicted in Figure 2 with the pavement width and right-of-way width indicated in Appendix A for the major segments. Ala Moana and Kapiolani Boulevards both serve as major regional routes for Ewa-Diamond Head direction traffic as does the King-Beretania Streets one-way street couple. Regional access to the H-1 Freeway and the mauka-makai circulation is provided by the Punchbowl-South Streets and Piikoi-Pensacola Streets one-way couples plus Ward Avenue.

Kapiolani Boulevard operates as a reversible-lane street during the morning and evening peak traffic periods. In the morning, traffic cones are placed from Cooke Street eastward to utilize four lanes for Ewa-direction traffic and two lanes for Diamond Head direction traffic. The operation is reversed for the evening peak period. During off-peak hours the street operates with three lanes in each direction.

Traffic signal-controlled intersections are indicated in Figure 2.

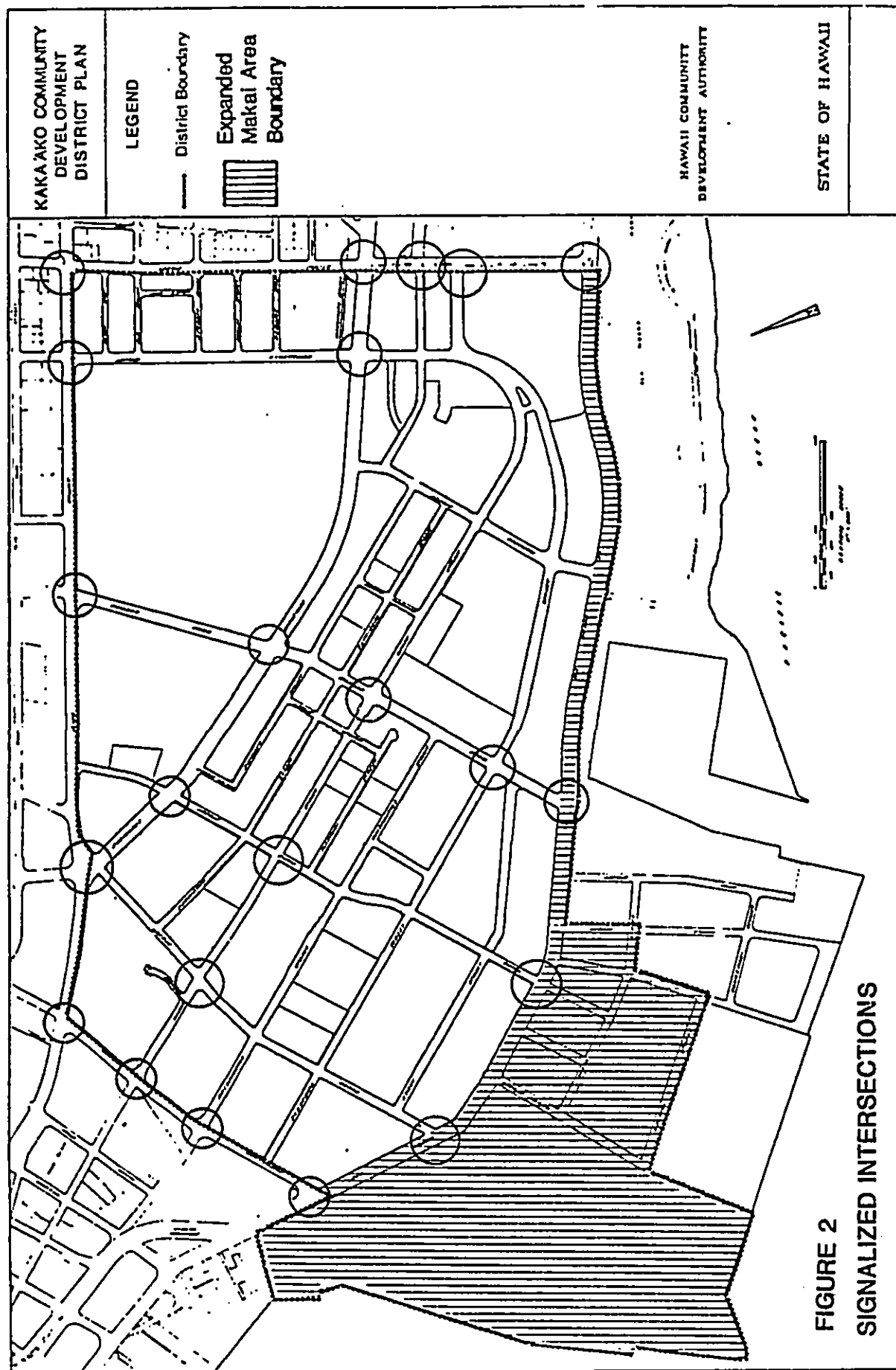
Traffic Volumes and Conditions

Weekday and peak hour traffic volumes were obtained from traffic count records of the City and County of Honolulu Department of Transportation Services (City DTS) and State of Hawaii Department of Transportation (State DOT). The counts were made during the 1981-84 period. Turning movement counts at key intersections were obtained from previous studies or were made by Wilbur Smith and Associates.

Traffic Volumes - The most heavily-travelled roadway in the Kaka'ako area is Ala Moana Boulevard. It accommodates the highest Ewa and Diamond Head directions traffic volumes for total weekday, morning peak hour and evening peak hour, as depicted in Figures 3, 4, and 5, respectively. Both the King-Beretania Street one-way couple and Kapiolani Boulevard also serve as major east-west traffic arteries. Queen Street is used for entry into the Downtown area by Kapiolani Boulevard traffic (via Ward Avenue) during the morning, and to a lesser extent, by the reverse movements during the afternoon.

Major mauka-makai traffic volumes occur on the Punchbowl-South Street one-way couple, Ward Avenue, and the Piikoi-Pensacola Street one-way couple.

Based on Hali 2000 Study information, through traffic currently comprises 75 percent of travel on the major Ewa-Diamond Head direction streets in Kaka'ako, while travel to and from Kaka'ako land uses contribute 25 percent. For mauka-makai streets, through traffic amounts to 55 percent of the total traffic volumes at the mauka boundary (King Street) of the District.



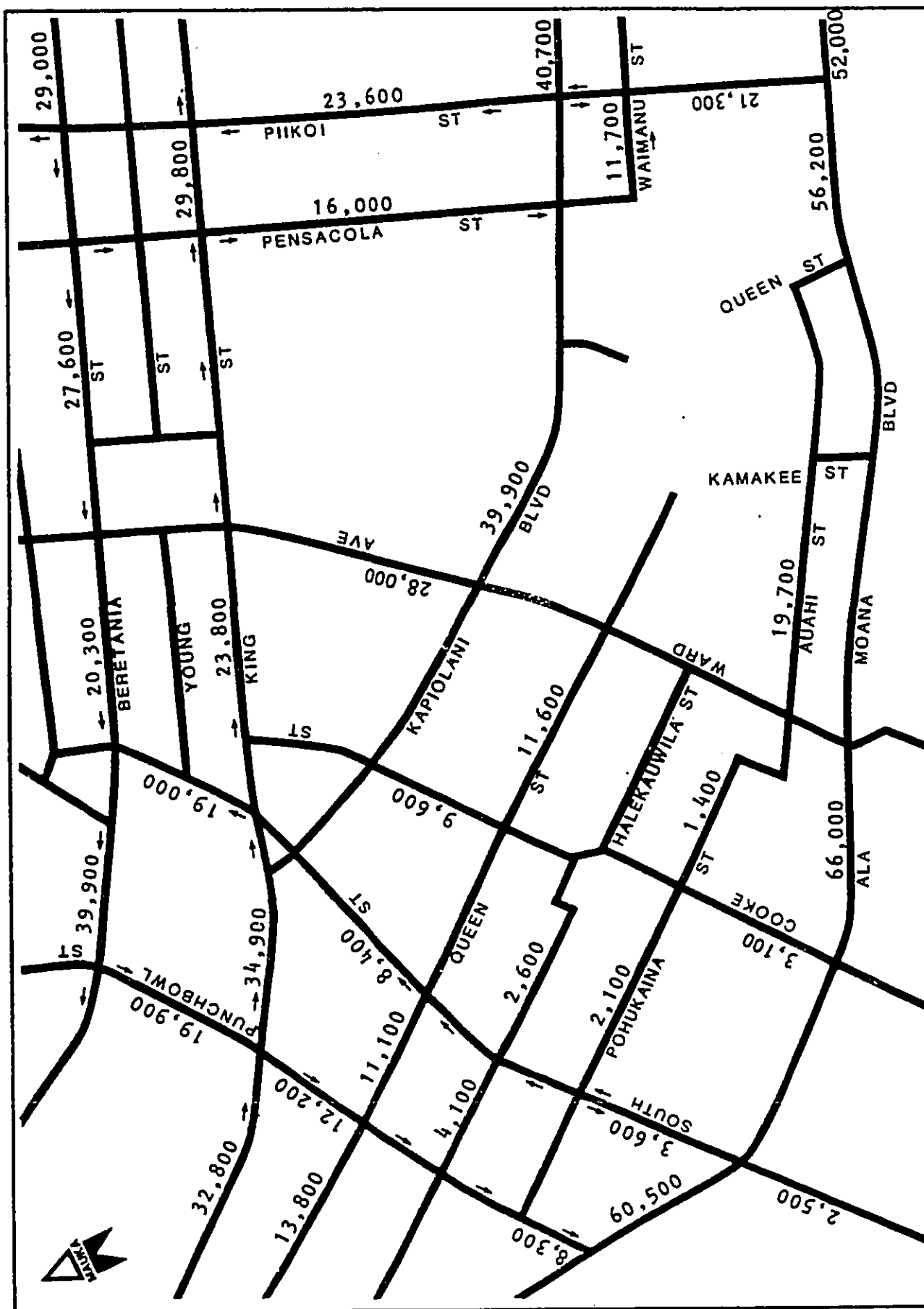


FIGURE 3

EXISTING WEEKDAY TRAFFIC VOLUMES

Wilbur Smith and Associates

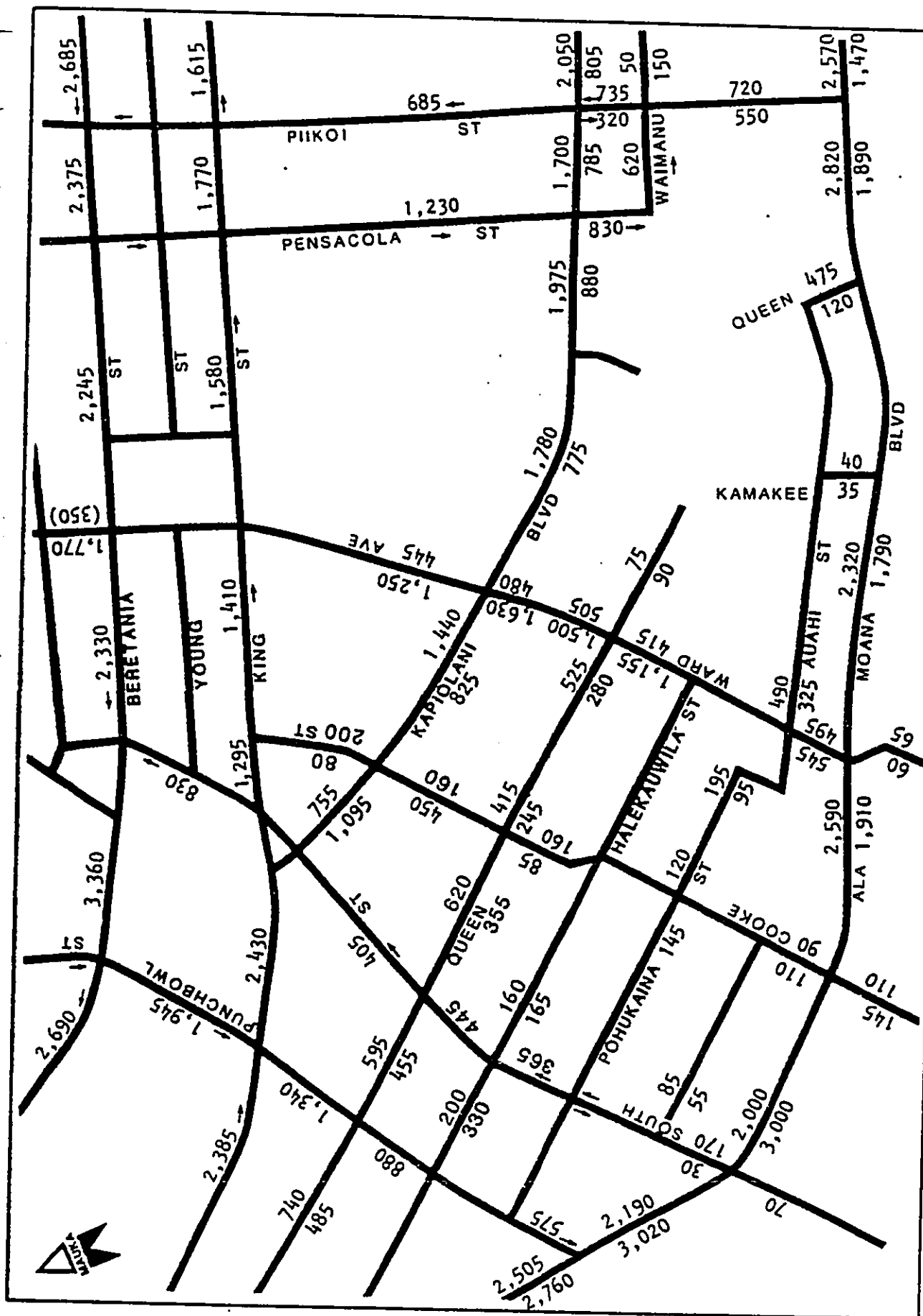


FIGURE 4

EXISTING MORNING PEAK HOUR TRAFFIC VOLUMES

Wilbur Smith and Associates

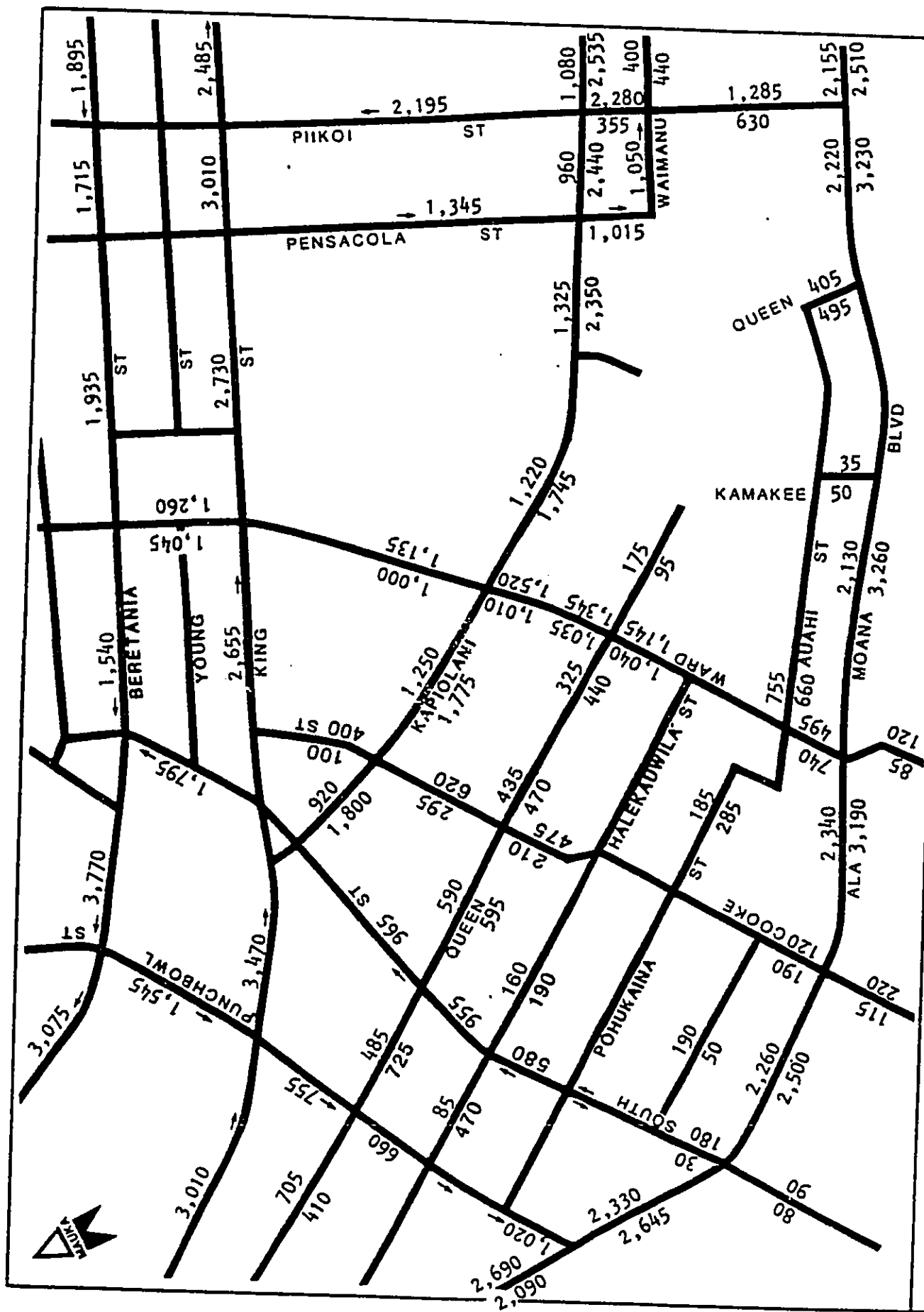


FIGURE 5

EXISTING EVENING PEAK HOUR TRAFFIC VOLUMES

Willis Smith and Associates

Level of Service Concept - The quality of traffic service provided by a roadway is measured in terms of the ratio of the traffic volumes which use the facility to the roadway capacity. The Level of Service concept is a standard means of describing traffic conditions associated with various ranges of volume-to-capacity ratios. The six Levels of Service (A through F) used to describe travel conditions, and the range of volume-to-capacity ratios for each, are described in Table 1.

Capacity along a roadway is usually determined by the capacities of the traffic signal-controlled intersections with other roadways, and the Level of Service is indicated by relating the intersection traffic volumes to the capacities of the two intersecting roadways. For this study, the analysis of intersection conditions has been conducted in the following manner:

1. The capacity was determined for each separate movement at the intersection based on a full one-hour of green signal time available for that movement.
2. The existing or projected traffic volume making each movement at the intersection was divided by its respective capacity to determine what proportion of the one-hour time would be needed to accommodate each movement.
3. The critical conflicting movements were identified for the intersections and the green time proportion summed to indicate the total portion of the one-hour capacity which is needed to accommodate the conflicting movements.
4. The summation of the needed green time, plus a factor for the yellow clearance intervals, indicates the volume-capacity ratio for the intersection given optimum assignment of the green signal time. This ratio indicates the Level of Service.

The 1965 Highway Capacity Manual⁽¹⁾ procedures were used to estimate the capacities for each intersection movement, based on use of a load factor approximating 1.0.

Existing Traffic Conditions - Localized traffic problems presently occur on Kaka'ako area roadways during the morning peak traffic period, while much more extensive areas of congestion occur during the afternoon peak traffic period. Assessment of these conditions were based upon field reconnaissance and volume-capacity analyses for the nine intersections summarized in Table 2. The intersection traffic movements and volume-capacity computations are documented in a separate technical supplement to this report.

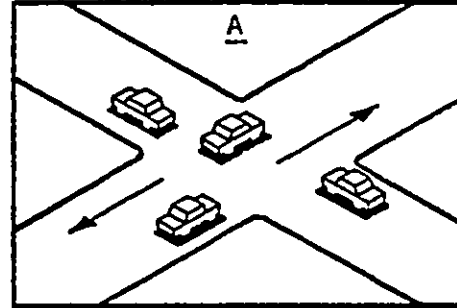
Ala Moana Boulevard, which accommodates the highest morning traffic flow in the area, generally provides acceptable travel speeds (30 miles per hour or more) with few delays at signalized intersections. The principal source of delay occurs at the Ward Avenue intersection due to the heavy left turn movement from the Ewa approach at Ala Moana Boulevard. The special left-turn phase frequently does not permit all of the waiting traffic to enter the intersection. Also, the number of

(1) Highway Capacity Manual, Highway Research Board Special Report 87, 1965.

Table 1
INTERSECTION LEVEL OF SERVICE CONCEPT

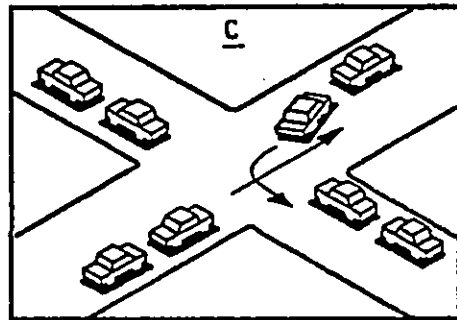
LEVEL OF SERVICE A *Volume/Capacity Ratio= 0 - 0.59*

- Free flow conditions
- No vehicle waits longer than one signal indication



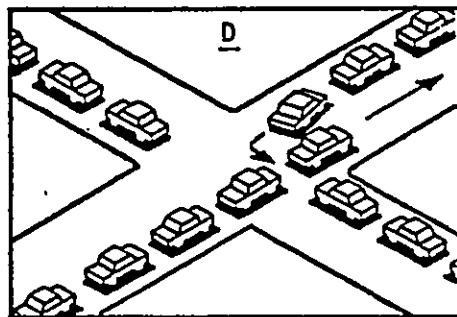
LEVEL OF SERVICE B *Volume/Capacity Ratio=0.60 - 0.69*

- Stable traffic flow
- Motorists rarely wait through more than one signal indication



LEVEL OF SERVICE C *Volume/Capacity Ratio=0.70 - 0.79*

- Stable and acceptable flow but speed and maneuverability somewhat restricted due to higher volumes
- Motorists intermittently wait through more than one signal indication
- Occasional backups behind left turning vehicles

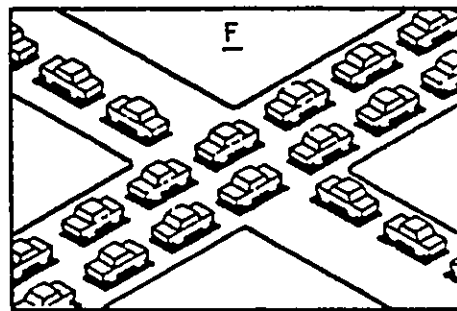


LEVEL OF SERVICE D *Volume/Capacity Ratio=0.80 - 0.89*

- Extensive delays at times
- Some motorists, especially left turners, may wait through one or more signal indications, but enough cycles with lower demand occur to prevent excessive backups
- Maneuverability restricted

LEVEL OF SERVICE E *Volume/Capacity Ratio=0.90 - 0.99*

- Very long queues may create lengthy delays, especially for left turning vehicles
- Volume at or near capacity
- Unstable flow



LEVEL OF SERVICE F *Volume/Capacity Ratio=1.00 or greater*

- Backups from locations downstream restrict movement at intersection approaches
- Forced flow conditions
- Stoppage for long periods due to congestion
- Volumes drop to zero in extreme cases

Table 2
EXISTING LEVEL OF SERVICE FOR KEY INTERSECTIONS

<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>		<u>EVENING PEAK HOUR</u>	
	<u>Volume Capacity Ratio</u>	<u>Level of Service</u>	<u>Volume Capacity Ratio</u>	<u>Level of Service</u>
Ala Moana/Punchbowl	.75	C	.79	C
Ala Moana/South	.71	C	.61	B
Ala Moana/Cooke	.72	C	.85	D
Ala Moana/Ward	.88	D	.93	E
Ala Moana/Piikoi	.82	D	.92	E
Kapiolani/King/ South/Alapai	.59	A	.81	D
Kapiolani/Ward	.93	E	.96	E
Kapiolani/Piikoi	.56	A	.93	E
Ward/Queen	.62	B	.61	B
Cooke/Queen	.54	A	.78	C
South/Queen	.43	A	.65	B
South/Halekauwila	.33	A	.50	A
Kapiolani/Cooke	.71	C	.92	E

waiting traffic to enter the intersection. Also, the number of left-turn vehicles exceeds the available storage capacity of the left-turn lane, thus stacking waiting vehicles into and blocking one of the Diamond Head direction through lanes.

The higher volumes during the evening peak hour result in increased delays and lower travel speeds on Ala Moana Boulevard, as indicated in the lower Levels of Service for the key intersections (Table 2). At Ward Avenue, significantly higher through volumes on Ala Moana Boulevard, combined with an increased number of left turns from the Mauka approach of Ward Avenue, result in long queues of traffic on the Diamond Head-bound lanes of Ala Moana Boulevard. At Piikoi Street, increased traffic queuing occurs in the Ewa direction lanes on Ala Moana Boulevard due to the signal time required to accommodate the heavy left-turn movements at the intersection. Traffic conditions at the Cooke Street intersection are worsened by the large number of turning vehicles on the narrow mauka side approach, small curb radii, and the proximity of parking to the intersection.

Traffic operations are at acceptable levels on Kapiolani Boulevard during the morning peak hour. Minor delays occur at the Ward Avenue intersections as a result of the large number of vehicles turning left from the Diamond Head approach of Kapiolani Boulevard. The left-turn movement (370 vehicles) does not pose a significant problem at present since the reversible lane operation provides a fourth peak direction approach lane (used almost entirely for left-turns) and there are comparatively few opposing vehicles.

During the evening peak period, the Cooke Street, Ward Avenue and Piikoi Street intersections on Kapiolani Boulevard experience Level of Service E conditions. The congestion at the Cooke Street intersection results from the conflict between the major traffic flows on the makai Cooke Street approach, and the through and left-turn movements on the Ewa and Diamond Head approaches, respectively, on Kapiolani Boulevard. At Ward Avenue, the key conflict is between the large number of vehicles travelling in the two-lane off-peak direction (Ewa-bound) and the mauka-direction traffic on Ward Avenue. The frequent stopping of buses at the near-side bus stop on the Diamond Head approach of Kapiolani Boulevard contributes to the intersection delay.

The Kapiolani Boulevard-Piikoi Street intersection is part of a problem which extends makai on Piikoi Street to include the Kona and Waimanu Street intersections. Large numbers of vehicles turn mauka onto Piikoi Street from these two intersections and the Ala Moana Center driveway. The capacity constraint of the Kapiolani Boulevard intersection and the close spacing of these intersections makai of Kapiolani Boulevard result in blockage of the Piikoi intersections by through or turning traffic and inefficient movement of traffic in the mauka direction through these intersections. This occurs primarily during the evening peak traffic period.

Public Transit

Public transportation service in Kaka'ako is provided by "The Bus". The Bus provides islandwide service with its operations centered upon Downtown and the Ala Moana Center on either side of the Kaka'ako area. Kaka'ako's location results in large numbers of buses on Kapiolani and Ala Moana Boulevards through the area (20 to 40 buses in each direction during peak hour). Service is also provided on Piikoi Street, on Ward Avenue from Ala Moana Boulevard to Queen Street, and on Queen Street between Ward Avenue and Downtown. During peak periods, many of these buses carry standing loads.

Approximately 11,000 person trips are made via public transit to or from Kaka'ako each weekday based upon Hali 2000 Study estimates of 1980 travel. This amounts to eight percent of Kaka'ako trips, slightly below the islandwide average of nine percent of trips via public transit.

YEAR 2000 LAND USE AND TRAVEL

Estimates of future travel were based upon the increased level of development anticipated in Kaka'ako by the year 2000. The development level for that year was projected by HCDA to reflect those planned projects now approaching implementation and the expected staging of development within the District. Trip generation factors were applied to the additional development, as well as the displaced land uses, to estimate the net increase in the number of vehicle trips generated by Kaka'ako land uses. To facilitate analysis and discussion of the land use and travel increases, the Kaka'ako area was divided into 23 land use/traffic analysis zones as depicted in Figure 6.

Year 2000 Kaka'ako Land Use

Increased development during the 1984-2000 period is expected to principally occur Ewa of Cooke Street and in several of the areas Diamond Head of Ward Avenue (Figure 6). Concentration of new development is expected to occur Ewa of Cooke Street since the initial improvements to roadways, utilities and other infrastructure will be concentrated within this area. These blocks are also adjacent to the Downtown-Civic Center area and would benefit from expansion of the activities within these areas. Development projected for areas Diamond Head of Ward Avenue reflect projects now in planning or where size and locations of parcels indicate likelihood for implementation prior to 2000.

New developments are expected to increase total building floor area by 57 percent — from 12,436,000 square feet in 1983 to 19,520,000 square feet in 2000. As indicated in Table 3, residential units would show the largest proportionate increase over present uses in Kaka'ako and would contribute 65 percent (4,621,000 square feet) of the additional floor area. The 20 to 25 percent increases in commercial and industrial uses are representative of islandwide growth during this period. Public uses (McKinley High School, Blaisdell Center) are expected to remain at current size. (Existing floor areas for each analysis zone are presented in Appendix B).

The increases indicated for each zone in Table 3 include the Ironworks Project in Zones 1 and 5, Pacific Park Plaza in Zone 8, and the Nauru Project in Zone 18.

The projected development level would increase resident population in Kaka'ako from the present 2,200 to 16,500 in 2000, and employment from 19,700 to 25,700 employees.

Projected Increase in Kaka'ako Trips

Estimates of the increased number of Kaka'ako trips reflect the magnitude and type of new development anticipated by the year 2000. The estimates represent the net increase reflecting both the displacement of existing uses and the addition of the new development.

Vehicle Trip Generation - The net increase in vehicle trips originating within or destined to the Kaka'ako District were estimated by application of a set of trip generation rates to the forecast increase in District land use. Separate factors were used to estimate the number of inbound and outbound vehicle trips generated by each land use for an average weekday, morning peak hour and evening peak hour.

Trip generation rates used in this analysis are listed in Table 4. These vehicle

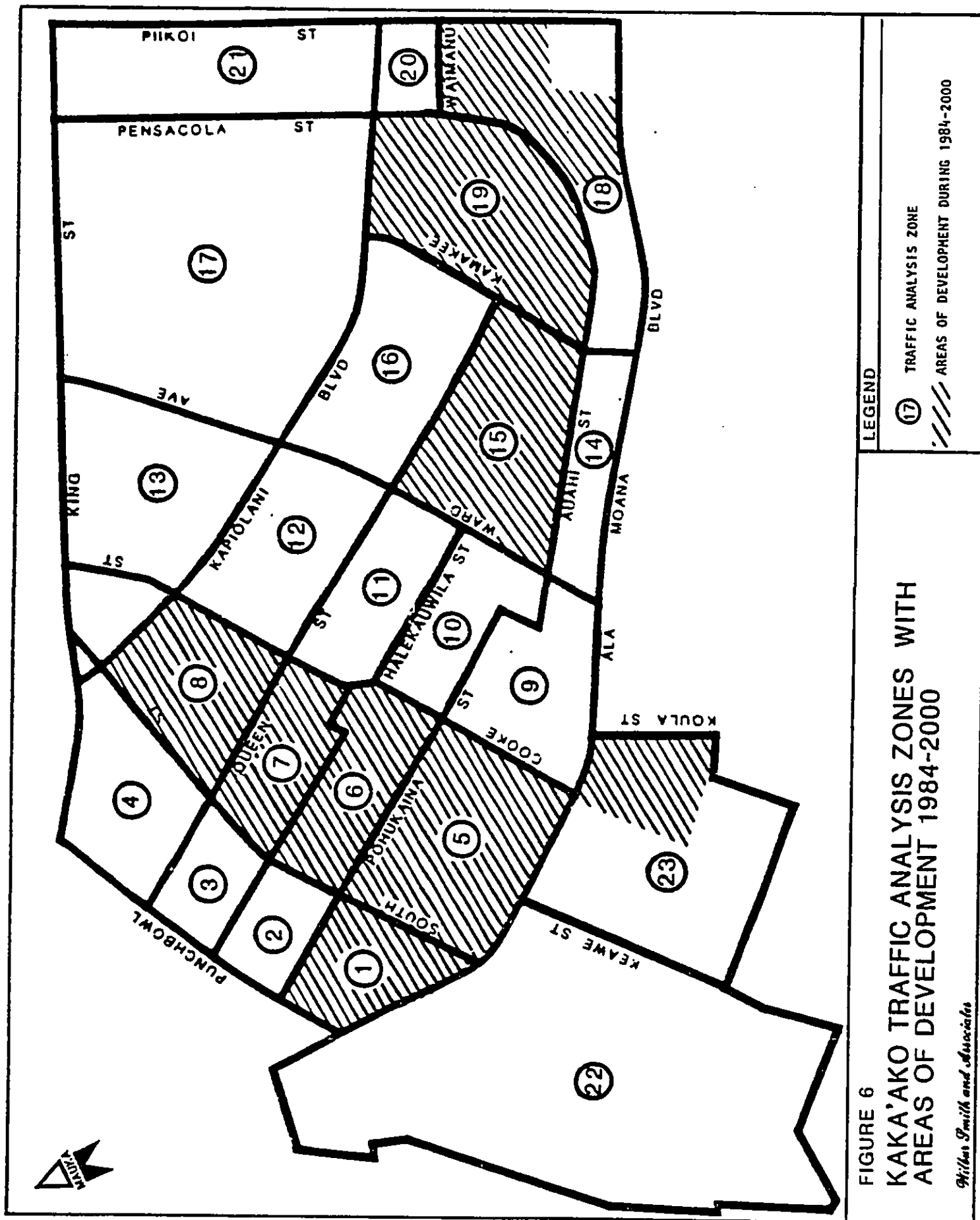


Table 3

PROJECTED LAND USE CHANGES 1984 - 2000
Kaka'ako Community Development District

TRAFFIC ANALYSIS ZONE	CHANGE IN DWELLING UNITS	CHANGE IN FLOOR AREA (1,000's Square Feet)			(a)
		Commercial	Industrial	Public	Total
1	0	+319	0	0	+319
2	-18	+138	0	0	+126
3	-11	+25	-14	0	+11
5	+1,488	+321	+156	0	+1,802
6	+202	-32	+58	0	+204
7	+455	+139	+33	0	+582
8	+457	+259	+66	0	+719
13	+99	0	0	0	0
15	+366	+485	+89	0	+896
18	+1,487	+79	+122	0	+1,246
19	+1,010	+165	-74	0	+986
23	+72	+102	+27	0	+193
Other	-58	0	0	0	0
TOTAL CHANGE	+5,549	+2,000	+463	0	+7,084
EXISTING	1,043	8,032	2,353	851	12,436
PROJECTED TOTAL YEAR 2000	6,592	10,032	2,816	851	19,520
PERCENT INCREASE	+532	+25	+20	0	+57

(a) Total floor area includes residential floor area.

Table 4
VEHICLE TRIP GENERATION RATES

LAND USE	TRIP RATE VARIABLE	AVERAGE VEHICLE TRIP RATE (a)				
		Morning Peak Hour		Evening Peak Hour		Weekday Total
		In	Out	In	Out	
Residential						
Multi Family	Dwelling Unit	.07	.37	.37	.18	5.20
Office						
Under 100,00 S.F.	1,000 S.F. (b)	1.45	.25	.19	1.14	17.70
100-199,000 S.F.	1,000 S.F.	1.87	.22	.44	1.76	14.30
Light Industrial	1,000 S.F.	.85	.15	.32	.63	5.46
Retail	1,000 S.F.	1.40	1.30	3.20	3.40	82.00
Mixed Commercial (c)	1,000 S.F.	1.10	.60	1.30	1.75	36.00

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- (a) Source of Rates: "Trip Generation", Institute of Transportation Engineers, Third Edition, 1982.
- (b) Square feet of gross floor area.
- (c) Composite rate comprising wholesale (40%), business services (17%), consumer services (4%), small office (15%), and retail trade (24%).

trip rates reflect development where public transit use comprises six to nine percent of daily person trips, which is the general level of existing and forecast transit use in the Kaka'ako area.

Where a project description was available, or where a specific use was forecast within an analysis zone, the appropriate generation rate was applied to the square footage or number of dwellings for the zone. For many of the commercial land use categories, however, HCDA had available a forecast of the increase floor area by commercial category for the entire District, but only the cumulative totals for each analysis zone. Therefore, a composite "mixed commercial" trip rate was developed to reflect the weighted contribution of each individual land use category to the District total. The "mixed commercial" trips accounted for approximately 30 percent of the increase.

Application of these trip generation rates to the land use forecasts indicate a total increase of 82,300 weekday vehicle trip ends for the Kaka'ako District, or 55 percent above the 135,000 weekday trips estimated for the present uses. The year 2000 total of 217,300 weekday vehicle trip ends is approximately 17 percent above the approximately 185,000 vehicle trips estimated for the Kaka'ako area in the Hali 2000 Study ⁽¹⁾.

The 55 percent increase in vehicle trips is slightly less than the forecast 57 percent increase in floor area as a result of the preponderance of residential uses in the land use increases relative to the present composition of land use in Kaka'ako. Residential uses generate a comparatively low average of about six vehicle trips per thousand square feet. The large increase in area residents could potentially reduce the actual vehicle travel below that estimated for the Kaka'ako nonresidential uses. This could occur since residents may contribute a large portion of the work and shopping trips to these businesses, with a greater portion of these shorter local trips made by walking, bicycle or transit than is reflected in the vehicle trip rates in Table 4.

The increase in trip generation by analyses zone is indicated in Table 5 for an average weekday, and for morning and evening peak traffic hours. Approximately 40,000 additional vehicle trips would be generated by the zones Ewa of Cooke Street, some 33,000 vehicle trips by the developments Diamond Head of Ward Avenue, and approximately 9,000 trips by developments in other portions of the District.

Traffic generated by the increases in Kaka'ako development are estimated to total 6,800 vehicle trips during the morning peak traffic hour and 8,040 vehicle trips during the evening peak traffic period.

Traffic Distribution - The major portion of Kaka'ako vehicle trips would be made to or from areas outside of the Kaka'ako District. The travel patterns for these trips were determined from Hali 2000 Study forecast information on Kaka'ako trips (traffic analysis zones 18, 60 and 61) in the year 2000. This included

(1) The numbers are approximate since the Hali 2000 Study analysis zone boundaries differ in several areas from the boundary of the Kaka'ako District. See Appendix C for zone boundaries.

Table 5
YEAR 2000 INCREASE IN VEHICLE TRIP ENDS (a)
Kaka'ako Community Development District

TRAFFIC ANALYSIS ZONE	MORNING PEAK HOUR INCREASE			EVENING PEAK HOUR INCREASE			WEEKDAY INCREASE (b)
	In	Out	Total	In	Out	Total	
1	600	70	670	140	560	700	4,560
2	260	30	290	60	240	300	1,970
3	30	10	40	0	20	20	360
5	770	700	1,470	840	940	1,780	15,750
6	30	60	90	50	20	70	220
7	210	260	470	370	350	720	7,660
8	570	260	830	310	590	900	9,420
13	10	40	50	40	20	60	5,150
15	810	280	1,090	260	680	940	10,980
18	300	620	920	690	490	1,180	11,240
19	190	470	660	570	420	990	10,800
23	130	90	220	170	210	380	4,190
TOTAL INCREASE	3,910	2,890	6,800	3,500	4,540	8,040	82,300

(a) Increase compared to the 1983 vehicle trips generated by Kaka'ako land uses.

(b) Vehicle trip ends.

the general distribution of Kaka'ako vehicle trips to areas within or outside the Kaka'ako District and the travel routes used by these trips in approaching or departing the Kaka'ako area.

The travel patterns for Kaka'ako trips, as determined for the morning peak traffic hour, are summarized in Table 6. The same percentage numbers were used for the distribution of Kaka'ako trips in the afternoon peak hour, but with the percentage numbers reversed between the inbound and outbound direction in each approach corridor. (The Hali 2000 Study does not include forecasts for evening peak hour travel).

Public Transit Use - Based on a 50 percent increase in the bus fleet and services by the year 2000, the Hali 2000 Study estimated that public transit would account for almost nine percent of Kaka'ako person trips made by motor vehicles⁽²⁾. Public transit would thus account for approximately 18,000 person trips to, from or within Kaka'ako.

(2) Those person trips made by automobiles, vans, trucks, motorcycles and public and private buses; excludes walking and bicycle trips.

Table 6
 ORIGIN/DESTINATIONS FOR VEHICLE TRIPS
 GENERATED BY KAKA'AKO LAND USES
 Year 2000 Morning Peak Hour

GENERAL TRIP ORIGIN/DESTINATION	APPROACH/DEPARTURE ROUTES	PERCENT OF KAKA'AKO VEHICLE TRIPS	
		Inbound	Outbound
Trips staying within Kaka'ako	Kaka'ako Streets	12	16
Downtown, Iwilei, Kalihi	Ala Moana Boulevard Queen Street King/Beretania Streets	25	30
Pearl Harbor, Leeward & Central Oahu	H-1 Freeway	15	13
Nuuanu Valley & Windward Oahu	Pali Highway	9	5
Makiki	Ward Avenue Pensacola-Piikoi Streets	9	5
East Honolulu	H-1 Freeway	8	0
McCully, Moiliili, Kaimuki, Manoa	King-Beretania Streets Kapiolani Boulevard	13	12
Ala Moana Center & Waikiki	Ala Moana Boulevard Kapiolani Boulevard Waimanu Street	9	19
		—	—
T O T A L		100	100

Source: Hali 2000 Study year 2000 forecasts.

YEAR 2000 TRAFFIC IMPACTS

Analysis of year 2000 traffic impacts were focussed upon the major street system within or adjacent to the Kaka'ako District. These analyses included the forecast of traffic volumes and the comparison of these volumes to roadway capacities for the major streets and at the key street intersections. Regional impacts were based upon a comparison of present and projected Kaka'ako traffic in each of the major travel corridors.

Planned Street System for Year 2000

The Kaka'ako Plan includes both widenings and realignments of the major roadways within the District, as well as the prohibition of on-street parking along most of the major roadways with the exception of Pensacola Street. The planned system of major and local streets is depicted in Appendix D, while Appendix A includes a listing of the present and planned roadway and right-of-way widths. The Plan includes extensions and widenings of Queen Street and Pohukaina/Auahi Streets to provide a one-way street couple between Punchbowl and Pensacola Streets, extension of Kamakee Street as a public roadway, and widenings/realignments of South, Halekauwila and Cooke Streets.

Implementation of the street modifications is expected to occur as particular projects or areas are developed. Therefore, completion of several street system improvements is not expected to occur until after the year 2000 due to later phasing of adjacent developments. This is expected to primarily affect the widening/realignment of streets between Cooke Street and Ward Avenue, and streets Diamond Head of Kamakee Street.

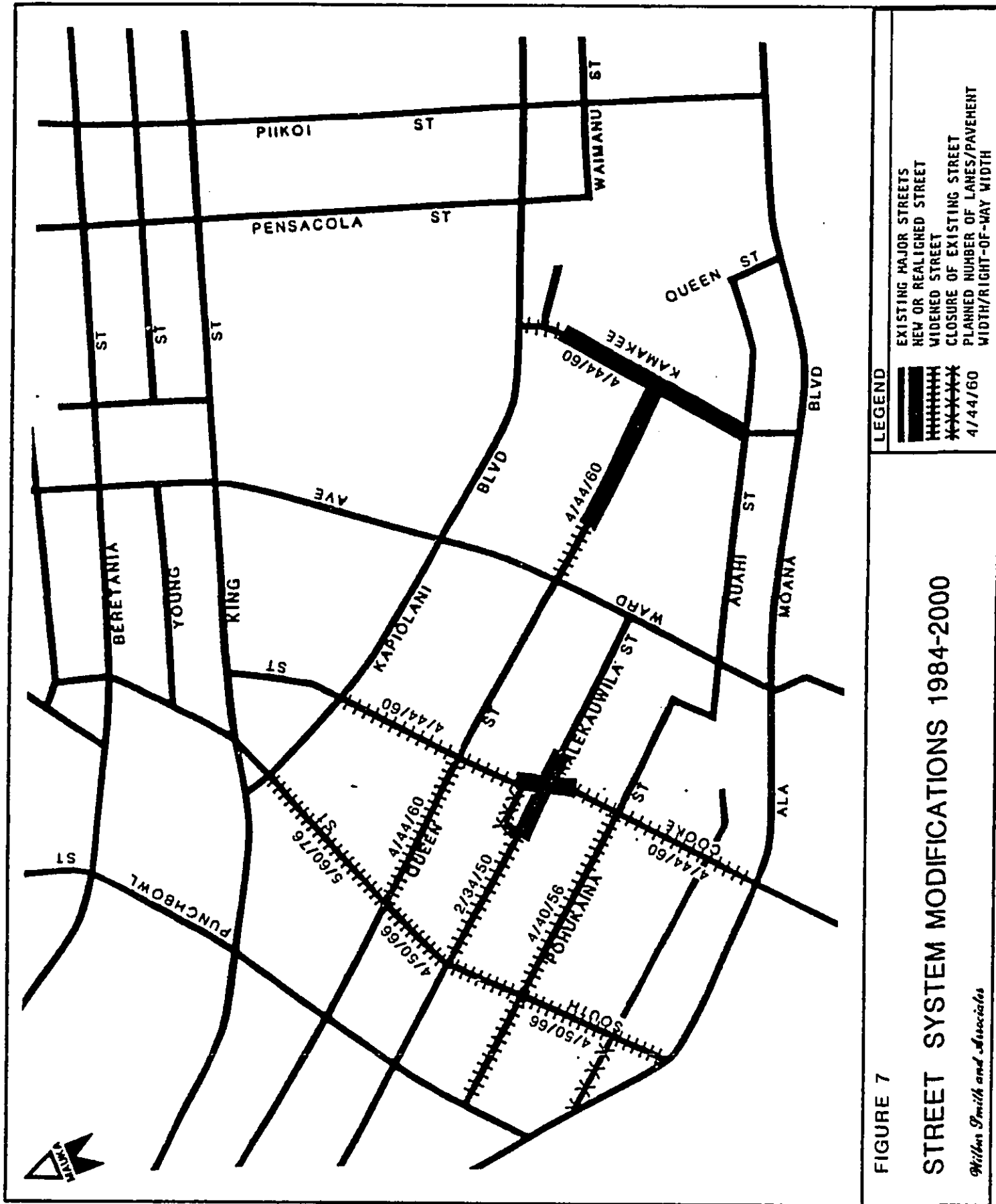
The street system improvements expected to be in place by the year 2000 are depicted in Figure 7. Since the realignment of Pohukaina and Auahi Streets at Ward Avenue and the extensions of Queen and Auahi Streets to Pensacola Street may not be implemented by 2000, the year 2000 analyses do not reflect conversion of Queen and Pohukaina Streets to one-way operation.

Kaka'ako Area Traffic Volumes

Projected year 2000 traffic on Kaka'ako area streets includes both the increase in traffic generated by Kaka'ako developments and the increase in traffic travelling through the area.

Through Traffic - The increases in through traffic, those trips on area streets which do not have an origin or destination in Kaka'ako, are expected to occur primarily on the Ewa-Diamond Head direction streets with only small increases on mauka-makai streets. The computer model developed for the Hali 2000 Study was used to estimate these increases in traffic by preparing model estimates of area traffic volumes in 1980 and 2000 without including trips generated by Kaka'ako land use. The resultant "through" traffic volumes on Kaka'ako streets for 1980 and 2000 were compared to estimate the future increase in through trips.

The results of the above analysis indicated that the 1980-2000 increase in morning peak hour through trips would approximate 12 and 25 percent in the Ewa and Diamond Head directions, respectively, and would amount to only nominal changes on mauka-makai streets. These increases were assumed to reverse in the evening peak hour. The routing of these trips on Kaka'ako streets was based on the computer model forecasts and the comparative future traffic flow conditions anticipated on these the



streets. Estimated increases in through trips on major streets are presented in Table 7.

Year 2000 Traffic Volumes - The increased numbers of vehicle trips generated by Kaka'ako land uses (Table 5) were assigned to the most direct route(s) for travel between each Kaka'ako traffic analysis zone and the approach corridors (Table 6). These volumes were combined with existing volumes and the increases in through traffic (Table 7) to estimate the total traffic on each street.

Projected year 2000 weekday, morning peak hour and evening peak hour traffic volumes on Kaka'ako area streets are presented in Figures 8, 9 and 10, respectively. Traffic volumes attributed to the increased development in Kaka'ako are shown in parenthesis for each major street segment.

For individual streets, the largest numerical increases in Kaka'ako - related traffic are projected to occur on Ala Moana Boulevard with peak hour directional traffic increases ranging from 200 to 660 vehicles, and on the Punchbowl - South Streets one-way couple. The Kaka'ako developments are generally projected to increase traffic on these and other major streets by 10 to 25 percent. Traffic increases on minor arterials within Kaka'ako generally range between 25 and 100 percent above present volumes.

A summary of the traffic increases on Ewa-Diamond Head streets (at Ward Avenue) and on mauka-makai streets (at Kapiolani Boulevard) are presented in Table 8. The largest cumulative percentage increase in traffic is projected for mauka direction traffic during the morning with a 66 percent increase above the present 1,320 mauka-bound vehicles. The increased Kaka'ako trips would contribute 990 of the 1,200 additional vehicles.

Kaka'ako Area Traffic Conditions

Assessment of morning and evening peak hour traffic conditions on Kaka'ako area streets were based upon volume-capacity analyses at the key traffic signal-controlled intersections, and a review of traffic volumes and number of traffic lanes at other locations. The volume-capacity analysis and level of service is summarized in Table 9 for the key intersections. The projected year 2000 turning movements and volume-capacity analyses for these intersections are presented in a separate technical supplement to this report.

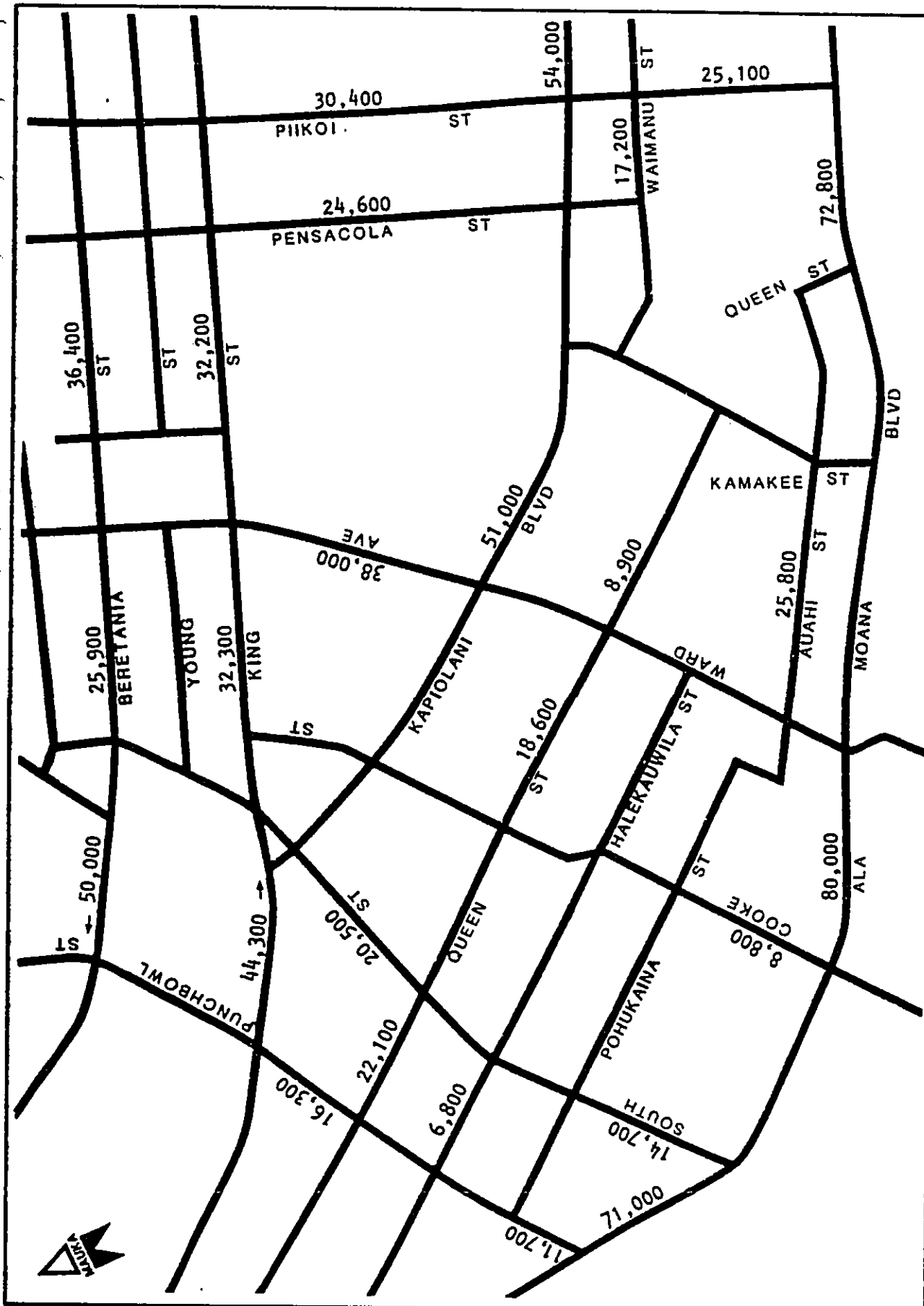
Ala Moana Boulevard - The combined increase of through and Kaka'ako traffic would result in increased travel delays and an expansion of the areas affected by traffic congestion on both Ala Moana Boulevard and the cross streets. During the morning peak hour, the traffic increases would result in lower travel speeds and longer traffic queues on Ala Moana Boulevard. The Ward Avenue intersection would be operating at capacity.

During the evening peak hour, the projected traffic volumes exceed roadway capacity at the Piikoi Street, Ward Avenue and Punchbowl Street intersections. Without roadway improvements at these intersections, a portion of this traffic would have to use an alternative travel route or travel at an earlier/later time.

Both the Ward Avenue and Piikoi Street problems represent a further worsening of existing traffic problems, principally the conflict between heavy Ewa-direction through traffic and the large numbers of left-turning vehicles from both the Ewa approach on Ala Moana Boulevard and the mauka approach on the cross street. Although few additional vehicles were assigned to the left-turns from the Ewa approach of Ala Moana

Table 7
1984-2000 INCREASE IN THROUGH TRAFFIC
KAKA'AKO AREA ROADWAYS

ROADWAY	MORNING PEAK HOUR INCREASE		EVENING PEAK HOUR INCREASE	
	Diamond Head or Makai Bound	Ewa or Mauka Bound	Diamond Head or Makai Bound	Ewa or Mauka Bound
Ala Moana	400-500	150	150	700
Queen	0-100	100	100	0
Kapiolani	100	150-250	150-250	100
King	300-500	--	300-450	--
Beretania	--	200-300	--	350-500
Punchbowl	50-200	--	0	--
South	--	0-100	--	0-100
Ward	0-100	0-100	0	0-100
Piikoi	--	50-100	--	100-150



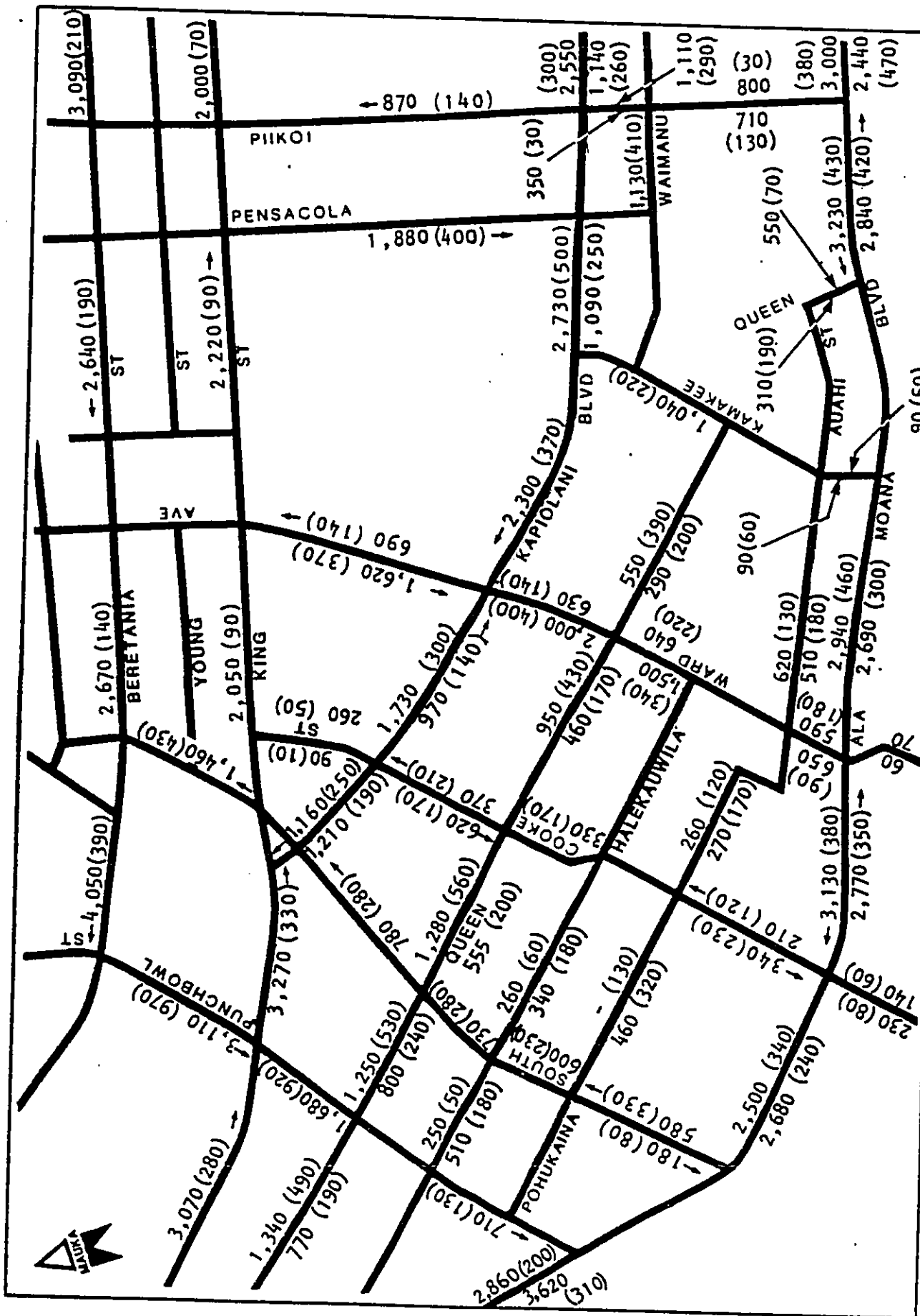


FIGURE 9

YEAR 2000 MORNING PEAK HOUR TRAFFIC VOLUMES

Wilbur Smith and Associates

LEGEND

620 TOTAL TRAFFIC
(130) INCREASE IN KAKA'AKO TRAFFIC OVER BASE YEAR

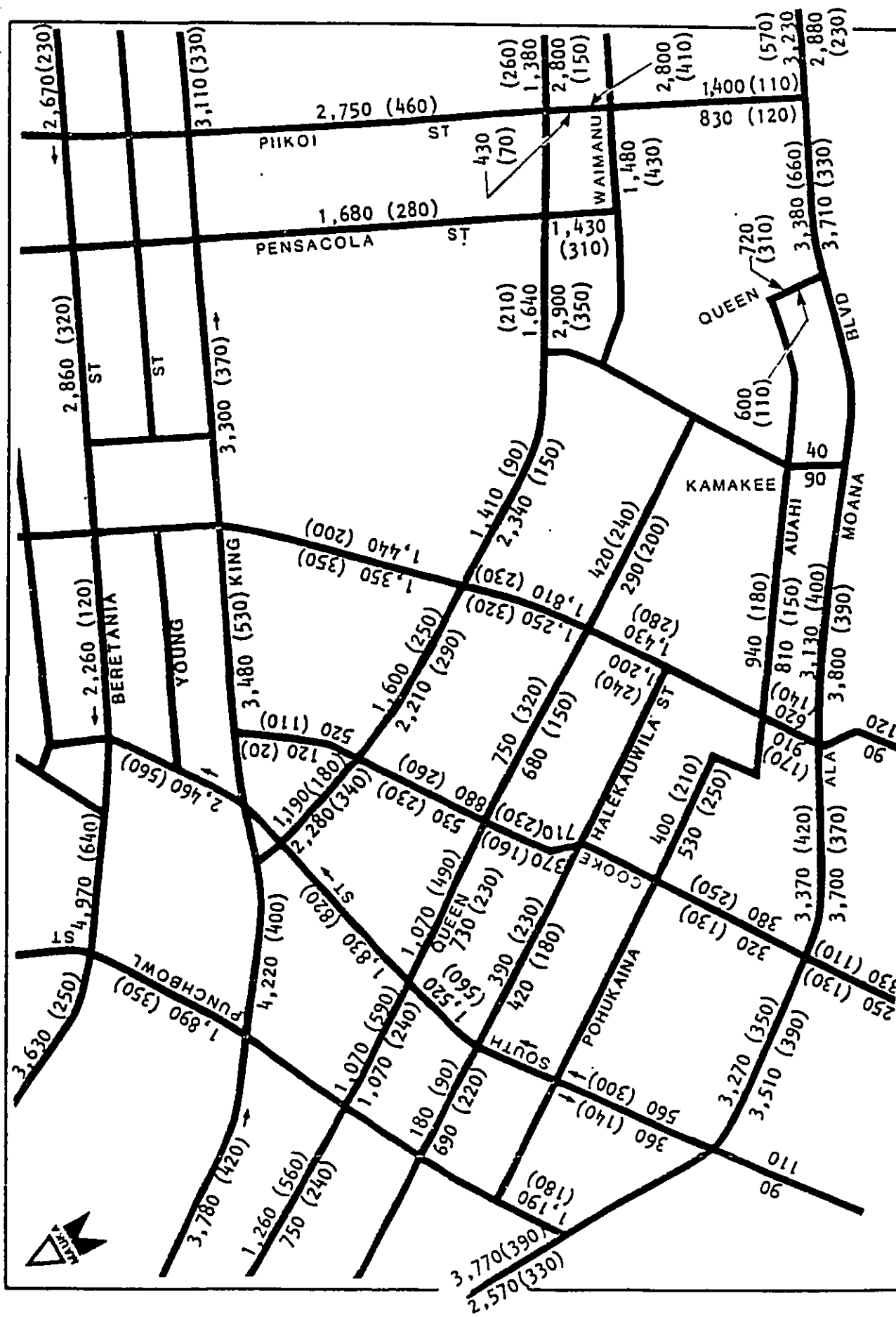


FIGURE 10

YEAR 2000 EVENING PEAK HOUR TRAFFIC VOLUMES

Willis Smith and Associates

LEGEND

360 TOTAL TRAFFIC BY DIRECTION
(150) INCREASE IN KAKA'AKO TRAFFIC OVER BASE YEAR

Table 8
TRAFFIC INCREASE SUMMARY IN KAKA'AKO
1984 - 2000

TRAVEL PERIODS AND DIRECTION OF TRAVEL	TOTAL TRAFFIC VOLUME (c)				KAKA'AKO TRAFFIC (d)	
	1984	2000	Increase	Percent Increase	Increase	Percent of Total Increase
Morning Peak Hour:						
Ewa (a)	7,200	9,240	2,040	28	1,510	74
Diamond Head (a)	4,650	6,950	2,300	49	1,220	53
Mauka (b)	1,820	3,020	1,200	66	990	82
Makai (b)	4,630	6,240	1,610	35	1,410	87
Evening Peak Hour:						
Ewa (a)	5,760	8,550	2,790	48	1,470	52
Diamond Head (a)	8,490	10,920	2,430	29	1,770	73
Mauka (b)	5,300	7,220	1,920	36	1,720	89
Makai (b)	3,390	4,730	1,340	40	1,260	94

- (a) Traffic volumes totalled for Ewa-Diamond Head direction streets on the Ewa side of Ward Avenue.
- (b) Traffic volumes totalled for mauka-makai direction streets on the makai side of Kapiolani Boulevard.
- (c) All vehicle trips to, from or through Kaka'ako.
- (d) Vehicle trips with origin or destination in Kaka'ako.

Table 9

VOLUME-CAPACITY ANALYSIS OF KEY INTERSECTIONS

Existing and Projected Year 2000 Peak Hours

INTERSECTION	MORNING PEAK HOUR			EVENING PEAK HOUR				
	Existing		2000	Existing		2000		
	V/C	L.O.S.		V/C	L.O.S.			
Ala Moana/Punchbowl	.75	C	.93	E	.79	C	1.03	*
Ala Moana/South	.71	C	.88	D	.61	B	.91	E
Ala Moana/Cooke	.72	C	.85	D	.85	D	.99	E
Ala Moana/Ward	.88	D	1.01	*	.93	E	1.13	*
Ala Moana/Piikoi	.82	D	.94	E	.92	E	1.11	*
Kapiolani/King/ South/Alapai	.59	A	.73	C	.81	D	.93	E
Kapiolani/Cooke	.71	C	.89	D	.92	E	1.07	*
Kapiolani/Ward	.93	E	1.00	E	.96	E	1.04	*
Kapiolani/Piikoi	.56	A	.68	B	.93	E	1.02	*
Queen/Ward	.62	B	.93	E	.61	B	.94	E
Queen/Cooke	.54	A	.66	B	.78	C	.72	C
Queen/South	.43	A	.71	C	.65	B	.89	D
South/Halekauwila	.33	A	.42	A	.50	A	.72	C

V/C - Volume-to-Capacity

L.O.S. - Level of Service

* Projected traffic exceeds intersection capacity.

Boulevard, further deterioration in conditions at each intersection is still indicated as a result of the increased Ewa-direction through traffic.

The problem at Punchbowl Street during the evening peak hour would result from the increased numbers of Ewa-direction through traffic and the right-turn vehicles from Punchbowl Street. Without intersection modifications, the right-turn traffic would have to experience lengthy delays or find alternative routes.

With the projected volumes, Cooke Street would be operating at capacity with extensive traffic queuing. Given the proximity of the Punchbowl Street, Cooke Street and Ward Avenue intersections to other signalized intersections along Ala Moana Boulevard, the traffic queues from all three intersections would likely extend through and disrupt operations at the South, Koula and Coral Street signalized intersections.

Kapiolani Boulevard - During the morning peak hour, the Ward Avenue intersection would provide the major source of traffic delays and congestion along Kapiolani Boulevard. The left-turning vehicles from Ewa-bound Kapiolani Boulevard would require a major portion of the signal green time. A portion of the Ewa-direction traffic which would prefer to turn left at Ward Avenue would likely have to use an alternative route, possibly turning left at the Kamakee Street intersection.

The projected morning traffic increase would also be sufficient to significantly impact the Cooke Street intersection, as evidenced by an increase in the volume capacity ratio from 0.71 to 0.89 (Level of Service C to D). Kapiolani Boulevard traffic may experience delays and congestion worse than those indicated by this volume-capacity ratio since, as at present, the time provided to pedestrians to cross Kapiolani Boulevard would exceed the proportion of the signal cycle time needed by Cooke Street traffic.

During the evening peak period, the projected traffic volumes would exceed the intersection capacity at Ward Avenue, Cooke Street, and Piikoi Street. (See Piikoi Street discussion.) At Ward Avenue, the critical conflict is between the mauka direction traffic on Ward Avenue and the Ewa-direction traffic on Kapiolani Boulevard, which is restricted to use of two lanes due to the Kapiolani Boulevard reversible lane operation.

The planned widening of Cooke Street to a 44-foot wide, four-laned street would not be sufficient to offset the evening peak hour traffic increases at the Kapiolani Boulevard intersection. With the provision of two lanes in each direction on Cooke Street, the estimated volume-capacity ratio would be 1.07 for Year 2000 forecast traffic volumes. (Note: The analyses of both the morning and evening traffic at Cooke Street assume that Curtis Street, or a similar Street connection, would remain to accommodate much of the turning traffic between Kapiolani Boulevard and the area makai of the street. Curtis Street currently accommodate approximately one-half the number of left and right turning vehicles as compared to those made at Cooke Street.)

Other Ewa-Diamond Head Direction Streets - Queen Street would provide sufficient capacity as a four-lane, two-way street to accommodate projected year 2000 traffic, although traffic volumes would be approaching the capacity of the Ward Avenue intersection in both the morning and evening peak periods. At South Street, the conflict between the heavy left-turn volume from the Ewa approach of Queen Street in the evening peak hour and the increased volumes of through traffic both in the Ewa-bound direction on Queen Street and the mauka-bound direction on South Street would adversely affect intersection conditions, as indicated by a volume-capacity ratio of 0.89 versus the present 0.65.

Traffic operations along Halekauwila and Pohukaina Streets would approximate Level of Service C. This is contingent upon removal of on-street parking and the striping of separate through and turn lanes on the approaches to the Punchbowl and South Street intersections.

Auahi Street, Diamond Head of Ward, would provide sufficient capacity to serve projected traffic if on-street parking is removed and left-turn lanes provided at intersections and major driveways. However, delays could be encountered by Auahi Street traffic at the Ward Avenue intersection due to potential blockage of the intersection as a result of traffic stacking from a congested Ala Moana Boulevard-Ward Avenue intersection through the Auahi Street intersection.

Punchbowl-South Streets - Within the Kaka'ako area, these streets should be able to accommodate projected year 2000 traffic at Level of Service D with the exception of the Ala Moana Boulevard intersections.

Ward Avenue - Traffic use of Ward Avenue would be largely constrained by conditions at the Kapiolani and Ala Moana Boulevard intersections.

Piikoi Street - The projected increase in year 2000 mauka-bound traffic on Piikoi Street would increase the delays presently experienced in the area between Kapiolani Boulevard and Waimanu Street. Congested conditions along this section of street would likely encourage use of alternative routes to and from the Ala Moana Center, and for the proposed developments Ewa of Piikoi Street.

Other Mauka-Makai Streets - Traffic is expected to operate at Level of Service C or D along Cooke, Kamakee and Pensacola Streets, with the exception of the Cooke Street intersections at Kapiolani and Ala Moana Boulevards. These intersections are expected to operate at or near capacity conditions during the evening peak hour.

Kaka'ako Impacts on Regional Travel

Trips generated by or attracted to Kaka'ako land uses comprise approximately 9 percent of present weekday vehicle trips on Oahu. The relative contribution to islandwide travel is expected to increase since the projected growth for Kaka'ako exceeds the islandwide average 20 percent population growth forecast for 2000⁽¹⁾. By 2000, Kaka'ako vehicle trips would amount to 11 percent of the islandwide trips forecast by the Hali 2000 Study.

Kaka'ako land use activities attract travel from most areas of Oahu and thus contribute to the traffic volumes and conditions in the major travel corridors into the Downtown Honolulu area. The total inbound (towards Downtown) morning peak hour traffic in the major travel corridors and the number of vehicle trips destined to the Kaka'ako area are presented in Table 10 for 1980 and 2000.

The projected increase in Kaka'ako traffic is comparatively small to total corridor travel and would have little effect on corridor travel conditions with the exception of the traffic inbound from the Leeward/Central Oahu areas through the Downtown area on either H-1 Freeway or the major streets. The increase in Kaka'ako traffic on streets and H-1 Freeway in the Iwilei and Downtown areas would contribute to the longer queues and travel delays anticipated for roadways in these areas.

Table 10

KAKA'AKO DEVELOPMENT INCREASE IN REGIONAL TRAFFIC
Morning Peak Hour, Peak Direction (a)

CORRIDOR/LOCATION (b)	1980		2000		KAKA'AKO AS PERCENT OF TOTAL INCREASE	KAKA'AKO TRAFFIC AS PERCENT OF TOTAL TRAFFIC	
	Total Traffic (c)	Kaka'ako Traffic (d)	Total Traffic (c)	Kaka'ako Traffic (d)		1980	2000
East Honolulu at Ainakoa	4,800	280	5,600	450	21	5.8	8.0
Trans-Koolau Routes	7,000	450	9,900	720	9	6.4	7.3
Ewa of Downtown at Nuuanu Stream	17,300	2,050	19,900	3,250	46	11.8	16.4
Ewa of Downtown at Moanalua Stream	12,400	1,120	15,350	1,800	23	9.9	11.7
Leeward/Central Oahu at Kalanua Stream	12,100	730	16,800	1,170	9	6.0	6.9

(a) Inbound towards Downtown Honolulu.

(b) Includes all major roadways crossing this location.

(c) From Hali 2000 Study information with year 2000 traffic modified to reflect HCDA land use/traffic for Kaka'ako.

(d) Estimated based on computer model runs for Hali 2000 Study traffic analysis zones 18, 20, 60 and 61.

A large portion of the Kaka'ako trips would desire to use the H-1 Freeway for access to and from Kaka'ako. With the increased Kaka'ako development, the additional number of vehicles which would desire to use the H-1 Freeway and access ramps would be:

	<u>TO/FROM EWA</u>	<u>TO/FROM KOKO HEAD</u>
Morning Peak Hour		
On-Ramps	150	0
Off-Ramps	550	300
Evening Peak Hour		
On-Ramps	650	350
Off-Ramps	450	50

These vehicle trips would contribute to a worsening of the congestion on the ramps and streets providing access to H-1 between the Downtown and Kaimuki areas.

(1) State Department of Planning and Economics Development, II-F Series, Population Forecast.

POTENTIAL MITIGATION MEASURES

The widenings and extensions planned for the Kaka'ako District roadways by the year 2000 would accommodate the increased traffic on the minor arterials and collector streets within Kaka'ako. However, the combined increases in through and Kaka'ako traffic would be expected to exceed the capacity of several intersections along the major arterials. These capacity constraints along Ala Moana Boulevard, Ward Avenue and Piikoi Street would require that many trips through or to Kaka'ako would have to seek alternative travel routes where possible, to travel at a different time, or to change travel mode (ridesharing, public transit, bicycling, or walking).

Several measures may be implemented which would alleviate traffic problems along the major arterials and improve accessibility to the Kaka'ako area. These are discussed in the following paragraphs.

Intersection Modifications

Traffic capacity at the key intersections could be increased by localized roadway widenings and modifications. These modifications are described in the following paragraphs, while the year 2000 volume-capacity ratios are presented in Table 11 for conditions with and without the described changes.

Ward Avenue/Ala Moana Boulevard - The Diamond Head-bound approach of Ala Moana Boulevard could be widened to provide a second (double) left-turn lane for mauka-bound traffic. The additional left-turn lane would reduce the proportion of signal time needed for the left turns or permit a larger number of vehicles to turn left at the intersection. This would reduce stacking of left-turn vehicles into and blockage of the Diamond Head direction through lanes. The additional left-turn lane would improve the volume-capacity ratio to .89 and 1.03 for morning and evening peak periods, respectively. An additional 10-foot of right-of-way would be needed to provided the additional turn lane. The present single left-turn lane should be lengthened if a double left-turn lane is not implemented.

Kamakee Street/Ala Moana Boulevard - The Kamakee Street approach could be realigned with the existing signalized intersection of the Ala Moana Park roadway to create a standard four-way intersection. This would permit left-turns to be made from mauka approach of Kamakee Street and the Ewa approach of Ala Moana Boulevard. The intersection would improve access to Kaka'ako areas Diamond Head of Ward Avenue and would divert some of the left-turn traffic from Ward Avenue-Ala Moana Boulevard intersection to Kamakee Street. A combination of the Kamakee Street realignment with the double left-turn lane described above should result in traffic volumes within the intersection capacity of the Ward Avenue-Ala Moana Boulevard intersection.

Additional right-of-way would be needed to realign Kamakee Street.

Piikoi Street/Ala Moana Boulevard -- Overall intersection traffic conditions could be improved by provision of a right-turn lane on the Diamond Head approach of Ala Moana Boulevard and by addition of a second left-turn lane on Piikoi Street. These would reduce signal time needed for the Piikoi Street approach and the Ewa-bound approach of Ala Moana Boulevard. Additional right-of-way would be needed to provide the right-turn lane.

Table 11

MITIGATION MEASURE IMPACTS ON KEY INTERSECTIONS
Volume - Capacity Analysis for Year 2000

INTERSECTION	MITIGATION MEASURES	MORNING PEAK HOUR		EVENING PEAK HOUR	
		Without	With	Without	With
		V/C	L.O.S.	V/C	L.O.S.
Ala Moana & Punchbowl	Add 2nd Right Turn Lane on Punchbowl	.93	E	.93	E
				1.03	*
Ala Moana & Ward	a. Add 2nd Left Turn Lane on Ewa Approach	1.01	*	.89	D
	b. Realign Ala Moana/Kamakee Intersection			.97	E
	c. Combined a + b			.87	D
Ala Moana & Piikoi	a. Add Right Turn Lane on Diamond Head Approach	.94	E	.90	E
	b. Add 2nd Left Turn Lane on Mauka Approach			.91	E
	c. Combined a + b			.87	D
Kapiolani & Ward	Relocate Diamond Head Approach Bus Stop to Far Side	1.00	E	1.00	E
				1.04	*
Kapiolani & Cooke	Add Additional Approach Lane on Makai Approach	.89	D	.85	D
				1.07	*

V/C - Volume-to-Capacity Ratio

L.O.S. - Level of Service

*Projected traffic exceeds intersection capacity.

Cooke Street/Ala Moana Boulevard - Given the large number of left and right turning vehicles, the Cooke Street approaches should be striped to provide separate left-turn, through and right turn lanes to minimize the signal time needed for the Cooke Street traffic. This would provide three approach lanes and one departure lane on Cooke Street.

Ala Moana Boulevard Pedestrian Bridges - The proportion of signal time allotted to cross streets is largely determined by the time needed to permit pedestrian crossings of Ala Moana Boulevard rather than the cross street traffic volume. This will become increasingly critical with larger volumes of Ala Moana Boulevard traffic and more frequent pedestrian crossing of the street as the area uses intensify. Development of the pedestrian bridges to alleviate this conflict should have highest priority at the more critical intersections where high pedestrian activity is present, in particular, Ward Avenue.

Kapiolani Boulevard/Ward Avenue - Evening peak period traffic operations would be improved by construction of a bus pull-out for the Ewa direction bus stop on Kapiolani Boulevard, or the relocation of this near-side bus stop to the Ewa side of the Ward Avenue intersection. Conditions at this intersection could also be improved by removing parking and restriping the mauka-bound approach to provide a full-width right-turn lane.

Kapiolani Boulevard/Cooke Street - Three approach lanes could be provided on the makai Cooke Street approach to this intersection to accommodate the projected increases in the mauka-direction traffic on Cooke Street. The additional lane would be used as a separate left-turn storage lane. The additional approach lane could be provided either by restriping the planned four-lane cross section for three lanes in the mauka direction, or by widening Cooke Street an additional 6 to 10 feet to provide a five-lane crosssection for a sufficient distance to accommodate a left-turn storage lane.

Future Public Transit System

The City and County of Honolulu is presently considering various transit options which could potentially affect Kaka'ako area travel, in particular the development of a fixed-guideway transit system. Such a rail line (or lines) may traverse a portion of the Kaka'ako area. Development of a rail system could increase transit use for Kaka'ako trips by 3 to 5 percentage points above the level anticipated with bus services in 2000. This would reduce Kaka'ako vehicle trips by 350 to 600 during the morning and evening peak hours. Overall, traffic volumes (through and local) on Kaka'ako streets could be reduced by an average of 2 to 3 percent.

If a rail system is implemented with a line through or adjacent to Kaka'ako, HCDA should promote higher density development along the rail line at stations/stops. Use of rail transit systems would be encouraged by an increase in residential/commercial/employment uses within walking distance of transit stops since travellers resist multiple changes from one transit mode to another (bus to rail line to shuttle bus). Therefore, rail transit use in Kaka'ako will depend upon both the line location and the location of high-activity uses relative to the line.

The Kaka'ako District Plan includes implementation of a shuttle bus service within Kaka'ako to encourage use of public transit for travel to, from, or within Kaka'ako. The shuttle bus service would be routed to serve travel to the major residential and employment sites, and would provide access to the stations/stops of any transit guideway through or adjacent to Kaka'ako.

Full Kaka'ako Roadway Plan

The year 2000 analyses indicate that Queen Street would be approaching its capacity as a two-way, 44-foot wide street. Development beyond 2000 would require additional east-west capacity such as the operation of Queen and Pohukaina Streets as a one-way street couple. This would increase the combined capacity of these two streets by about 20 percent. If the one-way conversion does not occur, Queen Street would require widening to a full four-lane street with left turn lanes similar to Ward Avenue (without on-street parking). A curb-to-curb street width of 54 to 64 feet would be needed.

With the extension and conversion to one-way operations, Queen and Pohukaina Streets are expected to attract through trips from Ala Moana and Kapiolani Boulevards in addition to trips destined within Kaka'ako. Preliminary estimates indicate that 300 to 500 through vehicles would be diverted to the Queen/Pohukaina Street couple during the peak traffic hours, primarily trips between Downtown and the Ala Moana Center areas.

SUMMARY AND CONCLUSIONS

HCDA estimates that development of the Kaka'ako District will have reached 55 percent of its maximum potential development by the year 2000, versus 35 percent at present. Population is expected to increase from the present 2,200 residents to 16,500 in 2000, and employment from 19,700 to 25,700.

The plan of street widenings and extensions would be implemented as redevelopment occurs within each area of Kaka'ako. By 2000, the widening of South and Cooke Streets and the extension of Kamakee Street should be completed, while portions of Queen, Halekauwila, Pohukaina, and Auahi Streets would have been widened to the planned cross section.

Analyses of the level of land use development and the roadway and transit improvements anticipated for year 2000 indicate the following:

1. The year 2000 development level would generate an additional 82,300 weekday vehicle trips, which would be a 55 percent increase above the 135,000 weekday trips estimated for current uses. The planned redevelopment would result in an increase of 6,800 and 8,040 vehicle trips during the morning and evening peak hours, respectively.
2. Kaka'ako District weekday passenger trips on public transit are estimated to increase from 11,000 at present to 18,000 in 2000.
3. Through traffic volumes on Kaka'ako area streets, which neither begin nor end their trip in Kaka'ako, currently comprise 75 and 55 percent of the traffic volumes on Ewa-Diamond Head and mauka-makai direction roadways, respectively, within the Kaka'ako area. In the year 2000, through traffic would comprise 70 and 45 percent of the traffic on Ewa-Diamond Head and mauka-makai Streets in Kaka'ako, respectively, with Kaka'ako land uses contributing the remainder.
4. The combined increases in through traffic and Kaka'ako traffic would worsen traffic conditions along those sections of major arterials which currently experience congestion and delays during the peak traffic periods. These include:
 - o Ala Moana Boulevard between Punchbowl Street and Ward Avenue, and at Piikoi Street.
 - o Ward Avenue at the Ala Moana and Kapiolani Boulevard intersections.
 - o Piikoi Street between Waimanu Street and Kapiolani Boulevard.

These future roadway conditions may result in drivers seeking alternative routes or times of travel for trips to or through Kaka'ako. The development impact on travel conditions could be mitigated by the herein described intersection improvements, by earlier implementation of the Queen-Pohukaina one-way street couple, or by public transit improvements.

5. The planned widenings and extensions of minor arterial and collector streets within Kaka'ako would be sufficient to accommodate the projected year 2000 travel on these roadways.

APPENDICES

APPENDIX A
EXISTING AND PLANNED ROADWAY WIDTHS

Street	EXISTING ROADS			PROPOSED PUBLIC ROADS		
	Class	R.O.W.	Curb-to-Curb	Class	R.O.W.	Curb-to-Curb
Ala Moana	Major	100	72	Major	100	72
Cooke	Major	50	38	Major	50	38
	Major	50	38	Major	60	44
Halekauwila	Local (P)	50	(N)	Local	50	34
Kamakee	Local (P)	40	(N)	Major	60	44
	Local	76	60	Major	76	60
Kapiolani	Major	100	64	Major	100	64
King	Major	80	64	Major	80	64
	Major	90	66	Major	90	66
Pensacola	Major	76	60	Major	76	60
	Major	56	(N)	Major	70	54
Piikoi	Major	80	64	Major	80	64
Punchbowl	Major	70	54	Major	70	54
Queen	Major (P)	56	(N)	Major	56	40
Extension					100	84
South	Major	60	44	Major	60	44
Waimanu	Major	56	40	Major	80	64
	Local (P)	40	(N)	Local	50	34
Ward	Major	80	64	Major	80	64
Auahi	Local	60	(N)	Local	60	44
	Major	76	60	Major	76	60
Cummins	Local (P)	40	(N)	Local	50	34
Drier	Local (P)	40	(N)	Local	50	34
Ilaniwai	Local (P)	40	(N)	Local	50	34
Kamani	Local	40	36	Local	50	34
Kawaiahao	Local (P)	40	(N)	Local	50	34
Kona	Local (P)	40	(N)	Local	50	34
Koula	Major (P)	50	36	Local	50	34
Mission	Local	40	Varies	Local	40	Same
Pohukaina	Local (P)	50	(N)	Major	56	40

R.O.W. = Right-of-Way Width in Feet

Curb-To-Curb = Street Width in Feet

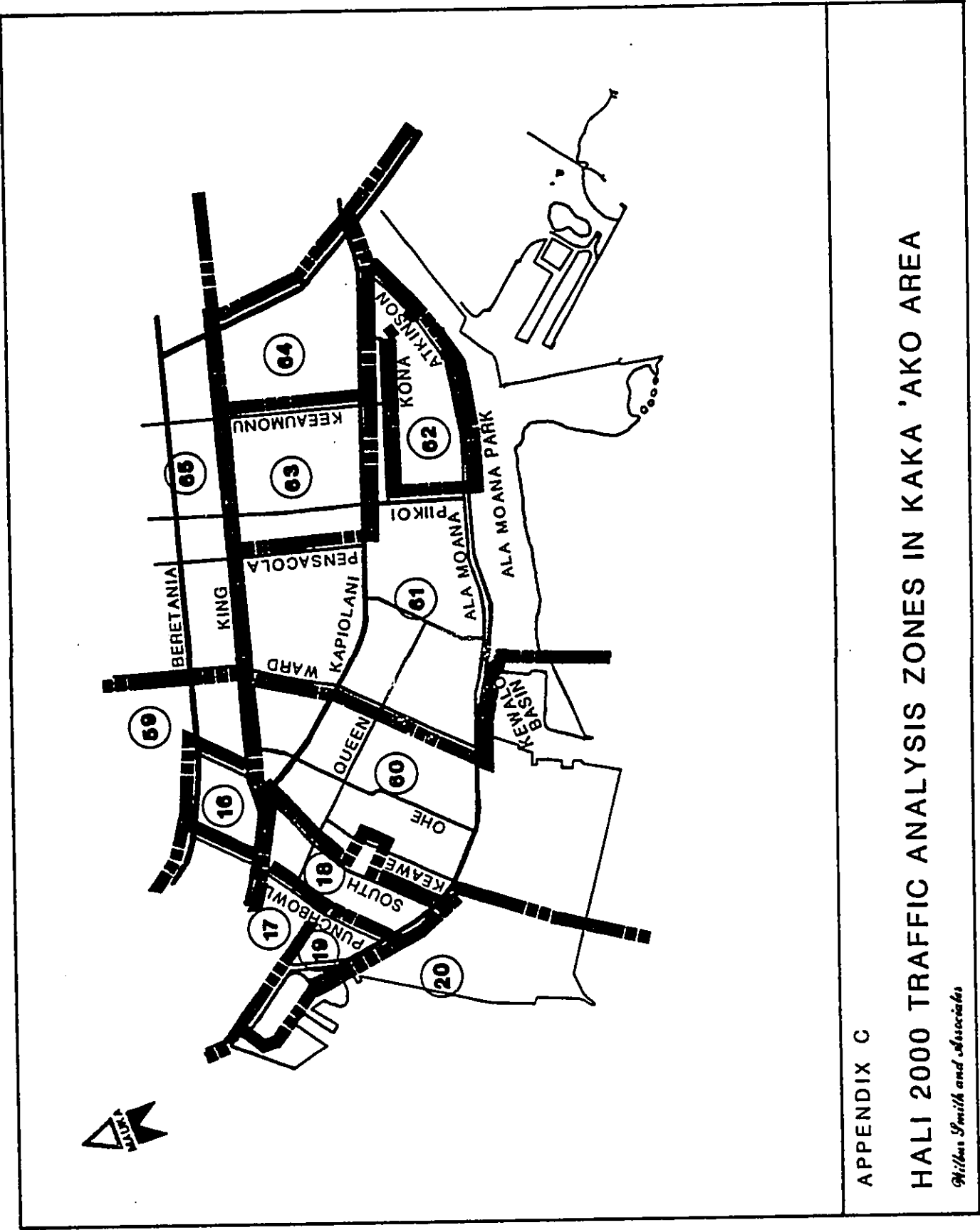
(P) = Partially or Entirely Private Roads

(N) = Partially or Entirely No Curbs or Sidewalks

Appendix B
EXISTING LAND USES
Kaka'ako Community Development District

TRAFFIC ANALYSIS ZONE	DWELLING UNITS	FLOOR AREA (Thousands Square Feet)			
		Commercial	Industrial	Public, Misc.	Total (a)
1	0	215	0	0	215
2	18	268	0	0	280
3	36	93	14	15	144
4	0	323	3	66	392
5	0	793	70	0	863
6	0	171	10	44	225
7	21	217	58	0	285
8	9	361	142	0	511
9	0	349	56	0	405
10	7	259	108	0	370
11	13	272	99	7	380
12	33	486	374	0	869
13	104	564	197	1	841
14	0	327	0	0	327
15	1	385	1	0	387
16	12	531	129	0	660
17	7	0	0	670	670
18	361	424	0	0	1,011
19	4	312	340	0	652
20	0	545	97	0	642
21	416	214	0	48	629
22	0	68	655	0	723
23	0	955	0	0	955
T O T A L	1,043	8,032	2,353	851	12,436

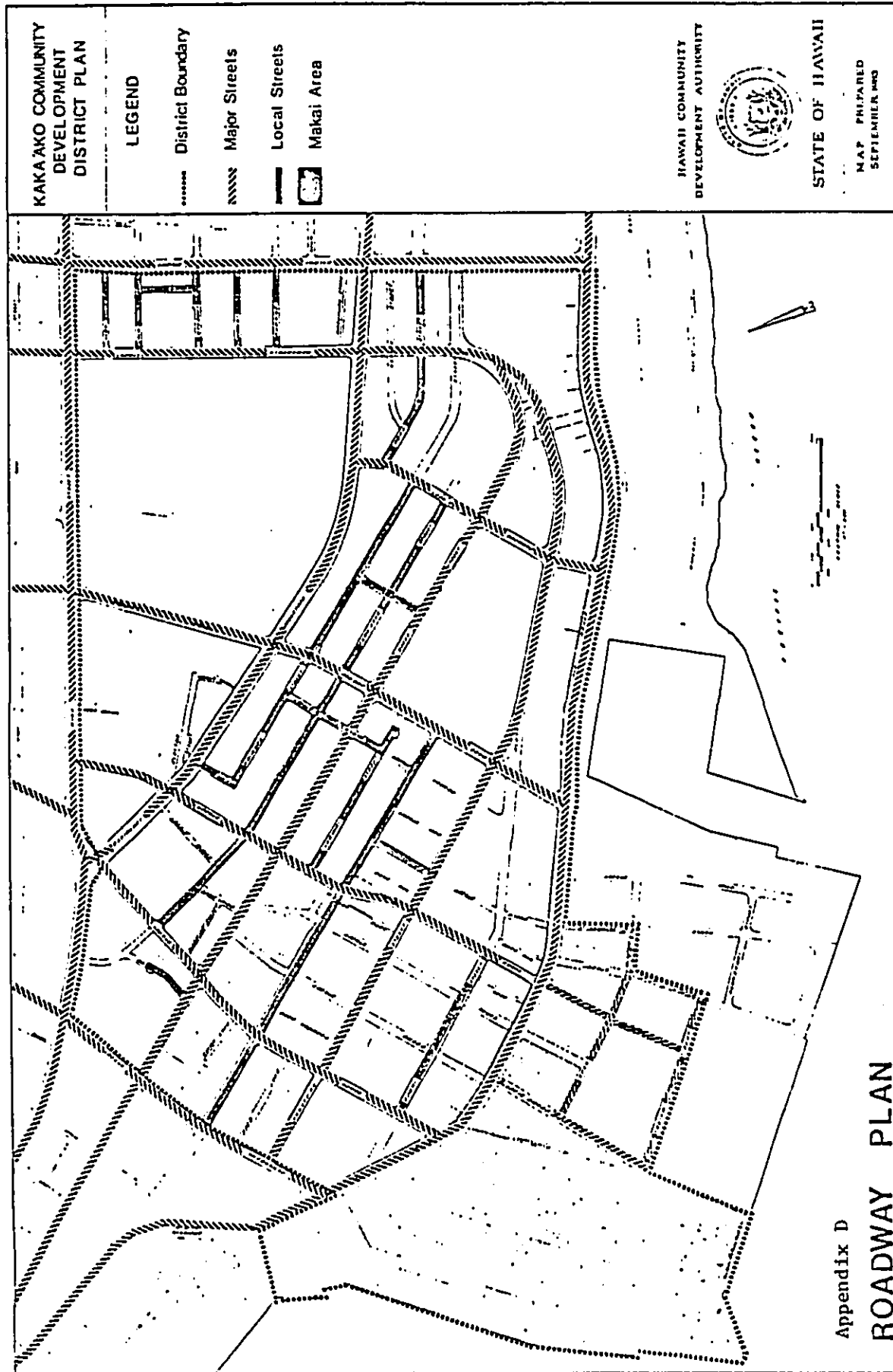
(a) Total includes residential floor area.



APPENDIX C

HALI 2000 TRAFFIC ANALYSIS ZONES IN KAKA 'AKO AREA

Wilbur Smith and Associates



APPENDIX C

**AIR QUALITY IMPACT ANALYSIS
KAKA'AKO COMMUNITY DEVELOPMENT DISTRICT PLAN
July, 1984**

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AIR QUALITY IMPACT ANALYSIS

KAKA'AKO COMMUNITY DEVELOPMENT DISTRICT PLAN

1. INTRODUCTION

In 1976, the State Legislature created the Hawaii Community Development Authority (HCDA), and subsequently designated the Kaka'ako District as the Authority's first community development district. A final environmental impact statement (FEIS), accepted in August, 1983, addressed the potential impacts of redeveloping a 450-acre area situated on the mauka (toward the mountain) side of Ala Moana Boulevard (1). During the preparation of that FEIS, however, the Legislature designated an additional 133-acre area located on the makai (toward the sea) side of Ala Moana Boulevard. This area has been appropriately referred to as the Makai Area, and the HCDA adopted a plan for its development in October, 1983 (2).

Since the development area has been expanded to include the Makai Area, and there have been other modifications including revised traffic projections, the Authority chose to prepare a Supplemental EIS to address the impacts associated with these changes. The purpose of this report is to present the findings of an air quality impact analysis which was intended to update a similar study conducted for the original plan (3). This current effort assesses the air quality impact of the entire Kaka'ako Community Development District including the Mauka and Makai Areas.

2. METHODOLOGY

The principal air quality impacts associated with a project such as this are related to its ability to generate vehicular traffic. Roadways and parking garages constitute "indirect" sources of air pollution as defined in the federal Clean Air Act (4) since they themselves do not directly emit pollutants but rather attract mobile sources, i.e., motor vehicles, which do.

The basic methodology employed in this analysis involves the following steps:

- o review pertinent air quality standards
- o review existing air quality
- o review local climate and meteorology

- o develop year-specific emission factors for the mix of traffic expected
- o compute estimates of annual emissions of regulated pollutants based on traffic projections provided by the traffic consultant ("burden" analysis)
- o compute estimates of ambient concentrations of carbon monoxide based on traffic projections, mix, speeds, "worst" case and "typical" meteorology, and temporal and spatial distribution

The details of the analytical procedure will be presented in subsequent sections of the report.

3. AIR QUALITY STANDARDS

A summary of State of Hawaii and national ambient air quality standards is presented in Table 1 (5, 6). Note that Hawaii's standards are not divided into primary and secondary standards as are the federal standards.

Hawaii's standards are clearly more stringent than their federal counterparts and are absolute ceiling values not to be exceeded at all. The federal standards allow one violation per year. It should also be noted that the State recently proposed amendments to its particulates and sulfur dioxide standards to make them equivalent to the federal standards. The public comment period on those proposed amendments ended on June 8, 1984, and the State Department of Health is in the process of finalizing the amended rules based on the comments received.

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 (7).

In the case of the automotive pollutants (carbon monoxide (CO), oxides of nitrogen (NOx), and photochemical oxidants (Ox), there are only primary standards. Until 1983, there was also a hydrocarbons standard which was based on the precursor role hydrocarbons play in the formation of photochemical oxidants rather than any unique toxicological effect they had at ambient levels. The hydrocarbons standard was formally eliminated in January, 1983 (8).

The U.S. Environmental Protection Agency (EPA) is mandated by Congress to periodically review and re-evaluate the federal standards in light of new research findings (9). The last review resulted in the relaxation of the oxidant standard from 160 to 140 micrograms/cubic meter (ug/m³) (10). The on-going review has resulted in suggestions that the carbon monoxide (CO) and sulfur dioxide (SO₂) standards be made more stringent, but final action has not been taken yet.

Finally, the State of Hawaii also has fugitive dust regulations for particulate matter (PM) emanating from construction activities (11). There can be no visible emissions, and the maximum downwind level of PM cannot be more than 150 ug/m³ above upwind levels as measured with a Hi-Volume sampler for a 12-hour period. As noted above, the State has recently proposed amendments to its air pollution control rules. One of these amendments would delete the 150 ug/m³ standard but retain the "no visible emissions" requirement. Whether or not the proposed changes are promulgated will depend on the results of a public hearing process which was completed June 8, 1984.

4. EXISTING AIR QUALITY

4.1 General. The State Department of Health maintains a network of air monitoring stations around the state to gather data on the following regulated pollutants:

- o total suspended particulates (TSP)
- o sulfur dioxide (SO₂)
- o carbon monoxide (CO)
- o ozone (O₃)
- o lead (Pb)

The nearest monitoring site to Kaka'ako is the Department's own building located about 0.25 mile northwest of the mauka boundary of the district. Another nearby monitoring station is located on Sand Island, about 1.0 mile west of the project area.

In the case of TSP and SO₂, measurements are made on a 24-hour basis to correspond with the averaging period specified in the standards. Samples are collected once every six days in accordance with U.S. Environmental Protection Agency (EPA) guidelines. Carbon monoxide and

ozone, however, are measured on a continuous basis due to their short-term (1-hour) standards. Lead concentrations are determined from the TSP samples which are sent to an EPA laboratory for analysis. Note that the lead standard is a quarterly average.

4.2 Department of Health Site. Recent (1983) data on total suspended particulates and sulfur dioxide levels at the Department of Health are presented in Table 2. Comparison with the State and federal standards suggests that those standards are currently being met.

Carbon monoxide monitoring at the Department of Health building was discontinued in 1979 when the monitor was moved to a residential area in Kaimuki; however, after several years of measuring very low CO levels at that site, the instrument was returned to the DOH building in 1983. The pre-1980 monitoring results indicated occasional violations of the State's 1-hour and 8-hour standards. Examination of meteorological data indicates that these occur most frequently during the winter months when "Kona" weather characterized by lower velocity, southerly winds occur more frequently. Federal standards appear to be met at all times. The most recent CO monitoring data (Table 3) indicate essentially the same findings, i.e., occasional violations of State standards but not federal.

4.3 Sand Island Site. The Department of Health also maintains a continuous monitor for photochemical oxidants on Sand Island. Photochemical oxidants (measured as ozone) are secondary pollutants formed in the atmosphere largely as a result of anthropogenic emissions of hydrocarbons and oxides of nitrogen.

The most recent monitoring data from that station are summarized in Table 4. The results indicate that the State's 1-hour standard is met over 99% of the time. During 1983, it was exceeded only one time.

4.4 Lead Sampling. The State also has been having particulate samples analyzed for lead content, and Table 5 summarizes ambient lead levels in recent years. Generally, airborne lead levels have declined as expected due to the federal program for gradual phaseout of leaded gasoline. Particulate lead accumulated over the years in roadside soils and plants, however, will remain indefinitely in the area and provide inhalation exposure whenever dust is re-entrained in the air as a result of scouring winds or mechanical disturbance due to vehicular motion.

5. CLIMATE & METEOROLOGY

5.1 Temperature & Rainfall. The National Climatic Data Center in its 1982 annual summary for Honolulu notes that:

"Hawaii's equable temperatures are associated with the small seasonal variation in the amount of energy received from the sun and the tempering effect of the surrounding ocean. The range of temperature averages only 7 degrees between the warmest months (August and September) and the coolest months (January and February) and about 12 degrees between day and night. Daily maximums run from the high 70's in winter to the mid-80's in summer, and daily minimums from the mid-60's to the low 70's. However, the Honolulu Airport area has recorded as high as 93 degrees and as low as 53" (12).

Rainfall in the airport area averages about 23 inches per year with monthly averages ranging from 4.53 inches in January to 0.44 inch in June. In accordance with Thornwaite's scheme for climatic classification, the area is considered sub-humid (13).

5.2 Surface Winds. Meteorological records were reviewed from the Honolulu International Airport and Hickam Air Force Base (AFB). It is quite evident that northeast tradewinds predominate during much of the year. A closer examination of the data, however, reveals seasonal differences both in direction and velocity. Figures 1 and 2 depict directional wind roses for the months of January and August and clearly show the predominance of northeast tradewinds during the summer in contrast to the more variable nature of the winter months.

The winter months also are characterized by generally lower wind velocities as evidenced again by the January-August comparison, this time presented in tabular form (Tables 7 and 8). Light, variable winds are much more prevalent during January than in August, and not surprisingly, it is during the winter months that most of the high carbon monoxide levels are recorded by the Department of Health.

Of particular interest from an air pollution standpoint were the stability wind roses prepared for the period January 1955 to December 1968 at 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. It is under such conditions that the greatest potential for air pollutant buildup exists.

5.3 Study Conditions.

5.3.1 Wind Speed and Direction. For the purposes of this study, a "worst case" wind speed of 1 meter per second (m/sec) was assumed. Based on the previous work (3), an "average" or "typical" wind speed of 2.9 m/sec was used as input for the modeling. Selected wind directions were also the same as the previous study with the exception that northeast winds were included along with northwest and north winds to achieve a more complete analysis of the light wind conditions.

5.3.2 Stability Class and Mixing Height. Stability class is a measure of the degree of turbulence in the atmosphere which affects dispersion of pollutants. The commonly employed Pasquill-Gifford stability classes (15) A thru F (or 1 - 6) representing very unstable through very stable conditions were used in this work. In order to estimate maximum concentrations, it was desirable to perform the analyses under the most stable possible conditions; therefore, a neutral stability (Class D or 4) was assumed in each case. It was considered to be the most stable condition possible in light of the generally urban nature of the project area and its surface roughness, i.e. number of manmade structures. This is consistent with guidance found in a number of EPA publications (16,17).

Mixing height is by definition the height above the earth's surface to which relatively vigorous vertical mixing occurs. The height to which pollutants get mixed affects their ultimate concentration in the air; thus, the mixing height is of interest. As in the previous study (3), mixing height data were taken from the Hickam AFB report (14). A 493 meter height was assumed for "worst" case conditions (1 m/sec wind speed), and 834 meters for the "average" case.

5.3.3 Temperature. As noted above, there is relatively little diurnal or seasonal temperature variation in Hawaii. Since the models employed in this analysis are relatively insensitive to the range of temperatures found in the project area, an ambient temperature of 75 degrees Fahrenheit was assumed throughout.

6. LONG TERM IMPACT ANALYSIS

6.1 Emission Factors. Automotive emission factors for carbon monoxide, oxides of nitrogen, and nonmethane hydrocarbons were generated for calendar years 1984 and 2000 using the Mobile Source Emissions Model (MOBILE-2)(18). To localize the emission factors as much as possible the age distribution for registered vehicles in the City & County of Honolulu (19) was input in lieu of national statistics. Lead emission factors were derived from other EPA guidelines (20). Emission factors for particulates and sulfur oxides were obtained from two other EPA publications (21, 22). The emission factors expressed in terms of grams per mile (g/mi) are presented in Table 8.

6.2 Mobile Source Activity. Motor vehicle activity data, i.e., average daily traffic (ADT), peak-hour volumes, and speeds were provided by the traffic consultants, Austin Tsutsumi and Associates, Inc. (23). Two types of mix data were incorporated in this study. One was based on the registered vehicle age distribution previously cited (19), and a summary of that mix is found in Table 9. The other is a vehicle-miles-traveled (VMT) distribution generated by the MOBILE-2 program, and it is presented in Table 10. MOBILE-2 accounts for an anticipated increase in the number of diesel vehicles; thus, the chief difference between the 1984 and 2000 VMT mixes is in light duty gasoline vehicles and light duty diesel vehicles.

Traffic data and air quality analyses were based on the 50 roadway segments depicted in Figure 3. As in the previous study, it was concluded that the afternoon peak hour ending at 5:00 p.m. would represent the "worst" case in terms of traffic volume; thus, the short-term ambient analyses focused on that hour. The maximum 8-hour volume was assumed to occur between 10:00 a.m. and 5:00 p.m. In addition, seven parking garage sources were included in the year 2000 analysis. Garage use rate factors were based on an unpublished study of the use rate of the existing Bethel Street garage in downtown Honolulu (24).

6.3 Mesoscale Analyses

6.3.1 Burden Analysis. A mesoscale or regional impact analysis based on annual emissions was performed as one technique in evaluating the impact of the proposed project. Using the aforementioned emission factors and source activity data, it was possible to estimate and compare present and future annual

emissions of the principal pollutants associated with the project. The method simply involves multiplying the average daily traffic of each roadway segment times the length of that segment times the speed and mix dependent emission factor for the segment and then summing them. The results of this analysis are presented in Table 11, and can be compared with the 1980 emissions inventory for the City & County of Honolulu found in Table 12.

6.3.2 Ambient Air Quality Analysis. Due to the present state-of-the-art in air quality modeling, analyses such as this are generally limited to estimating concentrations of non-reactive pollutants. For projects involving mobile sources as the principal air pollution source, carbon monoxide is normally selected for modeling because it has a relatively long half-life in the atmosphere (ca. 1 month) (25), and it comprises the largest fraction of automotive emissions.

Because of the number of roadway segments to be considered (50) as well as area-type sources (parking garages) to be included in the year 2000, the decision was made to use the EPA computer model PAL (17) to estimate carbon monoxide concentrations in the project area. PAL is an acronym standing for Point-Area-Line sources reflecting the model's capability of handling the three types of air pollution source configurations.

As described in previous sections, six meteorological scenarios were considered, involving three wind directions and two wind speeds in order to assess "worst case" and "average" conditions. In terms of traffic, the p.m. peak-hour (4:00 - 5:00 p.m.) volumes as provided by the traffic consultant were used. Since the traffic speeds provided were intended to represent "freeflow" conditions, they were reduced by 5 mph in an effort to account for the stop-and-go conditions which prevail on most of the streets in Kaka'ako during the afternoon peak hour. Emission factors were thus computed for speeds ranging from 15 to 30 mph. In the case of the garages, emission factors were based on a speed of 5 mph, again to account for the stop-and-go nature of movement within the parking structure. Emission rates for the garages were computed based on an EPA methodology described in Reference 16.

Receptor locations at which carbon monoxide concentrations were computed were distributed throughout the project area (Figure 3). They were generally placed in the middle of blocks and were not intended to show the high concentrations which invariably occur in close proximity to busy intersections. They were intended to give an indication of the general air quality occurring throughout the area during the p.m. peak hour. A few of the 25 receptors were located fairly close to heavily used streets, i.e., King Street, Kapiolani Boulevard, and Ala Moana Boulevard. Some were intentionally placed downwind of the parking garages.

Eight-hour carbon monoxide estimates were derived by simply multiplying the 1-hour concentrations by a factor of 0.6. This so-called "persistence" factor was recommended in an EPA publication on indirect source analysis (26). In order to check its validity, an analysis of local carbon monoxide monitoring data was conducted. The 1-hour and 8-hour CO data for January and August, 1983 were procured from the State Department of Health and, "persistence" factors were calculated for each month. The January value turned out to be 0.59, while for August it was 0.67. The average of the two was 0.63 thus indicating quite good agreement with the EPA factor. For "worst" case analysis, the January value seems more appropriate since January is normally the "worst case" month. Furthermore, the difference between the highest hour and the 8-hour average can be very little during August when the windier conditions tend to average out carbon monoxide levels throughout the day.

Concentration estimates were computed for both existing conditions and projected conditions in the year 2000. The results of the modeling are presented in Tables 13 through 18.

6.3.3 Special Intersection Analysis. A special analysis of the Ward Avenue - Ala Moana Boulevard intersection was performed because intersections are commonly found to be "hot spots" of CO pollution, and the traffic study indicated that the capacity of this intersection would be exceeded by the year 2000. The PAL model was again used in conjunction with an EPA analytical method (16) to account for queueing in addition to free-flow traffic at the intersection. The receptor array is depicted in Figure 4, and the results are presented in Table 19.

7. DISCUSSION AND CONCLUSIONS

7.1 Burden Analysis. Since higher density development of the Kaka'ako area will inevitably lead to higher traffic volumes on the streets serving the area, one would expect the quantity of pollutants associated with such traffic to also increase. The results in Table 10, however, generally indicate just the opposite with rather substantial declines in the four major automotive pollutants, i.e., carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx), and lead (Pb). Only sulfur oxides and particulates showed increases although their absolute magnitudes are relatively small as compared to CO, HC, and NOx.

The reason for these apparent declines despite the projected increase in traffic volumes can be seen in the emission factors in Table 8. The federal motor vehicle emission control program which requires lower emissions on new cars results in the eventual attrition of older, higher-polluting cars and an increase in the percentage of newer, lower-polluting cars. Thus, in the long-term emissions are projected to decline, at least until increasing traffic volumes overcome the effect of decreasing emissions. In this particular case, the projected rate of increase in traffic does not exceed the rate of decrease in emissions; thus the net result is an apparent decline in emissions rather than an increase. It might also be noted that without the project, emissions in the area would be even lower due to the federal control program.

Of course, this is all theoretical, and in actual fact due to outside factors such as tampering and removal of emissions control devices, emission rates are not declining quite as fast as projected. EPA has an ongoing testing program for in-use vehicles and periodically revises models such as MOBILE-2 to reflect the reality. In addition, over the 14 years since the Clean Air Amendments of 1970 were enacted, several delays have been experienced in the imposition of the statutory standards on newly manufactured vehicles. This also has the effect of slowing the rate at which emissions decline. Any further delays would result in this analysis being an underestimation of impacts.

The lead emissions showed the sharpest decline due to the federal lead phaseout program. This program has proceeded smoothly and effectively in reducing the production and use of leaded gasoline. Evidence of this may be seen in the ambient lead data reported in Table 5. Thus, we can assume that lead emissions will continue to decline in Honolulu.

Only the sulfur oxides and particulates showed an apparent increase between 1984 and 2000. The reason for this may be found in Table 10. The MOBILE-2 model projects an increase in the vehicle miles traveled by light duty diesel vehicles, and diesel engines are higher SOx and particulate emitters than gasoline engines. They are also higher NOx emitters which partially accounts for the smaller decline in NOx emissions as compared to CO and HC.

7.2 Ambient Air Quality Analysis. The 1-hour carbon monoxide levels depicted in Tables 13 - 15 were rather variable and did not reflect the same decline indicated in the burden analysis. Generally, it was the presence of the active parking garages that appeared to cause the concentrations at certain receptors to rise between 1984 and 2000. If one looks carefully at the results in Tables 13 - 15 and compares them with the wind direction and locations of garages and receptors, it becomes evident that when a receptor is downwind of a garage, that is when the CO concentration is maximized.

The highest concentrations did exceed the State's 1-hour CO standard, generally under the "worst case" scenario with low wind speed; however, some receptors indicated violations even under "average" wind conditions. The apparent violations occurred in both 1984 and 2000 under all three wind directions with the highest values occurring during northerly winds. No exceedance of the federal standard was revealed although the highest value of 37.7 milligrams/cubic meter was close to that 40 mg/m³ standard.

The 8-hour analysis revealed similar results indicating violations of the State's 8-hour standard at receptors within close proximity to parking garages. Again, high values occurred under all three wind directions, primarily in the "worst case" scenario.

With the exception of the highest values, the remainder of the concentrations are very similar to levels currently being measured by the Department of Health at its downtown and Waikiki monitoring sites. Thus, it appears that despite a rather substantial projected increase in traffic volumes in the area, ambient carbon monoxide levels may remain approximately the same with occasional violations of the State's standards. Since these standards are substantially more stringent than the federal standards which are intended to protect public health, one might conclude that occasional violations will not cause an imminent health hazard.

The Ward-Ala Moana intersection analysis showed similar results with potential violations of state standards, but apparent compliance with federal standards. Under worst case meteorological conditions, the 8-hour concentrations at 10 meters from the intersection were close to the federal standard.

7.3 Conclusions and Mitigating Measures. Based on the foregoing analysis, the following conclusions and suggestions for mitigating measures may be made:

- o The redevelopment of Kaka'ako will result in additional traffic which in turn will result in greater emissions of automotive pollutants than would have occurred without the project in the year 2000.
- o Between 1984 and 2000, however, there will be a net decrease in carbon monoxide, hydrocarbons, nitrogen oxides, and lead due to the federal motor vehicle emission control program.
- o There will be relatively small (on a ton/year basis) increases in automotive particulates and sulfur oxides emissions due to a projected increase in the percentage of light duty diesel vehicles in operation.
- o Ambient levels of carbon monoxide will continue to show occasional violations of 1-hour and 8-hour state standards, particularly in the vicinity of the most heavily used streets and intersections.
- o High CO levels in the vicinity of very active parking garages or in close proximity to busy intersections may approach federal standards under "worst case" meteorological conditions although this is expected to be a very infrequent event due to the infrequent joint occurrence of peak-hour traffic and "worst case meteorology.
- o Since high CO levels are often associated with stop-and-go traffic, they can be mitigated to some extent by traffic engineering solutions.
- o Encouragement of greater use of public transit in congested urban areas can contribute significantly to reducing CO levels in those areas.
- o High parking charges can also reduce the volume at an over-utilized parking garage and thereby reduce nearby CO levels.
- o Substitution of public transportation facilities in place of facilities which serve privately owned vehicles in congested urban areas can contribute to lower CO levels.

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TABLE 1
SUMMARY OF STATE OF HAWAII AND FEDERAL
AMBIENT AIR QUALITY STANDARDS

POLLUTANT	SAMPLING PERIOD	FEDERAL STANDARDS		STATE STANDARDS
		PRIMARY	SECONDARY	
1. Total Suspended Particulate Matter (TSP)	Annual Geometric Mean	75	60	--
(micrograms per cubic meter)	Annual Arithmetic Mean	--	--	55
	Maximum Average in Any 24 Hours	260	150	100
2. Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	80	--	20
(micrograms per cubic meter)	Maximum Average in Any 24 Hours	365	--	80
	Maximum Average			
3. Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	100		70
(micrograms per cubic meter)				
4. Carbon Monoxide (CO)	Maximum Average in Any 8 Hours	10		5
(milligrams per cubic meter)	Maximum Average in Any 1 Hour	40		10
5. Photochemical Oxidants (as O ₃)	Maximum Average in Any 1 Hour	240		100
(micrograms per cubic meter)				
6. Lead (Pb)	Maximum Average in Any Calendar Quarter	1.5		1.5
(micrograms per cubic meter)				

SOURCES: State of Hawaii, Title 11, Chapter 59, Air Quality Standards
Title 40, Code of Federal Regulations, Part 50

TABLE 2

TOTAL SUSPENDED PARTICULATES
AND SULFUR DIOXIDE MONITORING DATA
DEPARTMENT OF HEALTH
1983

24-Hour Concentrations (ug/m3)						
Month	Sulfur Dioxide			Total Suspended Particulates		
	Samples	Range	Mean	Samples	Range	Mean
Jan 83	4	<5 - 16	<5	3	20 - 49	33
Feb 83	3	<5 - <5	<5	3	32 - 58	42
Mar 83	4	<5 - <5	<5	5	21 - 53	33
Apr 83	5	<5 - <5	<5	5	15 - 45	28
May 83	5	<5 - <5	<5	5	14 - 29	24
Jun 83	5	<5 - <5	<5	5	19 - 29	24
Jul 83	5	<5 - <5	<5	5	16 - 22	18
Aug 83	5	<5 - <5	<5	5	16 - 23	20
Sep 83	5	<5 - <5	<5	5	15 - 24	20
Oct 83	5	<5 - <5	<5	5	21 - 30	24
Nov 83	5	<5 - <5	<5	5	16 - 27	23
Dec 83	5	<5 - <5	<5	5	16 - 42	32
Annual	56	<5 - 16	<5	56	14 - 58	27

SOURCE: Department of Health

TABLE 3

CARBON MONOXIDE MONITORING DATA
DEPARTMENT OF HEALTH
1983-84Carbon Monoxide
Concentrations (mg/m³)

MONTH	No. of Samples	1-Hr Min	1-Hr Max	8-Hr Max	Mean
Jul 83	455	0.0	3.7	1.5	0.3
Aug 83	679	0.0	4.9	2.4	0.4
Sep 83	641	0.0	4.8	2.4	0.8
Oct 83	667	0.0	5.2	1.6	0.5
Nov 83	666	0.0	7.5	3.0	0.9
Dec 83	700	0.0	8.5	3.1	1.2
Jan 84	687	0.0	10.9	4.8	1.0
Feb 84	612	0.2	7.9	3.0	0.9
Mar 84	704	0.0	11.0	3.7	0.8
9 Mos:	5,811	0.0	11.0	4.8	0.8

SOURCE: Department of Health

TABLE 4

AIR MONITORING DATA
SAND ISLAND
1983Photochemical Oxidants
1-Hour Concentrations (ug/m3)

Month	No. of Samples	Min	Max	Mean
Jan	700	0	123	24
Feb	509	0	92	23
Mar	701	0	92	32
Apr	629	0	88	41
May	703	0	78	35
Jun	681	0	61	23
Jul	704	0	47	14
Aug	705	0	55	15
Sep	687	0	47	18
Oct	672	0	71	24
Nov	683	0	74	19
Dec	663	0	96	22
Annual	8,037	0	123	23

SOURCE: Department of Health

TABLE 5

LEAD MONITORING DATA
HONOLULU, OAHU
1970-82

AVERAGE CONCENTRATION (micrograms/cubic meter)					
YEAR	1st QUARTER	2nd QUARTER	3rd QUARTER	4th QUARTER	ANNUAL MEAN
1970	0.78	0.81	0.65	0.92	0.79
1971	1.65	0.63	0.65	1.05	1.00
1972	--	0.75	0.65	0.48	--
1973	0.52	0.52	0.72	0.55	0.58
1974	0.84	0.61	0.70	0.92	0.77
1975	0.65	0.81	0.59	1.05	0.78
1976	0.91	0.65	0.99	1.00	0.89
1977	0.89	0.59	0.48	0.80	0.71
1978	--	--	--	0.72	--
1979	0.39	0.25	0.26	0.42	0.33
1980	0.41	0.23	0.21	0.20	0.26
1981	0.25	--	--	--	--
1982	0.21	0.16	0.09	0.21	0.17

Source: State of Hawaii
Department of Health

TABLE 6

HONOLULU INTERNATIONAL AIRPORT

JANUARY WIND ROSE

Period of Record: 1940-1967

Wind Direction	WIND SPEED (knots)						
	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33
N	2.4	2.8	1.8	0.5	0.1	0.0	0.0
NNE	1.4	1.8	1.0	0.5	0.1	0.0	0.0
NE	1.8	2.6	3.4	2.9	0.7	0.2	0.0
ENE	0.8	2.5	5.1	5.1	1.7	0.4	0.0
E	0.7	1.2	2.8	2.5	1.0	0.3	0.0
ESE	0.3	0.5	0.8	0.4	0.1	0.0	0.0
SE	0.4	0.8	1.6	1.2	0.2	0.1	0.0
SSE	0.3	0.8	1.6	1.1	0.4	0.3	0.0
S	0.5	1.3	2.6	1.6	0.5	0.2	0.1
SSW	0.2	0.5	1.3	1.0	0.2	0.1	0.0
SW	0.4	0.6	1.6	1.1	0.4	0.1	0.0
WSW	0.1	0.2	0.5	0.8	0.3	0.0	0.0
W	0.4	0.4	0.6	0.4	0.2	0.0	0.0
WNW	0.4	0.6	0.3	0.1	0.0	0.0	0.0
NW	3.0	3.1	1.4	0.3	0.1	0.0	0.0
NNW	1.5	2.5	1.1	0.4	0.1	0.0	0.0
	====	====	====	====	====	====	====
	14.6	22.2	27.5	19.9	6.1	1.7	0.1
Total:							92.0
%Calms:							8.0

TABLE 7

HONOLULU INTERNATIONAL AIRPORT

AUGUST WIND ROSE

Period of Record: 1939-48, 1950-68

Wind Direction	WIND SPEED (knots)						
	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33
N	1.2	1.4	0.5	0.0	0.0	0.0	0.0
NNE	0.5	1.0	0.5	0.2	0.0	0.0	0.0
NE	0.8	3.9	11.5	8.2	1.3	0.1	0.0
ENE	0.8	5.1	15.7	14.1	1.9	0.2	0.0
E	0.8	2.9	9.5	6.0	1.1	0.2	0.0
ESE	0.3	0.3	0.8	0.2	0.1	0.0	0.0
SE	0.3	0.4	0.3	0.1	0.2	0.0	0.0
SSE	0.2	0.0	0.0	0.1	0.0	0.0	0.0
S	0.1	0.1	0.1	0.0	0.0	0.0	0.1
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.1	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.1	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.2	0.1	0.0	0.0	0.0	0.0	0.0
NW	1.2	1.0	0.1	0.0	0.0	0.0	0.0
NNW	0.6	0.4	0.1	0.0	0.0	0.0	0.0
	====	====	====	====	====	====	====
	7.0	16.6	39.2	28.9	4.6	0.6	0.1

Total: 96.9

%Calms: 3.1

TABLE 8

MOBILE-2 EMISSION FACTORS

Year: 1984

Emission Factors (grams/mile)						
Pollutant/Speed	5 mph	10 mph	15 mph	20 mph	25 mph	30 mph
Carbon Monoxide	158.78	84.02	58.78	46.99	37.60	30.98
Hydrocarbons	11.75	6.77	5.00	4.16	3.50	3.03
Nitrogen Oxides	3.54	3.32	3.32	3.43	3.60	3.77
Sulfur Oxides	--	--	--	0.23	--	--
Particulates	--	--	--	0.36	--	--
Lead	--	--	--	0.25	--	--

Year: 2000

Carbon Monoxide	62.41	34.04	25.24	21.02	17.11	14.00
Hydrocarbons	3.82	2.24	1.66	1.36	1.12	0.93
Nitrogen Oxides	1.98	1.86	1.89	1.99	2.13	2.25
Sulfur Oxides	--	--	--	0.29	--	--
Particulates	--	--	--	0.37	--	--
Lead	--	--	--	0.06	--	--

TABLE 9

VEHICLE MIX BASED ON REGISTRATIONS
CITY & COUNTY OF HONOLULU
AUGUST, 1983

<u>Vehicle Type</u>	<u>Registered Vehicles</u>	<u>Percentage</u>
Light duty gasoline vehicles (LDGV)	437,091	91.88
Light duty diesel vehicles (LDDV)	2,142	0.45
Light duty gasoline trucks (LDGT1) (under 6000 lbs)	19,825	4.17
Light duty gasoline trucks (LDGT2) (6000 - 8500 lbs)	1,873	0.39
Light duty diesel trucks (LDDT)	337	0.07
Heavy duty gasoline vehicles (HDGV) (over 8500 lbs)	4,591	0.96
Heavy duty diesel vehicles (HDDV)	2,034	0.43
Motorcycles (MC)	7,811	1.64
	=====	=====
	475,704	100.00

TABLE 10

VEHICLE MILES TRAVELED (VMT)
MIX BY VEHICLE TYPE
1984 & 2000

Vehicle Type	1984 Mix (%)	2000 Mix (%)
Light duty gasoline vehicles (LDGV)	78.4	65.3
Light duty diesel vehicles (LDDV)	2.4	15.4
Light duty gasoline trucks (LDGT1) (under 6000 lbs)	8.1	6.7
Light duty gasoline trucks (LDGT2) (6000 - 8500 lbs)	3.1	3.1
Light duty diesel trucks (LDDT)	0.3	1.8
Heavy duty gasoline vehicles (HDGV) (over 8500 lbs)	3.8	3.8
Heavy duty diesel vehicles (HDDV)	2.9	2.9
Motorcycles (MC)	1.0 =====	1.0 =====
	100.0%	100.0%

TABLE 11

ESTIMATED ANNUAL EMISSIONS
1984 & 2000

Pollutant	Annual Emissions (tons/year)		Percent Change
	1984	2000	
Carbon Monoxide	2964	2493	-15.9
Hydrocarbons	283	162	-42.9
Nitrogen Oxides	317	259	-18.2
Sulfur Oxides	20	36	+76.5
Particulates	32	46	+45.4
Lead	21	7	-67.6

TABLE 12

1980 EMISSIONS INVENTORY
CITY & COUNTY OF HONOLULU

SOURCE CATEGORY	EMISSIONS (Tons/Year)				
	TSP	SOx	NOx	CO	HC
Steam Electric Power Plants	2092.0	36736.5	12454.9	1065.5	184.5
Gas Utilities	14.1	0.0	199.0	0.0	0.0
Fuel Combustion in Agricultural Industry	1088.4	579.3	358.1	0.0	30.8
Refinery Industry	621.9	7096.3	2148.8	266.4	2583.7
Petroleum Storage	0.0	0.0	0.0	0.0	1261.1
Metallurgical Industries	28.3	96.5	39.8	0.0	0.0
Mineral Products Industry	6883.7	1882.7	596.9	0.0	30.8
Municipal Incineration	42.4	144.8	2029.4	0.0	184.5
Motor Vehicles	1413.5	1013.8	17269.7	239197.6	22853.2
Construction, Farm and Industrial Vehicles	183.8	193.1	2506.9	3729.1	338.3
Aircraft	381.6	144.8	1750.8	5593.7	1476.4
Vessels	42.4	386.2	437.7	532.7	123.0
Agricultural Field Burning	1399.4	0.0	0.0	15982.0	1691.7
TOTAL IN TONS PER YEAR:	14,192	48,274	39,792	266,367	30,758

SOURCE: State Department of Health

TABLE 13

1-HOUR CARBON MONOXIDE CONCENTRATIONS
DURING THE P.M. PEAK TRAFFIC HOUR
1984 & 2000

WIND DIRECTION: Northwest

Receptor	Worst Case			Average Case		
	Concentration (mg/m ³)		Percent Change	Concentration (mg/m ³)		Percent Change
	1984	2000		1984	2000	
1	<0.1	<0.1	0.0	<0.1	<0.1	0.0
2	1.0	0.9	-10.0	0.3	0.3	0.0
3	0.7	0.7	0.0	0.2	0.2	0.0
4	1.0	0.8	-20.0	0.3	0.3	0.0
5	0.1	<0.1	-100.0	0.0	<0.1	0.0
6	1.4	1.2	-14.3	0.5	0.4	-20.0
7	0.6	0.7	16.7	0.2	0.2	0.0
8	3.1	2.5	-19.4	1.0	0.9	-10.0
9	3.8	2.9	-23.7	1.3	1.0	-23.1
10	9.3	7.2	-22.6	3.2	2.5	-21.9
11	3.7	2.5	-32.4	1.3	0.8	-38.5
12	5.7	3.8	-33.3	2.0	1.3	-35.0
13	5.9	3.5	-40.7	2.0	1.2	-40.0
14	13.2*	12.2*	-7.6	4.5	4.2	-6.7
15	3.4	13.1*	285.3	1.2	4.5	275.0
16	7.4	8.3	12.2	2.5	2.9	16.0
17	4.9	2.7	-44.9	1.7	0.9	-47.1
18	8.0	12.9*	61.2	2.7	4.4	63.0
19	6.5	15.3*	135.4	2.3	5.3	130.4
20	7.6	1.6	-78.9	2.6	0.5	-80.8
21	2.8	1.6	-42.9	1.0	0.5	-50.0
22	5.1	3.4	-33.3	1.8	1.2	-33.3
23	8.9	14.6*	64.0	3.1	5.0	61.3
24	10.1*	4.5	-55.4	3.5	1.5	-57.1
25	6.6	3.9	-40.9	2.3	1.3	-43.5

- NOTES: 1. "Worst" case means wind speed = 1 m/sec and neutral (D) stability.
2. "Average" case means wind speed = 2.9 m/sec and neutral (D) stability.
3. * denotes concentration exceeds State standard.
 ** denotes concentration exceeds Federal & State standards.

TABLE 14

1-HOUR CARBON MONOXIDE CONCENTRATIONS
DURING THE P.M. PEAK TRAFFIC HOUR
1984 & 2000

WIND DIRECTION: North

Receptor	Worst Case			Average Case		
	Concentration (mg/m ³)		Percent Change	Concentration (mg/m ³)		Percent Change
	1984	2000		1984	2000	
1	<0.1	<0.1	0.0	<0.1	<0.1	0.0
2	1.2	1.1	-8.3	0.4	0.4	0.0
3	2.4	2.0	-16.7	0.8	0.7	-12.5
4	2.2	1.5	-31.8	0.7	0.5	-28.6
5	3.1	8.2	164.5	1.1	2.8	154.5
6	6.0	5.5	-8.3	2.0	1.9	-5.0
7	2.2	34.7*	1477.3	0.7	12.0*	1614.3
8	3.7	2.9	-21.6	1.3	1.0	-23.1
9	4.1	2.8	-31.7	1.4	1.0	-28.6
10	8.3	12.7*	53.0	2.8	4.4	57.1
11	5.8	27.3*	370.7	2.0	9.4	370.0
12	5.1	2.9	-43.1	1.7	1.0	-41.2
13	4.7	2.8	-40.4	1.6	1.0	-37.5
14	1.2	8.1	575.0	4.3	2.8	-34.9
15	3.8	37.7*	892.1	1.3	13.0*	900.0
16	4.0	2.2	-45.0	1.4	0.8	-42.9
17	4.0	2.2	-45.0	1.4	0.7	-50.0
18	7.7	9.2	19.5	2.6	3.2	23.1
19	4.8	2.0	-58.3	1.7	0.7	-58.8
20	5.2	0.7	-86.5	1.8	0.2	-88.9
21	1.1	0.8	-27.3	4.0	0.3	-92.5
22	4.4	2.9	-34.1	1.5	1.0	-33.3
23	3.3	2.0	-39.4	1.1	0.7	-36.4
24	0.7	0.4	-42.9	2.4	0.1	-95.8
25	<0.1	<0.1	0.0	<0.1	<0.1	0.0

- NOTES: 1. "Worst" case means wind speed = 1 m/sec and neutral (D) stability.
2. "Average" case means wind speed = 2.9 m/sec and neutral (D) stability.
3. * denotes concentration exceeds State standard.
 ** denotes concentration exceeds Federal & State standards.

TABLE 15

1-HOUR CARBON MONOXIDE CONCENTRATIONS
DURING THE P.M. PEAK TRAFFIC HOUR
1984 & 2000

WIND DIRECTION: Northeast

Receptor	Worst Case			Average Case		
	Concentration (mg/m ³)		Percent Change	Concentration (mg/m ³)		Percent Change
	1984	2000		1984	2000	
1	4.3	9.2	114.0	1.5	3.2	113.3
2	2.3	1.8	-21.7	0.8	0.6	-25.0
3	2.8	2.1	-25.0	1.0	0.7	-30.0
4	3.0	2.0	-33.3	1.0	0.7	-30.0
5	5.4	4.7	-13.0	1.9	1.6	-15.8
6	6.5	6.3	-3.1	2.2	2.2	0.0
7	2.6	10.0	284.6	0.9	3.5	288.9
8	3.4	23.9*	602.9	1.2	8.3	591.7
9	4.2	2.6	-38.1	1.5	0.9	-40.0
10	12.0*	10.2*	-15.0	4.3	3.5	-17.9
11	7.1	4.0	-43.7	2.4	1.4	-41.7
12	6.8	4.3	-36.8	2.4	1.5	-37.5
13	6.3	3.7	-41.3	2.2	1.3	-40.9
14	1.2	7.3	508.3	4.2	2.5	-40.5
15	2.6	1.6	-38.5	0.9	0.6	-33.3
16	4.7	2.7	-42.6	1.6	0.9	-43.8
17	4.9	2.7	-44.9	1.7	0.9	-47.1
18	1.8	1.3	-27.8	0.6	0.4	-33.3
19	6.6	4.8	-27.3	2.3	1.7	-26.1
20	7.6	1.8	-76.3	2.6	0.6	-76.9
21	3.0	1.7	-42.3	1.0	0.6	-40.0
22	5.6	3.7	-33.9	1.9	1.3	-31.6
23	<0.1	<0.1	0.0	<0.1	<0.1	0.0
24	<0.1	<0.1	0.0	<0.1	<0.1	0.0
25	<0.1	<0.1	0.0	<0.1	<0.1	0.0

- NOTES: 1. "Worst" case means wind speed = 1 m/sec and neutral (D) stability.
2. "Average" case means wind speed = 2.9 m/sec and neutral (D) stability.
3. * denotes concentration exceeds State standard.
 ** denotes concentration exceeds Federal & State standards.

TABLE 16

8-HOUR CARBON MONOXIDE CONCENTRATIONS
1984 & 2000

WIND DIRECTION: Northwest

Receptor	Worst Case			Average Case		
	Concentration (mg/m ³)		Percent Change	Concentration (mg/m ³)		Percent Change
	1984	2000		1984	2000	
1	<0.1	<0.1	0.0	<0.1	<0.1	0.0
2	0.6	0.5	-10.0	0.2	0.2	0.0
3	0.4	0.4	<0.1	0.1	0.1	0.0
4	0.6	0.5	-20.0	0.2	0.2	0.0
5	0.1	0.0	-100.0	<0.1	<0.1	0.0
6	0.8	0.7	-14.3	0.3	0.2	-20.0
7	0.4	0.4	16.7	0.1	0.1	0.0
8	1.9	1.5	-19.4	0.6	0.5	-10.0
9	2.3	1.7	-23.7	0.8	0.6	-23.1
10	5.6	4.3	-22.6	1.9	1.5	-21.9
11	2.2	1.5	-32.4	0.8	0.5	-38.5
12	3.4	2.3	-33.3	1.2	0.8	-35.0
13	3.5	2.1	-40.7	1.2	0.7	-40.0
14	7.9	7.3	-7.6	2.7	2.5	-6.7
15	2.0	7.9	285.3	0.7	2.7	275.0
16	4.4	5.0	12.2	1.5	1.7	16.0
17	2.9	1.6	-44.9	1.0	0.5	-47.1
18	4.8	7.7	61.2	1.6	2.6	63.0
19	3.9	9.2	135.4	1.4	3.2	130.4
20	4.6	1.0	-78.9	1.6	0.3	-80.8
21	1.7	1.0	-42.9	0.6	0.3	-50.0
22	3.1	2.0	-33.3	1.1	0.7	-33.3
23	5.3	8.8	64.0	1.9	3.0	61.3
24	6.1	2.7	-55.4	2.1	0.9	-57.1
25	4.0	2.3	-40.9	1.4	0.8	-43.5

- NOTES:
1. A persistence factor of 0.6 was applied to the 1-hour concentrations to derive these 8-hour values. See the text for discussion of the persistence factor.
 2. "Worst" case means wind speed = 1 m/sec and neutral (D) stability.
 3. "Average" case means wind speed = 2.9 m/sec and neutral (D) stability.
 4. * denotes concentration exceeds State standard.
** denotes concentration exceeds Federal & State standards.

TABLE 17

8-HOUR CARBON MONOXIDE CONCENTRATIONS
1984 & 2000

WIND DIRECTION: North

Receptor	Worst Case			Average Case		
	Concentration (mg/m ³)		Percent Change	Concentration (mg/m ³)		Percent Change
	1984	2000		1984	2000	
1	<0.1	<0.1	0.0	<0.1	<0.1	0.0
2	0.7	0.7	-8.3	0.2	0.2	0.0
3	1.4	1.2	-16.7	0.5	0.4	-12.5
4	1.3	0.9	-31.8	0.4	0.3	-28.6
5	1.9	3.2	74.2	0.7	1.7	154.5
6	3.6	3.2	-11.7	1.2	1.1	-5.0
7	1.3	9.2*	595.5	0.4	7.2*	1614.3
8	2.2	1.8	-18.9	0.8	0.6	-23.1
9	2.5	1.7	-31.7	0.8	0.6	-28.6
10	5.0	7.6*	51.8	1.7	2.6	57.1
11	3.5	7.3*	108.6	1.2	5.6*	370.0
12	3.1	1.8	-41.2	1.0	0.6	-41.2
13	2.8	1.7	-40.4	1.0	0.6	-37.5
14	0.7	4.9	575.0	2.6	1.7	-34.9
15	2.3	10.0*	339.5	0.8	7.8*	900.0
16	2.4	1.4	-42.5	0.8	0.5	-42.9
17	2.4	1.3	-45.0	0.8	0.4	-50.0
18	4.6	5.3*	15.6	1.6	1.9	23.1
19	2.9	1.2	-58.3	1.0	0.4	-58.8
20	3.1	0.4	-86.5	1.1	0.1	-88.9
21	0.7	0.5	-27.3	2.4	0.2	-92.5
22	2.6	1.7	-34.1	0.9	0.6	-33.3
23	2.0	1.2	-39.4	0.7	0.4	-36.4
24	0.4	0.2	-42.9	1.4	0.1	-95.8
25	<0.1	<0.1	0.0	<0.1	<0.1	0.0

- NOTES: 1. A persistence factor of 0.6 was applied to the 1-hour concentrations to derive these 8-hour values. See the text for discussion of the persistence factor.
2. "Worst" case means wind speed = 1 m/sec and neutral (D) stability.
3. "Average" case means wind speed = 2.9 m/sec and neutral (D) stability.
4. * denotes concentration exceeds State standard.
 ** denotes concentration exceeds Federal & State standards.

TABLE 18

8-HOUR CARBON MONOXIDE CONCENTRATIONS
1984 & 2000

WIND DIRECTION: Northeast

Receptor	Worst Case			Average Case		
	Concentration (mg/m ³)		Percent Change	Concentration (mg/m ³)		Percent Change
	1984	2000		1984	2000	
1	2.6	5.5*	114.0	0.9	1.9	113.3
2	1.4	1.1	-21.7	0.5	0.4	-25.0
3	1.7	1.3	-25.0	0.6	0.4	-30.0
4	1.8	1.2	-33.3	0.6	0.4	-30.0
5	3.2	2.8	-13.0	1.1	1.0	-15.8
6	3.9	3.8	-3.1	1.3	1.3	0.0
7	1.6	6.0*	284.6	0.5	2.1	288.9
8	2.0	14.3**	602.9	0.7	5.0	591.7
9	2.5	1.6	-38.1	0.9	0.5	-40.0
10	7.2*	6.1*	-15.0	2.6	2.1	-17.9
11	4.3	2.4	-43.7	1.4	0.8	-41.7
12	4.1	2.6	-36.8	1.4	0.9	-37.5
13	3.8	2.2	-41.3	1.3	0.8	-40.9
14	0.7	4.4	508.3	2.5	1.5	-40.5
15	1.6	1.0	-38.5	0.5	0.4	-33.3
16	2.8	1.6	-42.6	1.0	0.5	-43.8
17	2.9	1.6	-44.9	1.0	0.5	-47.1
18	1.1	0.8	-27.8	0.4	0.2	-33.3
19	4.0	2.9	-27.3	1.4	1.0	-26.1
20	4.6	1.1	-76.3	1.6	0.4	-76.9
21	1.8	1.0	-42.3	0.6	0.4	-40.0
22	3.4	2.2	-33.9	1.1	0.8	-31.6
23	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0

- NOTES: 1. A persistence factor of 0.6 was applied to the 1-hour concentrations to derive these 8-hour values. See the text for discussion of the persistence factor.
2. "Worst" case means wind speed = 1 m/sec and neutral (D) stability.
3. "Average" case means wind speed = 2.9 m/sec and neutral (D) stability.
4. * denotes concentration exceeds State standard.
 ** denotes concentration exceeds Federal & State standards.

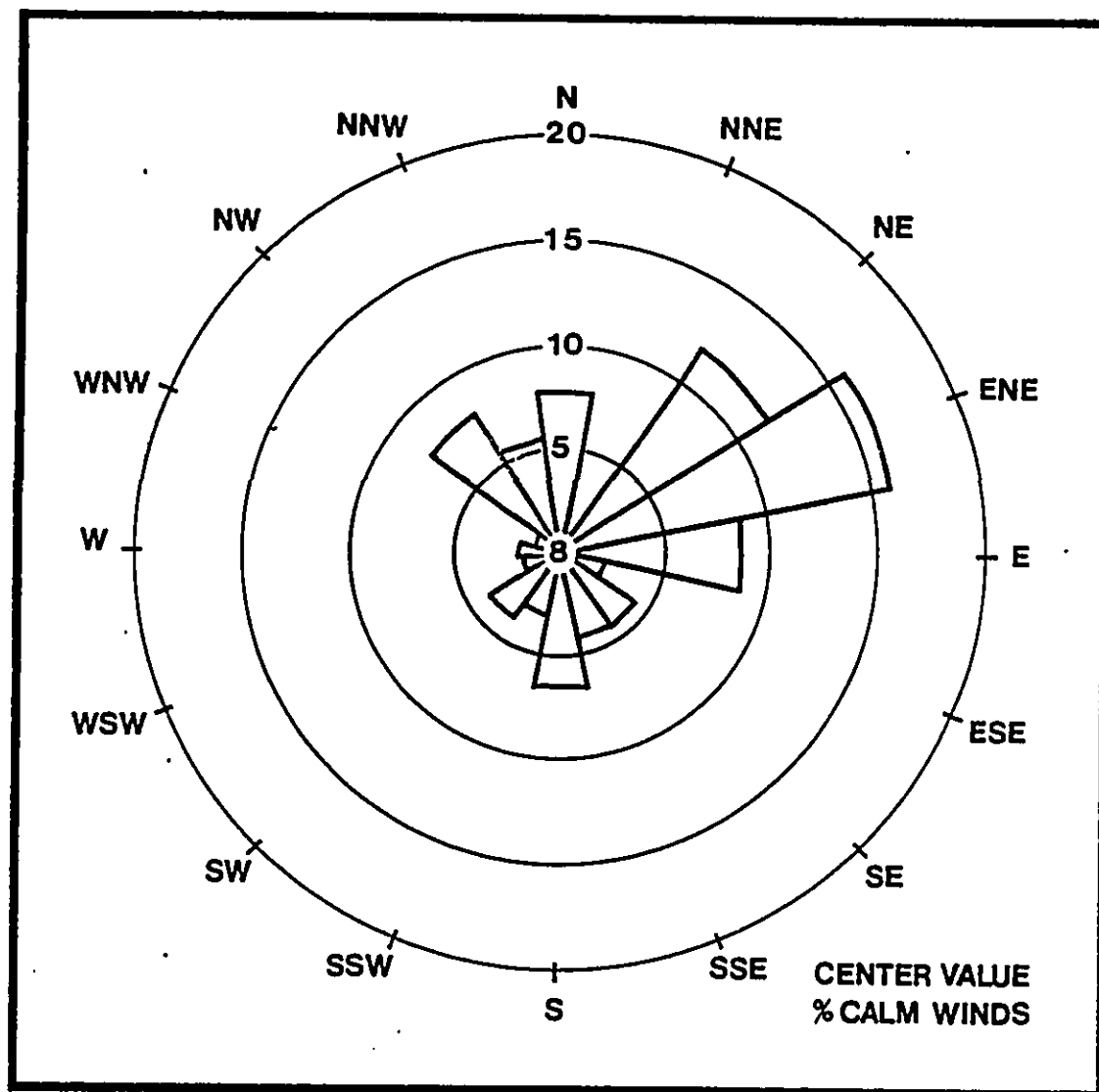
TABLE 19

HIGHEST OF THE SECOND HIGHEST
8-HOUR CARBON MONOXIDE CONCENTRATIONS
WARD AVENUE - ALA MOANA BOULEVARD INTERSECTION
YEAR 2000

Receptor	CO Concentration (mg/m3)
1	9.6 *
2	9.2 *
3	8.8 *
4	7.1 *
5	6.6 *
6	6.1 *
7	5.1 *
8	4.7
9	4.5
10	9.5 *
11	9.8 *
12	10.0 *
13	8.5 *
14	8.4 *
15	8.2 *
16	7.0 *
17	6.7 *
18	6.3 *

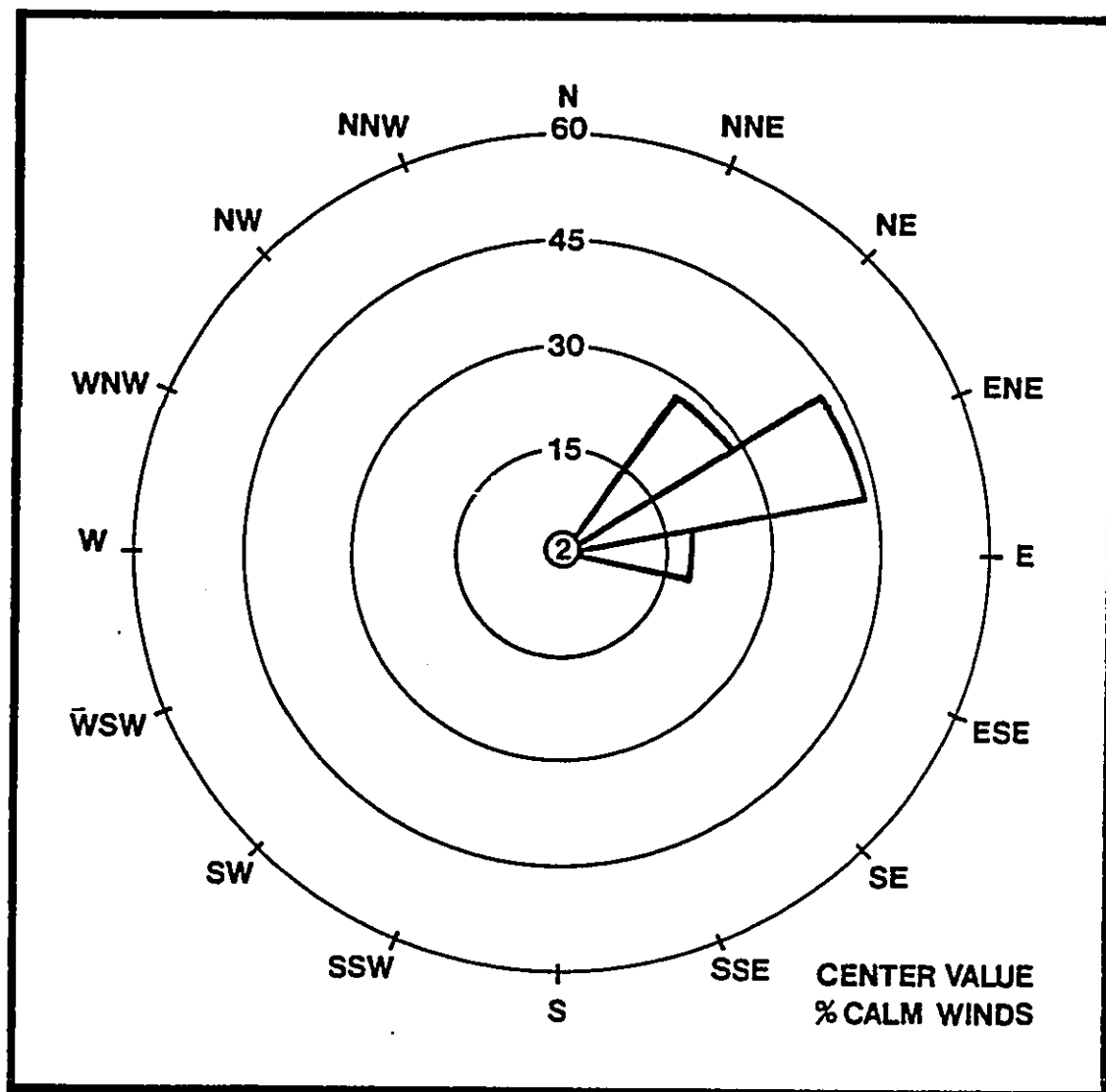
- Notes:
1. Based on 1982 surface weather observations at Honolulu International Airport. 13 Jan 82 (0700-1500) data were used.
 2. Off-peak traffic volumes were assumed to average 77% of the p.m. peak hour.
 3. * = exceeds state 8-hour standard

FIGURE 1
 FREQUENCY DISTRIBUTION OF WIND DIRECTION IN PERCENTAGE
 MONTH OF JANUARY
 HONOLULU INTERNATIONAL AIRPORT



SOURCE: NATIONAL WEATHER SERVICE
 RECORDS [1940-67]

FIGURE 2
 FREQUENCY DISTRIBUTION OF WIND DIRECTION IN PERCENTAGE
 MONTH OF AUGUST
 HONOLULU INTERNATIONAL AIRPORT



SOURCE: NATIONAL WEATHER SERVICE
 RECORDS [1939-48, 1950-68]

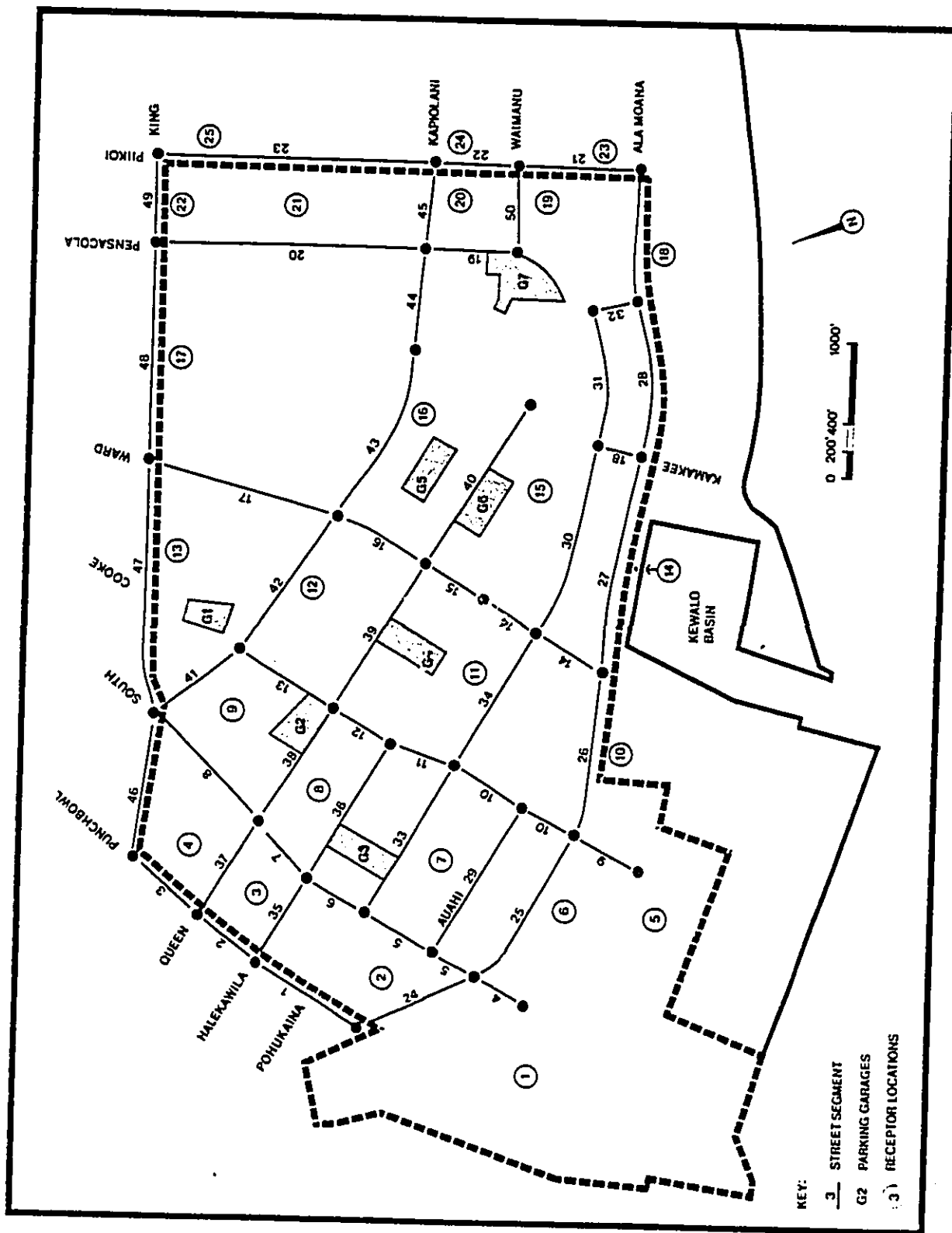
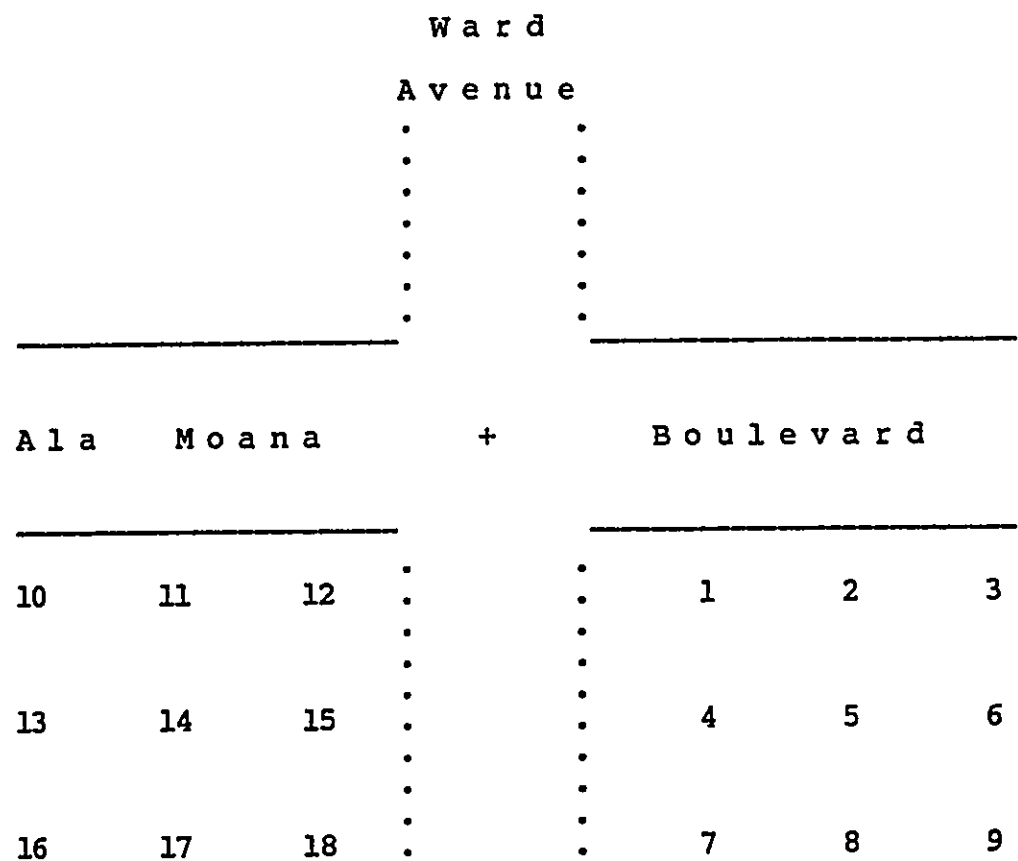


FIGURE 3
AIR QUALITY IMPACT ANALYSIS
STREET, GARAGE AND RECEPTOR LOCATIONS

FIGURE 4
RECEPTOR ARRAY
WARD AVENUE - ALA MOANA BOULEVARD INTERSECTION



Note: Spacing between receptors is 10 meters.