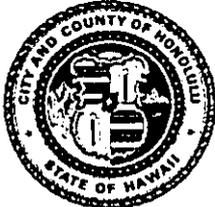


DEPARTMENT OF WASTEWATER MANAGEMENT  
**CITY AND COUNTY OF HONOLULU**  
650 SOUTH KING STREET  
HONOLULU, HAWAII 96813

JEREMY HARRIS  
MAYOR



RECEIVED

'95 SEP 27 A10:36 FELIX B. LIMTIACO  
DIRECTOR

OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL  
CHERYL K. OKUMA-SEPE  
DEPUTY DIRECTOR

WPP 95-470

September 25, 1995

Office of Environmental Quality Control  
220 South King Street, 4th Floor  
Honolulu, Hawaii 96813

Gentlemen:

Subject: Kalaheo Avenue Relief Sewer  
Negative Declaration (EA)

There were no significant comments received during the 30-day public comment period which began on July 8, 1995. The Department of Wastewater Management has determined that the subject project will not have a significant environmental impact and has issued a Negative Declaration. Please publish this notice in the October 8, 1995, OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the Final EA.

Should there be any questions, please contact Cedric Takamoto of the Division of Planning and Service Control at 523-4067.

Very truly yours,

A handwritten signature in black ink, appearing to read "Felix B. Limtiaco".

FELIX B. LIMTIACO  
Director

Enclosures

132

1995-10-08-0A-FEA-Kalaheo Avenue Relief Sewer

OCT 8 1995

**FILE COPY**

DEPARTMENT OF WASTEWATER MANAGEMENT

CITY AND COUNTY OF HONOLULU

**FINAL**

ENVIRONMENTAL ASSESSMENT

FOR

KALAHEO AVENUE RELIEF SEWER

AT

KAILUA, KOOLAUPOKO, OAHU  
TMK: 4-2-18 TO 20, 4-2-39, 4-2-40, 4-2-46,  
4-2-75:17, 4-3-11 TO 20, 23 TO 30,  
69, 70, 75, 4-4-02, 4-4-04, 4-4-23

AUGUST 1995

PROPOSING AGENCY:

DEPARTMENT OF WASTEWATER MANAGEMENT  
CITY AND COUNTY OF HONOLULU  
650 SOUTH KING STREET  
HONOLULU, HAWAII

RESPONSIBLE OFFICIAL:

  
FELIX B. LIMTIACO

8/22/95  
Date

PREPARED BY:

AKINAKA & ASSOCIATES, LTD.  
CONSULTING ENGINEERS  
250 NORTH BERETANIA STREET, SUITE 300  
HONOLULU, HAWAII 96817

THIS ENVIRONMENTAL DOCUMENT IS SUBMITTED PURSUANT TO CHAPTER 343, HRS

ENVIRONMENTAL ASSESSMENT  
KALAHEO AVENUE RELIEF SEWER

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## EXHIBITS

1. LOCATION MAP
2. VICINITY MAP
3. EXISTING SYSTEMS MAP
4. ALTERNATIVE 06-01
5. ALTERNATIVE 06-02
6. ALTERNATIVE 01-01
7. ALTERNATIVE 01-02
8. ALTERNATIVE 01-03

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1. COST ESTIMATE FOR ALTERNATIVE 06-01
2. COST ESTIMATE FOR ALTERNATIVE 06-02
3. COST ESTIMATE FOR ALTERNATIVE 01-01
4. COST ESTIMATE FOR ALTERNATIVE 01-02
5. COST ESTIMATE FOR ALTERNATIVE 01-03
6. COST ESTIMATE FOR ALTERNATIVE 01-03M
7. COST ESTIMATE FOR KAILUA HEIGHTS WWPS MODIFICATIONS
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1. KALAHEO AVENUE RECONSTRUCTED SEWER
2. KAILUA HEIGHTS WWPS MODIFICATION AND NEW FM
3. KAINALU DRIVE RELIEF SEWER
4. KAILUA HEIGHTS WWPS EXPANSION AND TRUNK SEWER REPLACEMENT

## I. INTRODUCTION

### A. PROJECT DESCRIPTION

The proposed project will provide relief to the trunk sewer system from Akumu Street/Keolu Drive to the Kailua Regional Wastewater Treatment Plant (WWTP). The existing trunk sewer follows Keolu Drive and Wanaao Road to the Kailua Heights Wastewater Pump Station (WWPS). From Kailua Heights WWPS, the route follows Wannao Road, Aumoe Road, Kailua Road then along the entire length of Kalaheo Avenue to Mokapu Road through Aikahi Park Subdivision then into Kailua Regional WWTP.

The recommended relief system involves: 1) Replacement of the existing trunk sewer line from Akumu Street to the Kailua Heights WWPS via Keolu Drive and Wanaao Road (approximately 3,200 ft); 2) Rehabilitation of the trunk sewer in Kalaheo Avenue by pipe lining and manhole repairs; 3) Installation of approximately 18,400 feet of sewer relief line and 900 feet of sewer force main (FM) along the Wanaao Road alignment from the WWPS to the Kailua Regional WWTP via Kailua Road, Kainalu Drive, Kainui Street and Kalaheo Avenue. 4) Modification to the WWPS including installation of new pumps and appurtenances.

### B. PROJECT LOCATION

**EXHIBIT 1: LOCATION MAP** shows the Project in Windward Oahu at the north-eastern edge of Kailua. The area is mainly residential with supporting neighborhood - commercial sections. The area is approaching full development as envisioned by the City & County's Koolaupoko Development Plan (Development Plan).

### C. PROJECT OBJECTIVES

The objective of the project is to increase the system capacity of specific sections of the Kailua wastewater collection system; thereby allowing development of the surrounding areas as provided by the Development Plan.



## II. DESCRIPTION OF PROPOSED PROJECT

### A. BACKGROUND AND EXISTING CONDITIONS

The Islandwide Sewer Adequacy Project, dated July 1989, indicated that sections of the Kailua wastewater collection system were inadequate based on the projected land use of the Development Plan. The March 1991 storm confirmed the Kalaheo-Enchanted Lake sewer system's inadequacy to accommodate wet weather flows. The Kailua Heights Wastewater Pump Station (WWPS) and the downstream 24" sewer line in Wanaao Road, Aumoe Road and Kailua Road were specific items identified as inadequate during the storm.

The existing wastewater collection system resides in two segments identified by the Islandwide Sewer Adequacy Project as Station Code 06 (KK06) & Station Code 01 (KK01), see **EXHIBIT 2: VICINITY MAP**. KK06 represents the collection system for the Kailua Heights WWPS. KK01 represents the collection system for the Kailua Regional Wastewater Treatment Plant (WWTP). The collection districts/subdivisions for KK06 and KK01 are listed below.

#### COLLECTION DISTRICTS/SUBDIVISIONS

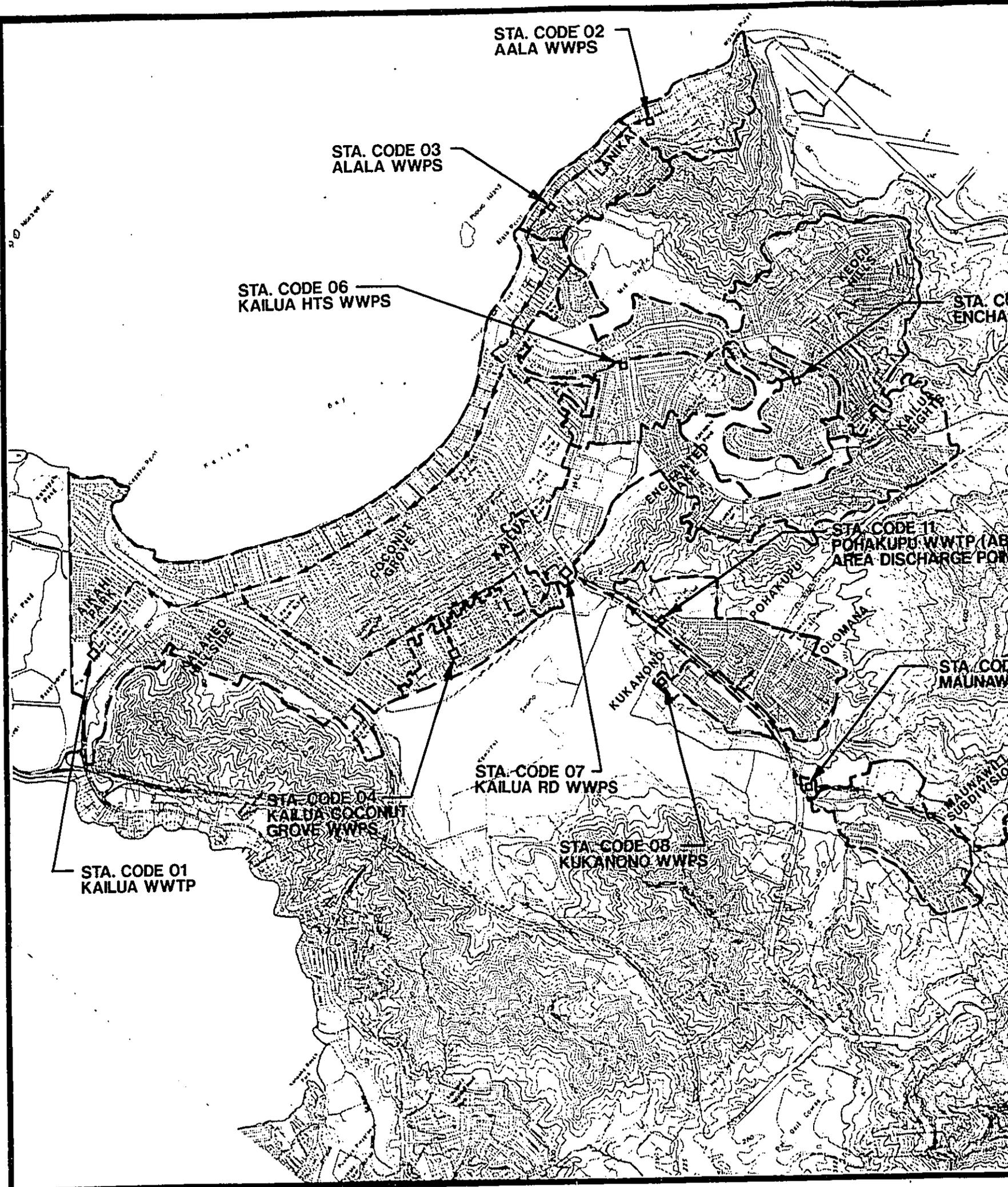
##### KK06

Keolu Hills  
portions of Kailua Heights  
and Enchanted Lake

##### KK01

Maunawili Estates  
Maunawili Subdivision  
Olomana  
Kukanono  
Pohakupu  
KK06  
remainder of Kailua Heights  
and Enchanted Lake  
Lanikai  
Kailua Town  
Coconut Grove  
Kalaheo Hillside  
Aikahi Park

The existing system under study transports sewerage from the intersection of Keolu Drive and Akumu Street to the Kailua Regional WWTP. Specific components of the existing system include (see **EXHIBIT 3: EXISTING SYSTEMS MAP**):



STA. CODE 02  
AALA WWPS

STA. CODE 03  
ALALA WWPS

STA. CODE 06  
KAILUA HTS WWPS

STA. CODE  
ENCHA

STA. CODE 11  
POHAKUPU WWTP (AB  
AREA DISCHARGE POINT)

STA. CODE  
MAUNAWA

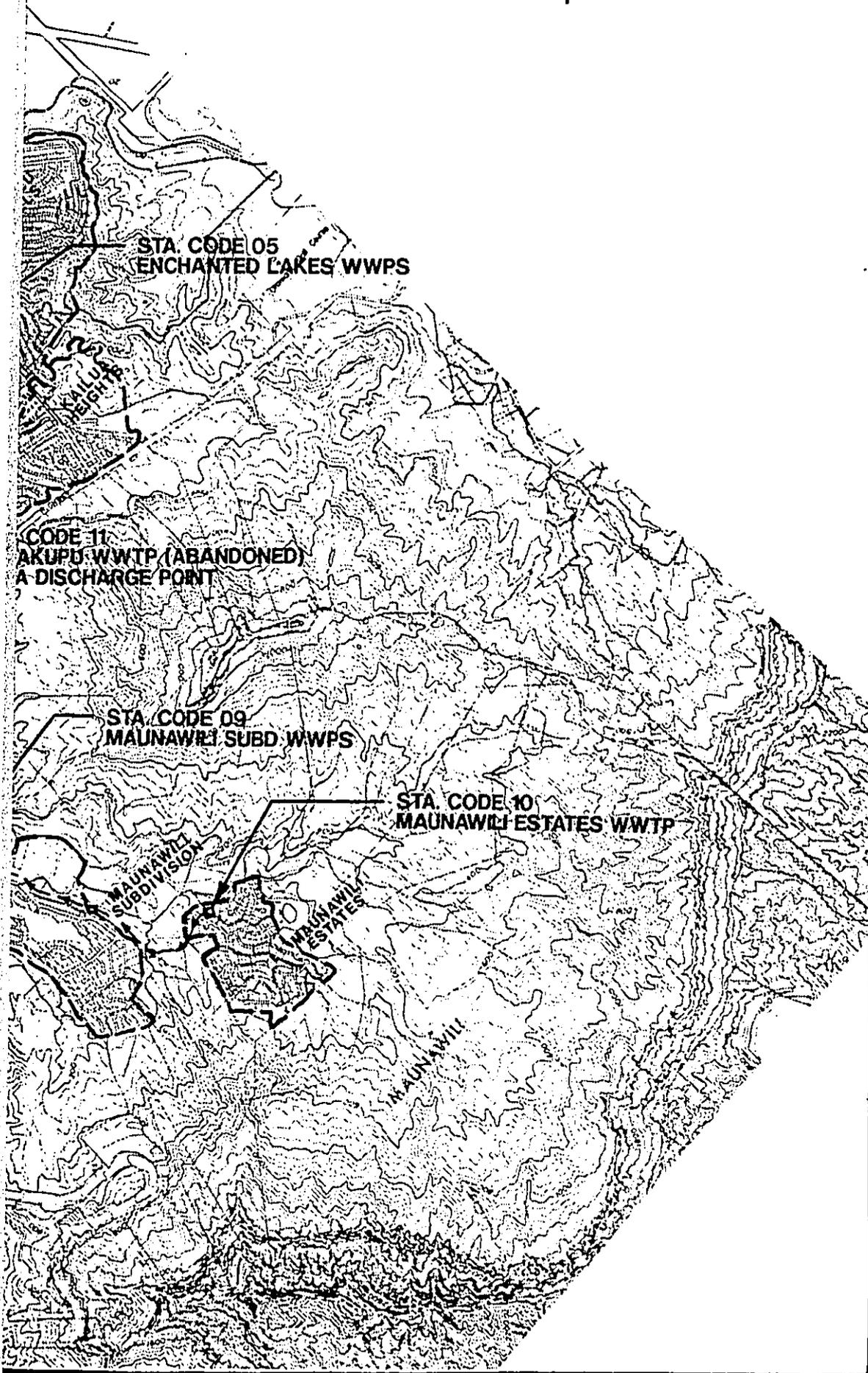
STA. CODE 07  
KAILUA RD WWPS

STA. CODE 08  
KUKANO'O WWPS

STA. CODE 04  
KAILUA COCONUT  
GROVE WWPS

STA. CODE 01  
KAILUA WWTP

KK01 AREA = 8.37 sq. mi. (includes KK06)  
KK06 AREA = 1.59 sq. mi.



**VICINITY MAP**  
**KALAHEO AVENUE RELIEF SEWER PROJECT**  
KAILUA, KOOLAUPOKO, OAHU

AKINAKA & ASSOCIATES, LTD.

DECEMBER 1992

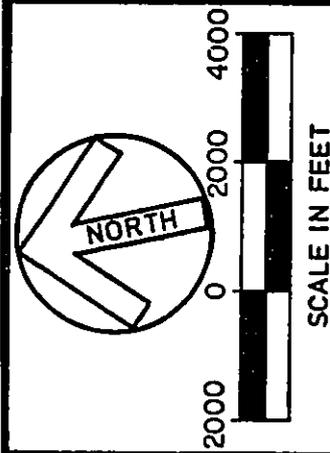


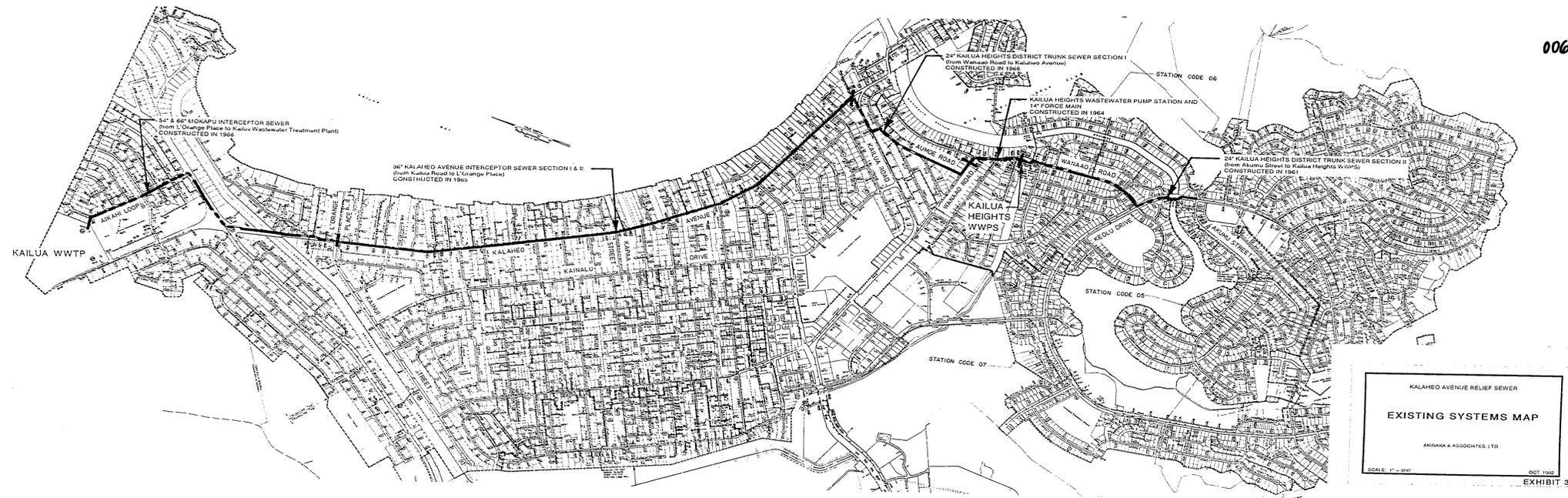
EXHIBIT 2

**OVERSIZED  
DRAWING/MAP**

**PLEASE SEE  
35MM ROLL**

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0061



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1. Kailua Heights District Trunk Sewer Section II (KK06): 3000 L.F. 24" gravity sewer along Keolu Drive and Wanaao Road from Akumu Street to Kailua Heights WWPS, constructed in 1961;
2. Kailua Heights WWPS and Force Main (KK01): 900 L.F. 14" sewer force main along Wanaao Road from Kailua Heights WWPS, constructed in 1964;
3. Kailua Heights District Trunk Sewer Section I (KK01): 2700 L.F. 24" gravity sewer along Wanaao Road, Aumoe Road & Kailua Road, constructed in 1966;
4. Kalaheo Avenue Interceptor Sewer Section I (KK01): 4800 L.F. 36" gravity sewer along Kalaheo Avenue from Kailua Road to Kapaa Street, constructed in 1965;
5. Kalaheo Avenue Interceptor Sewer Section II (KK01): 4600 L.F. 36" gravity sewer along Kalaheo Avenue from Kapaa Street to L'Orange Place, constructed in 1965; and
6. Mokapu Interceptor Sewer, from L'Orange Place to Kailua WWTP (KK01): 1900 L.F. 54" gravity sewer along Kalaheo Avenue, and 3200 L.F. 66" gravity sewer along Kalaheo Avenue and Aikahi Loop, constructed in 1966.

The Kailua Heights WWPS is located at the intersection of Wanaao Road and Auwina Street.

**B. VISUAL AND TV INSPECTION**

Akumu Street/Keolu Drive to Kailua Heights WWPS (KK06)

Field inspections were accomplished between July 23, 1992 and August 6, 1992 under Project WII-91 "Kailua Rehabilitation." The video indicated that approximately 74% of the system (2150 feet of 2914 feet total) is badly deteriorated by hydrogen sulfide. The inspection recommended that the badly deteriorated sections be lined or replaced. The report did not include manhole inspections.

Leaking joints and service connections were evident in most sections. Sags appear in 35% of the pipeline sections. Apparently, the pipeline foundation settled and caused the sags and leaks.

Kailua Heights WWPS to Kailua WWTP (KK01)

Field inspections were completed between October 6, 1992 and November 16, 1993. Inspections indicate that over 90% of the sewer line is badly deteriorated (14,424 ft. of 15,900 ft. total). Some sections (1,056 ft.) have deteriorated past the reinforcing bars. The badly deteriorated sections cannot be repaired by chemical grouting. Replacement or lining will be required to rehabilitate the system.

In general, the alignment and grades are acceptable. Sags were evident in a few section but flow was not impeded. Leaks from misaligned joints and service laterals were not significant.

Of the sixty-five (65) manholes inspected (manhole at Kalaheo/Mokapu not located), forty-three were heavily deteriorated at the invert. These same manholes require epoxy-cement-type repair for the walls. Eight (8) other manholes require repair work on the walls and step replacement.

C. PROPOSED IMPROVEMENTS

The project proposes to replace the existing trunk sewer line from Akumu Street to the Kailua Heights WWPS via Keolu Drive and Wanaao Road. The replacement line will parallel the existing sewer alignment within the road right-of-way. The existing trunk sewer will remain in use until the replacement is completed.

The project also proposes to repair the existing trunk sewer line on Kalaheo Avenue and install a relief gravity sewer line from the sewer force main terminus on Wanaao Road to the Kailua Regional WWTP via Kainalu Drive. The relief sewer line will parallel the existing sewer alignment from Kainui Street/Kalaheo Avenue along Mokapu Boulevard then into Aikahi Park Subdivision. The proposed alignment will then use the maintenance corridor for the concrete drainage ditch between Aikahi Park Subdivision and Aikahi Elementary School to connect to the Kailua Regional WWTP.

Replacement and relief sewer line construction will require trenching at depths ranging from 6 to 26 feet. During the design process, alternate construction methods will be investigated. Connections to existing laterals

will require adjustments within the road right-of-way. Siphon manholes will be used to transport flow under Kaelepulu Stream and Kawainui Canal.

Modifications to the Kailua Heights WWPS include replacement of three pumps and appurtenances. All modifications will be done within the existing boundaries of the site. Due to the expansion schedule of Kailua Regional WWTP, it is recommended that modifications to handle the existing peak flows be initiated immediately and full improvements delayed until the WWTP expansion.

**D. PROJECT FUNDING**

Preliminary construction cost estimate for this project is approximately \$61,230,000 divided as follows (see **TABLE 8: COST ESTIMATE SUMMARY**):

1. KK01-03 (Kailua Heights WWPS to Kailua Regional WWTP) = \$54,670,000 (microtunneling), see **TABLE 6: COST ESTIMATE FOR ALTERNATIVE 01-03M**
2. KK06-01 (Kailua Heights WWPS Expansion & Trunk Sewer Replacement, Akumu Rd./Keolu Dr. to Kailua Heights WWPS) = \$9,240,000 (see **TABLE 1: COST ESTIMATE FOR ALTERNATIVE 06-01**)
3. Kailua Heights WWPS Modifications & New FM = \$920,000 (see **TABLE 7: COST ESTIMATE FOR KAILUA HEIGHTS WWPS MODIFICATIONS & NEW FM**)

Funding for this project will be provided by the City and County of Honolulu. Construction of this project will not require direct assessments to the residents being served by the improvements. Project implementation units are:

- UNIT 1**      **Kalaheo Avenue Reconstructed Sewer:**  
Replace gravity sewer from Kailua Heights WWPS force main to Kailua Road/Kalaheo Avenue intersection. Repair trunk sewer from Kailua Road/Kalaheo Avenue intersection to Kailua Regional WWTP.

UNIT 2 Kailua Heights WWPS Modifications and New Force Main:  
Modify pump station to provide capacity required to correctly  
handle existing peak flows. Project will also replace existing  
force main with larger main.

UNIT 3 Kainalu Drive Relief Sewer:  
Provide a relief sewer line from the Kailua Heights WWPS  
force main to the Kailua Regional WWTP. Clean & repair  
existing 14" sewer force main.

UNIT 4 Kailua Heights WWPS Expansion and Trunk Sewer  
Replacement:  
Expand pump station to handle future peak flows. Replace  
sewer line from Akumu Street/Keolu Drive intersection to  
Kailua Heights WWPS.

Items 3 and 4 cannot be implemented until the Kailua Regional WWTP  
has been modified.

### III. ENVIRONMENTAL SETTING

#### A. TOPOGRAPHY

The outer reaches of KK06 includes Keolu Hills and Kailua Heights which have moderately steep slopes. The remaining area for KK06 and KK01 in the vicinity of Kaelepulu Pond, Kawainui Marsh and the shoreline are relatively flat.

#### B. GEOLOGY/SOILS

The soils in the project area are of the Jaucas series. Soils of the Jaucas series are excessively drained and are developed in wind- and water-deposited sand from coral and seashells. In a representative profile, the soil is single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. In many places the surface layer is dark brown as a result of accumulation of organic matter and alluvium. The soil is neutral to moderately alkaline throughout the profile.

Permeability of jaucas soils is rapid, and runoff is very slow to slow. The risks of water erosion is slight, but wind erosion is a severe hazard where vegetation has been removed.

Workability is slightly difficult because the soil is loose and lacks stability. Deep trenching may require shoring of the soils to prevent collapsing. It is recommended that soil boring investigations be done during the design phase of the project to determine the stability of the soil.

#### C. CLIMATE

The area has a mild subtropical climate with strong northeast trade winds about 75 percent of the time. Mean annual temperature is 75°F. Occasional temperatures in the upper fifties in January-February and slightly over 90°F during August-October constitute the extremes. Mean annual rainfall averages 50 inches along the coast and 150 inches along the crest of the Koolau Range. Heavy rains often occur during November-April, with only about 30 percent of the annual rainfall occurring in May-October.

**D. BIOLOGY**

There are no known endangered species of flora or fauna located within the project site. Due to the well developed areas surrounding the project, construction of this project will have no impact on wildlife.

**E. AIR QUALITY**

Although no information on air quality at the project site was obtained, it is observed that the air is relatively clear and low in pollution. This is because of the distance from major urban centers, and industries which produce noxious gases.

**F. NOISE**

Noise levels were not measured at the project site. The noise levels are basically normal residential activities and primarily urban road traffic.

**G. ARCHAEOLOGY**

The Department of Land and Natural Resources, Historic Preservation Division, believes that the Kailua sand berms within Kailua ahupua'a contains significant historic sites (burial sites)

Although no previous archaeological surveys have been done along the proposed Kalaheo Ave. sewer relief corridor, it is their belief that historic sites are likely to be found along Kalaheo Avenue, especially in areas outside of established utility corridors. In these areas, a qualified archaeologist would need to monitor construction to determine if any historic sites are present. Should any sites be found, the archaeologist will gather sufficient information for evaluation. A report will then be submitted to the State Historic Preservation Division for review. If significant historic sites are present, a mitigation plan may need to be developed and mitigated.

**H. FLOOD HAZARD**

The Project is not considered to be in a flood-prone area. The Flood Insurance Rate Map (FIRM), City and County of Honolulu, Hawaii, Panel 60 of 135, shows the Project to be outside the 500-year flood plain (Zone X).

#### IV. SOCIO-ECONOMIC SETTING

The Kailua/Mokapu neighborhood consisted of approximately 55,000 people in 1988. Most residents within the neighborhood's 14,000 households who are in the labor force work in downtown Honolulu. The Kailua town core includes commercial businesses and retail activities to service the neighborhood. Agricultural production is insignificant in the neighborhood.

Lands along the sewer pipe alignment are entirely residential except at the intersection of Kalaheo Avenue and Mokapu Boulevard. Lot sizes range (in general) from 5,000 to 10,000 square feet. The subarea along the shoreline includes larger parcels, some of which were recently subdivided. Multi-family residential units are insignificant in number. Commercial activities (shopping center, restaurant and office buildings) are situated at the Kalaheo Ave./Mokapu Blvd. intersection.

**V. PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT**

**A. SHORT TERM IMPACTS**

Short term impacts of the proposed project will be primarily due to construction. Use of construction equipment such as backhoes, trucks, hand compactors, and pavers will create noise, dust and exhaust emissions. The noise of the construction equipment will be minimized by placing mufflers on machinery, avoiding unnecessary "gunning" of equipment, and restricting construction activity (open trenching) during daylight hours. Daily traffic of the construction crew should be during off-peak hours. Construction activities will partially interfere with the flow of vehicular traffic. Traffic control by off-duty Police Officers and/or trained construction flagmen will mitigate traffic congestion. Parking will be restricted on both sides of streets (where applicable) during construction. Other utilities such as water, electric, gas and telephone installations may also be affected by the construction activities. Construction plans will be reviewed for coordination by all utility companies affected.

Sewer line installation by open trenching will generate dewatering effluent. Potential problems include flooding of the local area, discharge of pollutants into the drainage system then to the ocean, and their associate effects. Mitigation must incorporate the conditions within the NPDES permit or the Contractor may select a dewatering method that does not generate discharge.

Sewer line construction by micro-tunneling will require continuous effort during periods of actual pipe installation. Should work hours extend in the evening, noise generation can be reduced by selecting equipment with sound insulation, ceasing non-essential operations and minimizing travel.

**B. LONG TERM IMPACTS**

There are no negative long term impacts from this sewer relief project.

The project goal is to relieve the inadequate sewer line in Kalaheo Avenue to allow development of the tributary area as defined by the Development Plan. Another goal of the project is to increase the system capacity upstream to and including the Kailua Heights Force Main and WWPS to minimize future bypass/overflows.

**VI. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED**

The noise level will increase during the construction period. This effect will be of short duration, lasting only for the construction phase. The noise level can be reduced by the contractor by ensuring proper functioning of mufflers on all equipment, and conducting construction activity (open trenching) only during daylight hours, between 7:30 a.m. to 5:00 p.m.

During construction, dust may be generated from pipe installation procedures. The contractor will be required to comply with the procedures outlined by the Department of Health to mitigate the dust emission.

Rehabilitation of the trunk sewer along Kalaheo Avenue is envisioned as a cure-in-place pipe process. This process should be the most efficient for traffic control and period of construction. Sewer by-pass around the work site may be the cause of additional construction impacts (noise, dust and traffic).

Traffic along the proposed relief alignment will be disrupted for short periods during installation of the relief sewer line and connection to the existing laterals. Traffic along Kainalu Drive and Wanaao Road can be restricted to localized traffic only. Other motorists can be detoured a relatively short distance to Kalaheo Avenue.

Residents along the proposed relief alignment will be inconvenienced in regards to driveway access and other roadway frontage usage (mail, deliveries, etc.). The inconveniences will occur when construction is directly fronting their lots.

## VII. ALTERNATIVES TO THE PROPOSED ACTION

Two alternatives for the KK06 system (Keolu Drive) and three alternatives for the KK01 system (Kalaheo Avenue) were considered in the Preliminary Engineering Report.

### A. ALTERNATIVES FOR KK06

The objective for the KK06 alternatives is to increase the capacity of the sewer system to the Development Plan's projected land use. Alternative 06-01 is the recommended alternative.

1. **ALTERNATIVE 06-01** (recommended alternative) proposes to replace and abandon the existing trunk sewer line on Keolu Drive and Wanaao Road from Akumu Street to the Kailua Heights WWPS. The existing sewer line will remain in operation while the replacement line is being constructed. If space in the corridor is insufficient, a temporary by-pass system between manholes can be used. **EXHIBIT 4: ALTERNATIVE 06-01**, shows the alignment for the replacement sewer lines. Total construction cost can be found in **TABLE 1: COST ESTIMATE FOR ALTERNATIVE 06-01**.
2. **ALTERNATIVE 06-02** proposes to rehabilitate the existing gravity sewer line as required and construct a relief gravity sewer from Hele Street to the Kailua Heights WWPS via Keolu Drive and Wanaao Road. The relief line will intercept branch line flows originally directed to the existing trunk sewer line on Keolu Drive and Wanaao Road. **EXHIBIT 5: ALTERNATIVE 06-02**, shows the alignment for the existing and relief gravity sewer lines. Total construction cost can be found in **TABLE 2: COST ESTIMATE FOR ALTERNATIVE 06-02**.

### B. ALTERNATIVES FOR KK01

The objective for the KK01 alternatives, is to increase the capacity of the sewer system to meet the demands of the Development Plans projected land use. Alternative 01-03 is the recommended alternative.

1. **ALTERNATIVE 01-01** proposes to replace and abandon the existing trunk sewer line from the Kailua Heights WWPS sewer Force Main on Wanaao to the Kailua Regional WWTP. The existing trunk sewer line will remain in operation while the replacement line is being constructed. If space in the corridor is

insufficient, a temporary by-pass system between manholes can be used. The drainage ditch maintenance road adjacent to Aikahi Elementary School may be used as an optional corridor. **EXHIBIT 6: ALTERNATIVE 01-01**, shows the alignment for the replacement trunk sewer line. Total construction cost can be found in **TABLE 3: COST ESTIMATE FOR ALTERNATIVE 01-01**.

2. **ALTERNATIVE 01-02** proposes to rehabilitate the existing trunk sewer line as required and construct a relief sewer from the Kailua Heights WWPS sewer force main to Kalaheo Avenue via Wanaao Road, Aumoe Road and Kailua Road. The relief sewer line will continue on Kalaheo Avenue as a 42" trunk sewer line from Kailua Road to Kainui Street. The relief line will intercept branch line flows directed to the existing trunk sewer line on Kalaheo Avenue. The relief sewer line will then converge to the existing trunk sewer line on Kalaheo Avenue at Kainui Street. The flow from Kainui Street will be intercepted by a relief sewer line starting from Kainui Street on Kalaheo Avenue and will end at the Kailua Regional WWTP. **EXHIBIT 7: ALTERNATIVE 01-02**, shows the alignment for the existing and relief trunk sewer lines. Total construction cost can be found in **TABLE 4: COST ESTIMATE FOR ALTERNATIVE 01-02**.
3. **ALTERNATIVE 01-03** (recommended alternative) proposes to rehabilitate the existing trunk sewer line as required and construct a relief sewer from the Kailua Heights WWPS sewer force main to Kainalu Drive via Wanaao Road and Kailua Road. The relief sewer line will continue on Kainalu Drive from Kailua Road to Kainui Street. Branch line flows mauka of Kainalu Drive, originally directed to the existing trunk sewer line in Kalaheo Avenue, will be intercepted by the relief line. The relief sewer line will then proceed on Kainui Street to Kalaheo Avenue. Similar to Alternative 01-02, the relief sewer line will then converge to the existing trunk sewer line on Kalaheo Avenue at Kainui Street. The original flow from Kainui Street will be intercepted by a relief sewer line starting from Kainui Street on Kalaheo Avenue and will end at the Kailua Regional WWTP. **EXHIBIT 8: ALTERNATIVE 01-03**, shows the alignment for the existing and relief sewer line. Total construction cost can be found in **TABLE 5: COST ESTIMATE FOR ALTERNATIVE 01-03**.

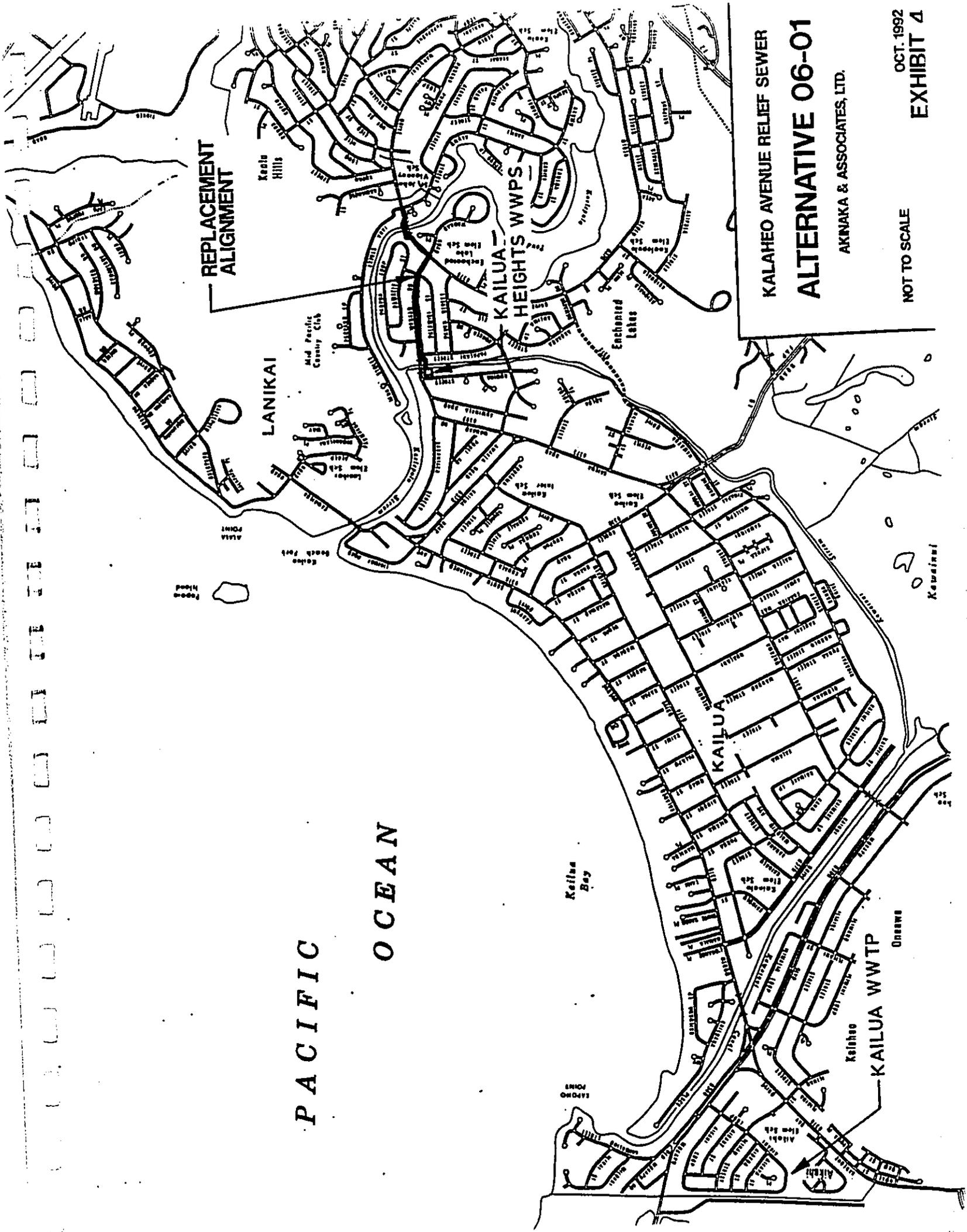
C. ALTERNATE CONSTRUCTION METHODS

In lieu of the typical open trenching method of pipe installation, micro-tunneling has become the choice in special situations. Micro-tunneling is a precision method of directly jacking pipe to line and grade through the ground without an open trench. Micro-tunneling is an alternate solution in congested urban areas, yielding soil conditions, and high groundwater locations. Also, tunneling under streams will preclude permit requirements by Federal and State agencies. The cost effectiveness of micro-tunneling will not be known until the soils investigation is completed. A cost estimate for Alternative 01-03 via micro-tunneling can be found in **TABLE 6: COST ESTIMATE FOR ALTERNATIVE 01-03M.**

A soils investigation is required to determine if micro-tunneling is feasible. Borings along the pipe alignment will reveal soils conditions and ground water levels. Knowledge of groundwater levels is important for any construction method and to initiate the NPDES dewatering permits.

D. NO ACTION ALTERNATIVE

The "no action" alternate is not practical as inspections have shown that the existing systems in Kalaheo Avenue and Wanaao Street have deteriorated to a condition where repair is required. Studies have shown that the system is undersized—which has been evidenced by overflows and emergency pumping. A program to reduce infiltration and inflow has been initiated by the city. If successful, the construction of the relief system may be postponed.



KALAEHO AVENUE RELIEF SEWER

**ALTERNATIVE 06-01**

AKINAKA & ASSOCIATES, LTD.

OCT. 1992

EXHIBIT 4

NOT TO SCALE

PACIFIC OCEAN

REPLACEMENT ALIGNMENT

LANIKAI

KAILUA HEIGHTS WWPS

KAILUA

KAILUA WWTP

Kailua Bay

Kailua

Onawa

Kawainani

Pepee Hood

Alala Point

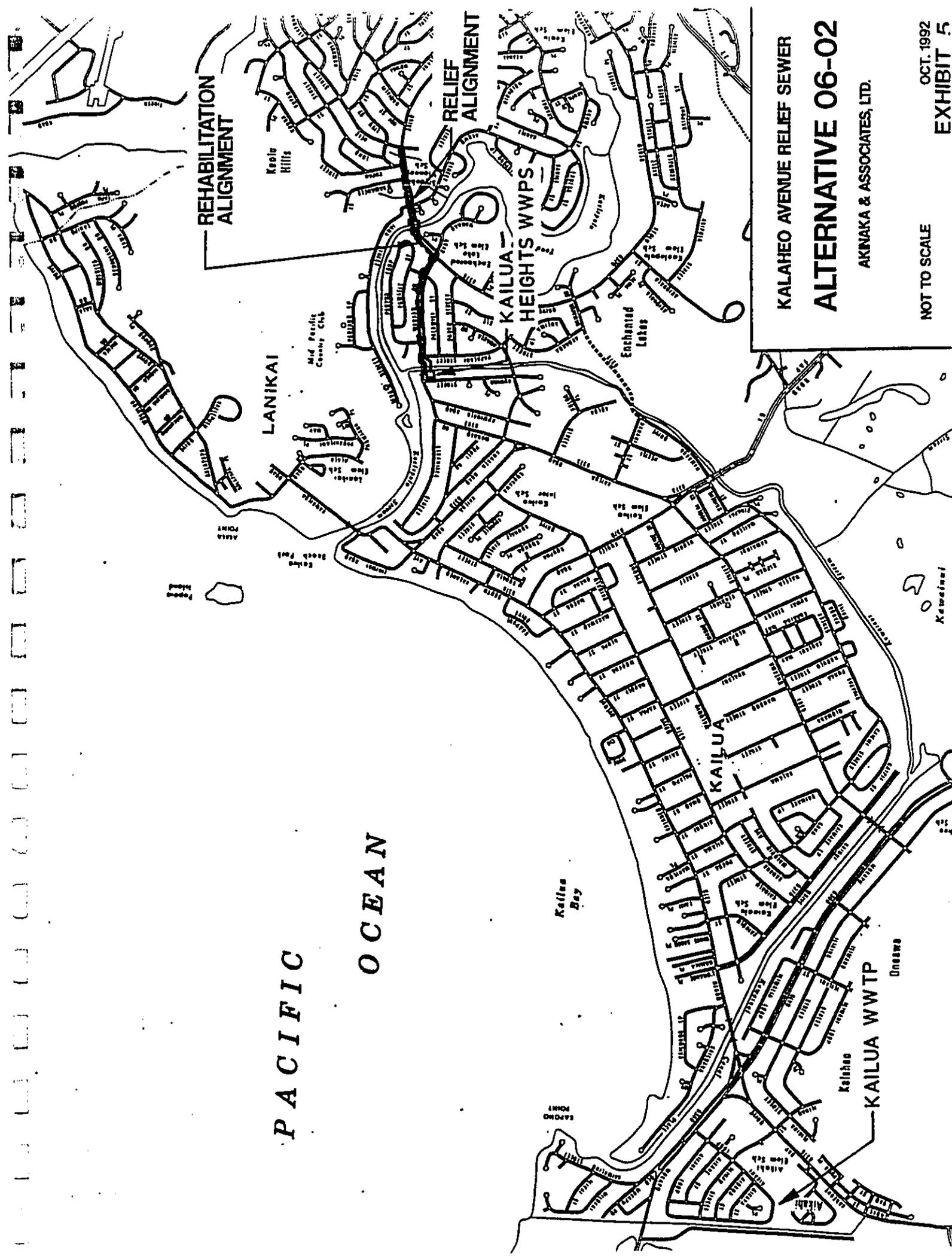
Koala Beach Park

Mad Pacific Country Club

Lapuna Point

Enchanted Lakes





PACIFIC OCEAN

KALAHEO AVENUE RELIEF SEWER  
**ALTERNATIVE 06-02**

AKINAKA & ASSOCIATES, LTD.

OCT. 1992  
**EXHIBIT 5**

NOT TO SCALE



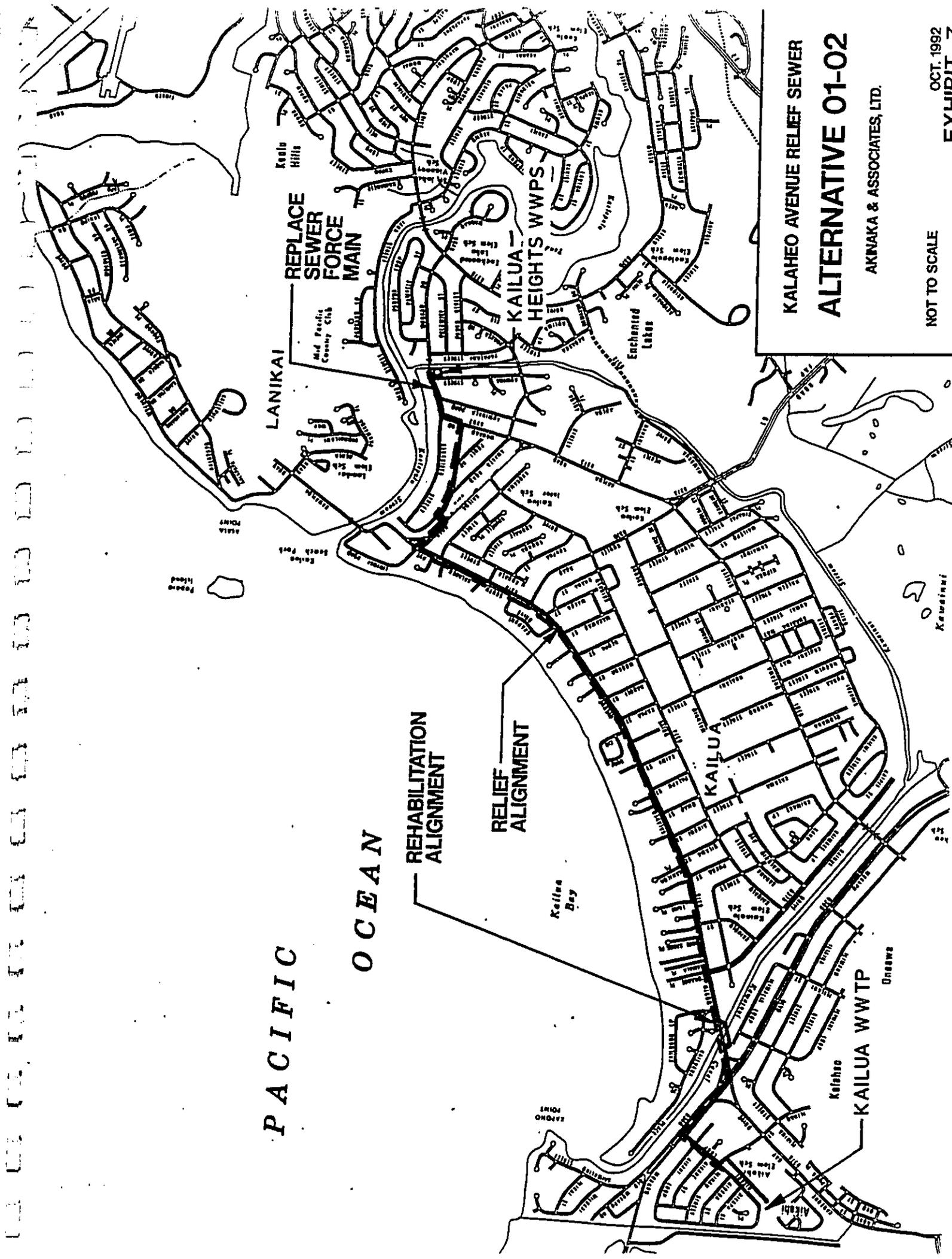


**TABLE 3  
CONSTRUCTION COST ESTIMATE ALTERNATIVE 01-01  
(REPLACE EXISTING SEWERLINE)**

KALAHEO AVENUE RELIEF SEWER  
FILE: TABLE3.XLS

DATE: 3/14/95

DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL
UNCLASS. TRENCH EXC. INCL. SHORING AND DEWATERING	96,135	CY	360	34,608,600
33-INCH RCP SEWER W/T. LOCK	2,781	LF	240	667,440
42-INCH RCP SEWER W/T. LOCK	1,924	LF	320	615,680
45-INCH RCP SEWER W/T. LOCK	2,428	LF	400	971,200
48-INCH RCP SEWER W/T. LOCK	5,086	LF	460	2,339,560
60-INCH RCP SEWER W/T. LOCK	1,582	LF	600	949,200
66-INCH RCP SEWER W/T. LOCK	2,092	LF	740	1,548,080
72-INCH RCP SEWER W/T. LOCK	1,339	LF	860	1,151,540
SEWER SIPHON, INCL. RC JACKET @ STREAM CROSSING	295	LF	950	280,250
8-INCH VCP SEWER (CONNECTING BRANCH LINES)	555	LF	60	33,300
21-INCH VCP SEWER (CONNECTING BRANCH LINES)	35	LF	170	5,950
18-INCH D.I. FORCEMAIN	830	LF	130	107,900
PLAIN SEWER MANHOLE 8'-9.99' W/ PLASTIC LINER	2	EACH	8,500	17,000
PLAIN SEWER MANHOLE 10'-11.99' W/ PLASTIC LINER	3	EACH	9,300	27,900
PLAIN SEWER MANHOLE 12'-13.99' W/ PLASTIC LINER	4	EACH	10,300	41,200
PLAIN SEWER MANHOLE 14'-15.99' W/ PLASTIC LINER	5	EACH	11,700	58,500
PLAIN SEWER MANHOLE 16'-17.99' W/ PLASTIC LINER	10	EACH	12,900	129,000
PLAIN SEWER MANHOLE 18'-19.99' W/ PLASTIC LINER	17	EACH	14,100	239,700
PLAIN SEWER MANHOLE 20'-21.99' W/ PLASTIC LINER	19	EACH	15,400	292,600
PLAIN SEWER MANHOLE 22'-23.99' W/ PLASTIC LINER	18	EACH	16,700	300,600
PLAIN SEWER MANHOLE 24'-25.99' W/ PLASTIC LINER	2	EACH	18,100	36,200
ADDITIONAL PLAIN SMH (AVE DEPTH=10')	22	EACH	9,000	198,000
UPSTREAM SIPHON MANHOLE	1	EACH	20,000	20,000
CONNECTION OF EXISTING LATERALS TO RELIEF LINE	74	EACH	300	22,200
CONNECTION OF EXISTING SEWER LINE TO NEW SMH	34	EACH	450	15,300
AC RESURFACING 2-1/2" A.C. BASE & SUBBASE COURSE	16,141	SY	130	2,098,330
EXTRA EXCAVATION FOR SOFT SPOTS	4,800	CY	400	1,920,000
CRUSHED ROCK FOR SOFT SPOTS	4,800	CY	20	96,000
DISCHARGE MANHOLE	1	EACH	12,000	12,000
ALLOWANCE FOR OFF-DUTY POLICE SERVICE	1	LS	40,000	40,000
CONCRETE REACTION BLOCKS	20	CY	300	6,000
MAINTAIN/BY-PASS FLOWS	1	LS	1,400,000	1,400,000
<b>SUB-TOTAL</b>				50,249,230
				3,014,954
				2,130,567
			<b>SAY</b>	<b>\$55,395,000</b>



**KALAHEO AVENUE RELIEF SEWER  
ALTERNATIVE 01-02**

AKIYAKA & ASSOCIATES, LTD.

NOT TO SCALE

OCT. 1992  
EXHIBIT 7

PACIFIC

OCEAN

REHABILITATION  
ALIGNMENT

RELIEF  
ALIGNMENT

REPLACE  
SEWER  
FORCE  
MAIN

KAILUA  
HEIGHTS  
WWPS

KAILUA  
WWTP

LANIKAI

KAILUA

Kailua Hills

Enchanted Lakes

Kailua Bay

Kawainani

Onawa

Keiōhō

Papaha Island

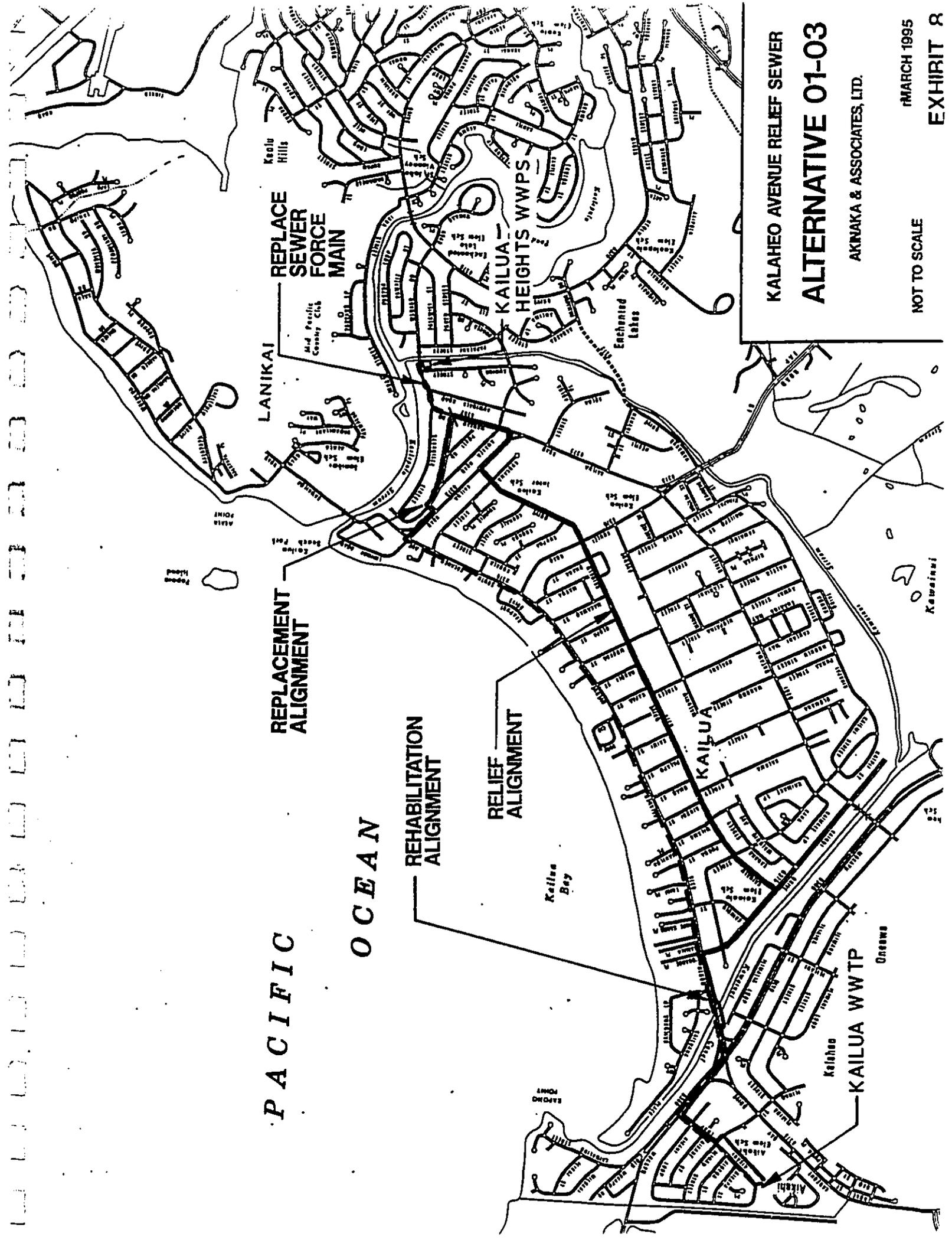
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

**TABLE 4**  
**CONSTRUCTION COST ESTIMATE ALTERNATIVE 01-02**  
**(RELIEVE EXISTING SEWER - VIA KALAHEO AVE.)**

KALAHEO AVENUE RELIEF SEWER  
 FILE: TABLE4.XLS

DATE: 3/14/95

DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL
UNCLASS. TRENCH EXC. INCL. SHORING AND DEWATERING	83,403	CY	360	30,025,080
42-INCH RCP SEWER W/T. LOCK	2,470	LF	320	790,400
48-INCH RCP SEWER W/T. LOCK	2,530	LF	460	1,163,800
54-INCH RCP SEWER W/T. LOCK	6,960	LF	530	3,688,800
60-INCH RCP SEWER W/T. LOCK	5,040	LF	600	3,024,000
SEWER SIPHON, INCL. RC JACKET @ STREAM CROSSING	300	LF	700	210,000
8-INCH VCP SEWER (CONNECTING BRANCH LINES)	220	LF	60	13,200
18-INCH D.I. FORCEMAIN	1,140	LF	130	148,200
PLAIN SEWER MANHOLE 6'-7.99' W/ PLASTIC LINER	3	EACH	7,500	22,500
PLAIN SEWER MANHOLE 8'-9.99' W/ PLASTIC LINER	6	EACH	8,500	51,000
PLAIN SEWER MANHOLE 10'-11.99' W/ PLASTIC LINER	7	EACH	9,300	65,100
PLAIN SEWER MANHOLE 12'-13.99' W/ PLASTIC LINER	12	EACH	10,300	123,600
PLAIN SEWER MANHOLE 14'-15.99' W/ PLASTIC LINER	19	EACH	11,700	222,300
PLAIN SEWER MANHOLE 16'-17.99' W/ PLASTIC LINER	20	EACH	12,900	258,000
PLAIN SEWER MANHOLE 18'-19.99' W/ PLASTIC LINER	10	EACH	14,100	141,000
PLAIN SEWER MANHOLE 20'-21.99' W/ PLASTIC LINER	1	EACH	15,400	15,400
ADDITIONAL PLAIN SMH (AVE DEPTH=10')	11	EACH	9,000	99,000
UPSTREAM SIPHON MANHOLE	2	EACH	20,000	40,000
CONNECTION OF EXISTING LATERALS TO RELIEF LINE	70	EACH	300	21,000
CONNECTION OF EXISTING SEWER LINE TO NEW SMH	29	EACH	450	13,050
AC RESURFACING	14,000	SY	130	1,820,000
EXTRA EXCAVATION	2,500	CY	400	1,000,000
CRUSHED ROCK FOR SOFT SPOTS	2,500	CY	20	50,000
DISCHARGE MH	1	EACH	12,000	12,000
ALLOWANCE FOR OFF-DUTY POLICE SERVICE	1	LS	50,000	50,000
CONCRETE REACTION BLOCKS	60	CY	300	18,000
REHABILITATE EXISTING 24" SEWER PIPE (CIPP)	2,767	LF	650	1,798,550
REHABILITATE EXISTING 36" SEWER PIPE (CIPP)	9,388	LF	700	6,571,600
REHABILITATE EXISTING 54" SEWER PIPE (CIPP)	1,865	LF	800	1,492,000
REHABILITATE EXISTING 66" SEWER PIPE (CIPP)	3,370	LF	950	3,201,500
TYPE I SEWER MANHOLE REPAIR (EPOXY WALL REPAIR)	8	EACH	2,000	16,000
TYPE II SEWER MANHOLE REPAIR (INVERT AND EPOXY WALL REPAIR)	43	EACH	4,500	193,500
SEWER BY-PASS	1	LS	1,400,000	1,400,000
CLEAN & REPAIR EXIST. 14" SFM	1	LS	60,000	60,000
<b>SUB-TOTAL</b>				<b>57,818,580</b>
MOBILIZATION @ 6%				3,469,115
INFLATION 1992-1994 @ 4%				2,451,508
			<b>SAY</b>	<b>\$63,740,000</b>



**KALAHEO AVENUE RELIEF SEWER  
ALTERNATIVE 01-03**

AKNAKA & ASSOCIATES, LTD.

NOT TO SCALE  
MARCH 1995  
EXHIBIT R





**TABLE 7  
CONSTRUCTION COST ESTIMATE  
KAILUA HEIGHTS WASTEWATER PUMP STATION MODIFICATION AND NEW FM**

KALAHEO AVENUE RELIEF SEWER  
FILE: TABLE7.XLS

DATE: 6/7/95

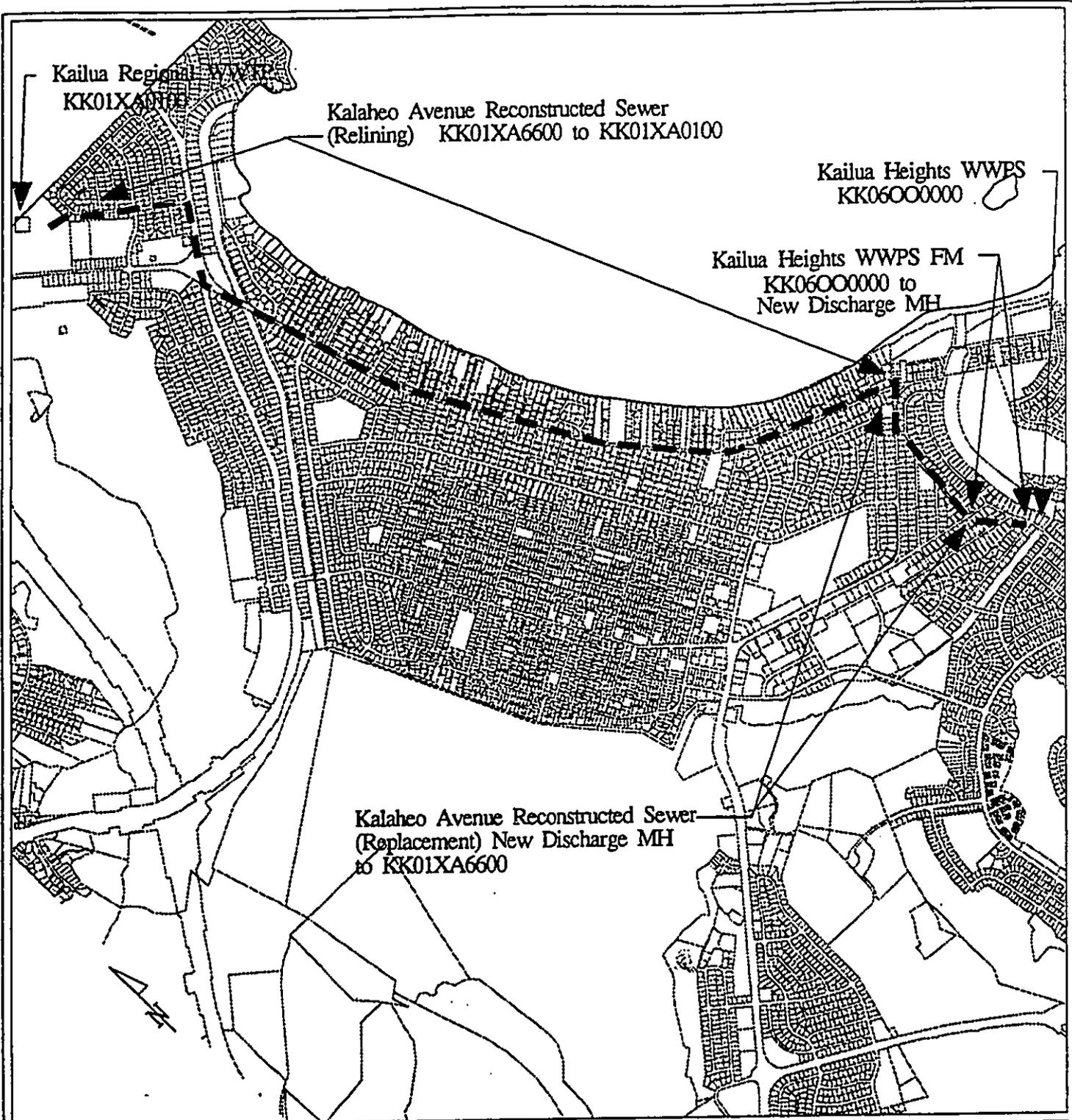
DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL
UNCLASS. TRENCH EXCAVATION	505	CY	360	181,800
AC RESURFACING	473	SY	130	61,490
30-INCH RCP PIPE W/ T-LOCK	12	LF	230	2,760
14-INCH D.I. PIPE	30	LF	110	3,300
20-INCH D.I. PIPE	885	LF	180	159,300
D.I PIPE FITTINGS	2,300	LB	3	6,900
CONCRETE FOR REACTION BLOCKS	25	CY	300	7,500
DISCHARGE MANHOLE	1	EACH	12,000	12,000
FLOW TUBE BOX, INCLUDING EXCAVATION, FLOW TUBE, PIPING, FITTINGS, EMERGENCY CONNECTION, VALVES, AIR RELEASE VALVE AND ALL CONCRETE WORK	1	LS	50,000	50,000
PUMP STATION MODIFICATIONS INCLUDING PROCESS PIPING, FITTINGS, VALVES, PLASTIC LINER REPAIR, ARCHITECTURAL WORK, INTAKE, DISCHARGE HEADER AND APPURTENANCES	1	LS	150,000	150,000
WASTEWATER PUMPS AND MOTORS REPLACEMENT INCLUDING DRIVE SHAFTS, GUARDS AND APPURTENANCES	1	LS	45,000	45,000
CONTROLS AND INSTRUMENTATION REPLACEMENT INCLUDING WETWELL LEVEL CONTROLS AND SYSTEMS FOR FLOW TUBE MEASUREMENT, DISCHARGE PRESSURE MEASUREMENT AND ALARM	1	LS	50,000	50,000
ELECTRICAL AND TELEMETERING SYSTEM REPLACEMENT INCLUDING POWER SUPPLY AND WIRING, MOTOR CONTROL CENTER, LIGHT FIXTURES AND WIRING, AND PUMP MOTOR WIRING	1	LS	70,000	70,000
ALLOWANCE FOR OFF-DUTY POLICE SERVICE	1	LS	30,000	30,000
<b>SUB-TOTAL</b>				<b>830,050</b>
MOBILIZATION @ 6%				49,803
INFLATION 1992-1994 @ 4%				35,194
				915,047
			<b>SAY</b>	<b>\$920,000</b>

TABLE 8 COST ESTIMATE SUMMARY FOR SELECTED ALTERNATIVES	
KALAHEO AVENUE RELIEF SEWER FILE: COSTSUM.XLS	DATE: 6/7/95
DESCRIPTION	TOTAL

<b>ALTERNATIVE 01-03</b>	
<b>UNIT 1</b> SEE FIGURE 1 PIPE REHAB ALONG KALAHEO AVE & PIPE REPLACEMENT ALONG KAILUA ROAD	\$19,170,000
<b>UNIT 2</b> SEE FIGURE 2 KAILUA HEIGHTS WWPS MODIFICATIONS & NEW FM	\$920,000
<b>UNIT 3</b> (INSTALLATION VIA TRENCHING) SEE FIGURE 3 RELIEF SEWER VIA KAINALU DRIVE / CLEAN & REPAIR EXIST. 14" SFM	\$47,020,000
<b>UNIT 3M</b> (INSTALLATION VIA MICRO-TUNNELING) SEE FIGURE 3 RELIEF SEWER VIA KAINALU DRIVE / CLEAN & REPAIR EXIST. 14" SFM	\$35,500,000
<b>ALTERNATIVE 06-01</b> SEE FIGURE 4 KAILUA HEIGHTS WWPS EXPANSION AND TRUNK SEWER REPLACEMENT	\$9,240,000
<b>SUB-TOTAL</b>	
ALTERNATIVE 01-03 WITHOUT KAILUA HEIGHTS WWPS MODIFICATION	\$66,190,000
INSTALLATION VIA TRENCHING **	\$54,670,000
INSTALLATION VIA MICRO-TUNNELING	
ALTERNATIVE 01-03 WITH KAILUA HEIGHTS WWPS MODIFICATION	\$67,110,000
INSTALLATION VIA TRENCHING	\$55,590,000
INSTALLATION VIA MICRO-TUNNELING	

\*\* SUBTOTAL USED TO COMPARE WITH ALTERNATIVE 01-02

ALTERNATIVE 01-02 DOES NOT INCLUDE KAILUA HEIGHTS WWPS MODIFICATIONS  
ALTERNATIVE 01-02 COST ESTIMATE = \$63,740,000  
(INSTALLATION VIA TRENCHING)



**City & County  
of Honolulu**

**Department of  
Wastewater  
Management**

0 2167 4334



1" = 2167'

Project Site



**KALAHEO AVENUE  
RECONSTRUCTED SEWER**

KAILUA, KOOLAUPOKO, OAHU

TMK 4 2 18, 19

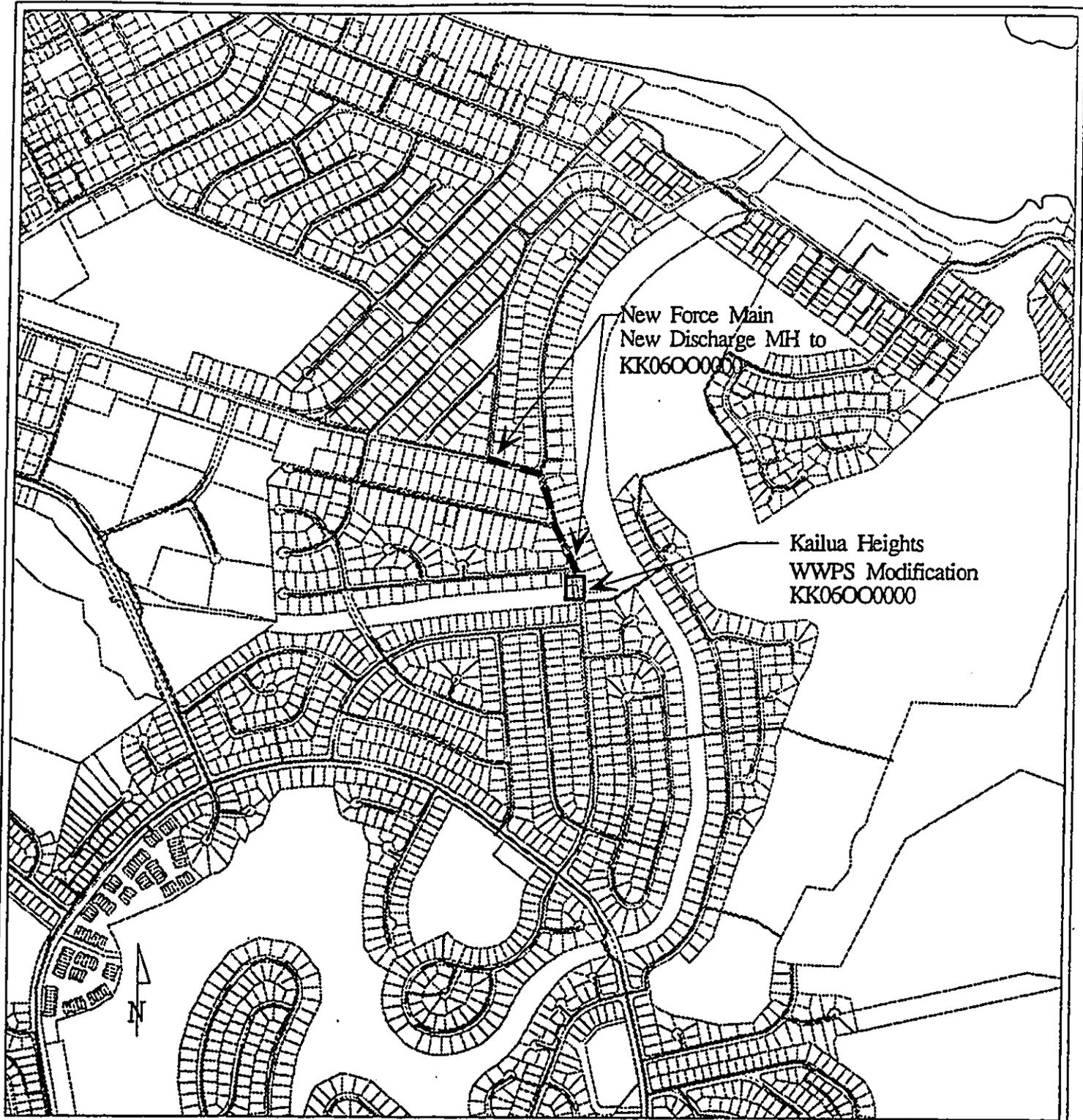
TMK 4 3 11 to 20, 23 to 30, 69, 70, 75

TMK 4 4 02, 04, 23

PLANNING BRANCH

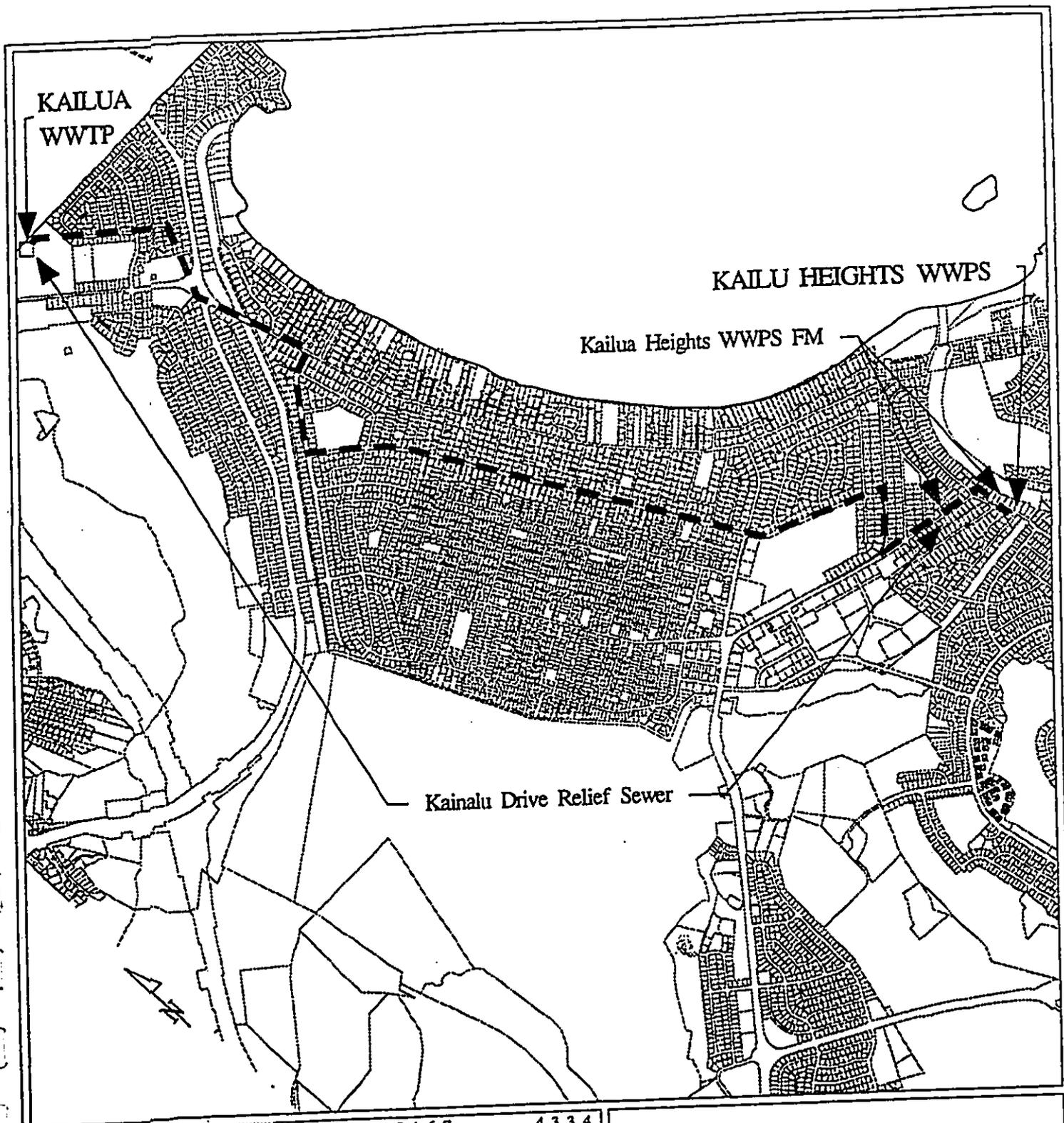
Date: 06/02/95

**FIGURE 1**

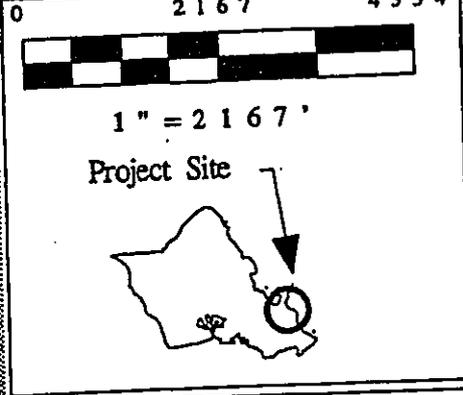


<p><b>City &amp; County of Honolulu</b></p> <p><b>Department of Wastewater Management</b></p>	<p>0 1000 2000</p> <p>1" = 1000'</p> <p>Project Site</p>	<p><b>KAILUA HEIGHTS WWPS MODIFICATION AND NEW FM</b></p> <p>KAILUA, KOOLAUPOKO, OAHU</p> <p>TMK: 4-2-20, 4-2-39, 4-2-40, 4-2-46, 4-2-75:17</p> <p>PLANNING BRANCH</p> <p>Date: 04/10/95</p>
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**FIGURE 2**



**City & County  
of Honolulu**  
  
Department of  
Wastewater  
Management



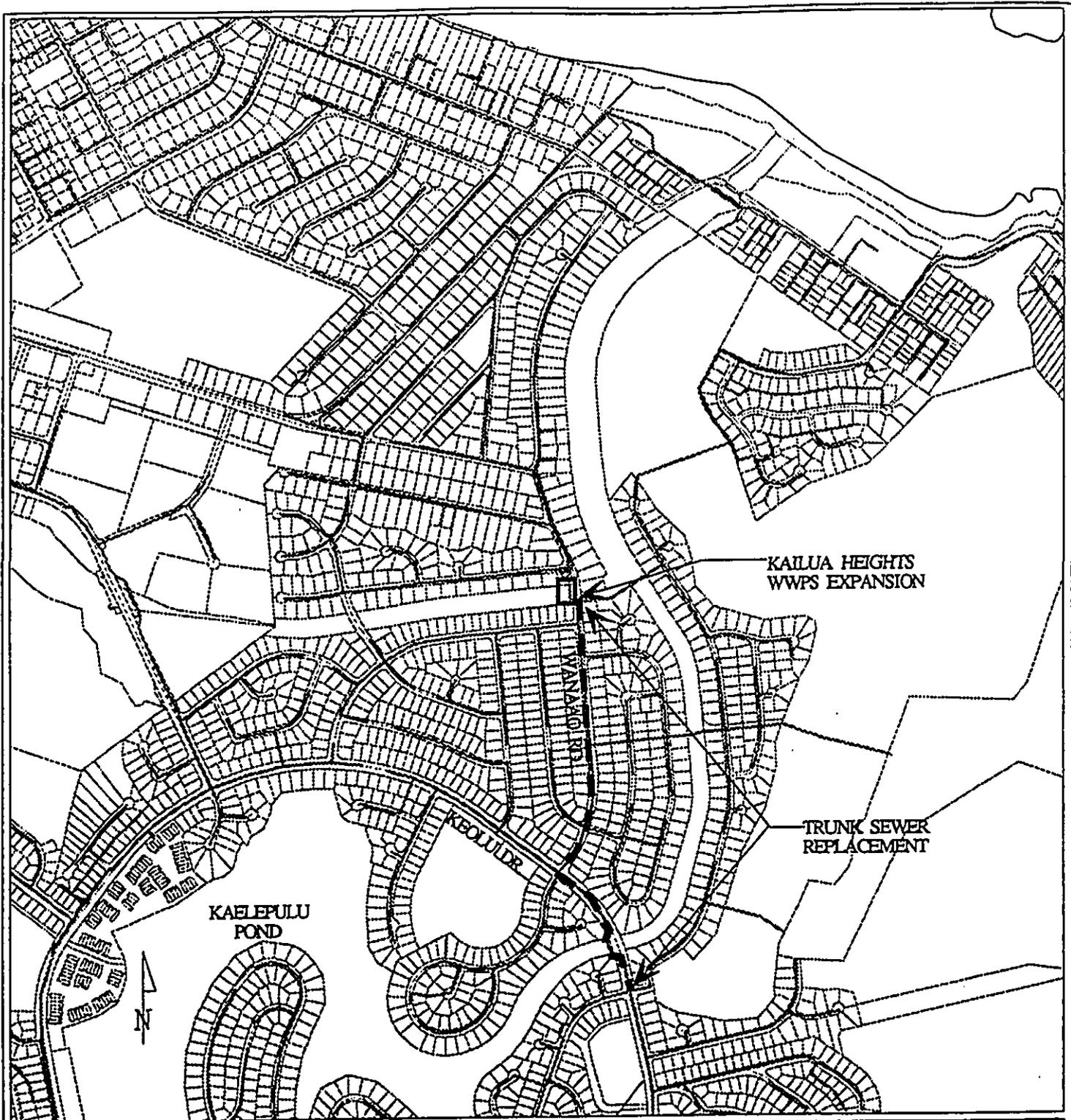
**KAINALU DRIVE RELIEF SEWER  
KAILUA, KOOLAUPOKO, OAHU**

TMK: 4 3 83, 80, 20, 75, 76, 79, 70-74,  
4 2 19 4 4 23, 2, 3, 4, 5, 11, 27

PLANNING BRANCH

Date: 03/21/95

**FIGURE 3**



**City & County  
of Honolulu**

**Department of  
Wastewater  
Management**

0 1000 2000



1" = 1000'

Project Site



**KAILUA HEIGHTS WWPS  
EXPANSION AND  
TRUNK SEWER REPLACEMENT**

KAILUA, KOOLAUPOKO, OAHU

TMK: 4-2-20, 4-2-39, 4-2-40, 4-2-46, 4-2-75:17

PLANNING BRANCH

Date: 06/02/95

**FIGURE 4**

**VIII. RELATIONSHIP BETWEEN LOCAL SHORT TERM USES AND MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY**

The short term use of the project is the same as its long term use - transport sewer from the residential area of Enchanted Lakes to the Kailua Regional WWTP for treatment and disposal. The proposed action, if implemented, will enable the City and County of Honolulu to meet its sewer demands for the Development Plan's projected land use.

The proposed action will not involve trade-offs between short-term uses, foreclose future options, narrow the range of beneficial use of the environment, nor pose long-term risks to health and safety.

**IX. MITIGATING MEASURES TO MINIMIZE ADVERSE IMPACTS**

The short term impacts occurring during the construction work will be minimized by applying current techniques and methods. In addition, restrictions of operational hours will minimize noise impacts to the adjoining area.

To minimize pollutant emissions from internal construction engines, the contractor will be responsible for proper maintenance of all construction equipment and vehicles.

The contractor will be required to comply with Department of Health regulations to mitigate dust emission. Dust is not anticipated to be a problem due to the sandy nature of the native soil. Dust problems can be mitigated by use of an appropriate water sprinkling method and limiting the area being worked at any one time.

Traffic control by off-duty Police Officers and/or trained construction flagmen will moderate traffic congestion.

**X. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

The construction of the proposed project would involve the commitment of certain natural and fiscal resources. The commitment of construction materials, manpower, and energy are mostly unrenowable and irretrievable. The impacts of using these resources should, however, be weighed against the benefits to the residents of Kailua who will not experience future sewage bypasses/overflows. There will be no loss of any natural or cultural resources.

**XI. DETERMINATION**

Based on the preceding paragraphs, it is anticipated that the proposed action will result in no significant adverse impacts other than those described in this assessment. Consequently, a Negative Declaration is recommended and therefore, an Environmental Impact Statement would not be required.

**XII. REASONS SUPPORTING RECOMMENDED DETERMINATION**

- A. The proposed action does not involve an irrevocable commitment or loss of or destruction of any natural cultural resource:

There are no natural or cultural resources associated with the project site. Development of the project area has substantially altered the site from its natural condition.

- B. The proposed action does not curtail the range of beneficial uses of the environment:

The proposed project is consistent with the County's General Plan and the Department of Wastewater Managements planning standards and would not curtail beneficial uses of the environment in the area. The proposed project will be compatible with the uses of the surrounding area.

- C. The proposed action is in concert with the State's long-term environmental policies, goals and guidelines as expressed in Chapter 343, HRS, and any revisions and amendments thereto, court decisions and executive orders:

The proposed project is consistent with the State's Land Use Plan which is in concert with all applicable policies, goals and guidelines. No long-term environmental conflicts are foreseen.

- D. The proposed action does not substantially affect the economic or social welfare of the community or State:

The economic impact will be affected by the short-term, construction related activities. Cash infusion during the construction phase will be the primary short-term economic impact. Upon completion of the project, the economic situation should return to the existing condition.

- E. The proposed action does not involve substantial secondary impacts, such as population changes or effects on public facilities:

The proposed project will not directly result in an increase of population in the area but the project will eliminate restriction to growth due to the inadequacy of the existing system. The proposed project will allow development of lands in conformance with the existing Development plan.

F. The proposed action does not substantially affect public health:

Only the short-term impacts have potential for affecting public health. Construction activities will be regulated to minimize noise, dust and exhaust emissions.

G. The proposed action does not involve a substantial degradation of environmental quality:

The existing physical aspects of the surrounding area will be preserved.

H. The proposed action is individually limited and cumulatively, does not have a considerable effect upon the environment or involve a commitment for larger actions:

The proposed action, either individually or cumulatively, will not have a considerable effect on the environment, nor will it involve a commitment to larger actions.

I. The proposed action does not substantially affect rare, threatened or endangered species or habitats:

There are no known rare, threatened or endangered species or habitat associated with the project site.

J. The proposed action does not detrimentally affect air or water quality or ambient noise levels:

Short-term impacts on air and water quality, as well as noise, may occur during the construction period, but will be mitigated by normal construction practices and will be regulated by the project plans and specifications.

K. The proposed action does not affect an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary or coastal waters.

The proposed project is not located in an environmentally sensitive area. The project is not located within a flood plain or within a tsunami zone. The project is not located on unique geologically hazardous lands. It is also not expected to have any significant adverse impacts on fresh or coastal waters.

**XIII. LIST OF NECESSARY REVIEW/APPROVALS**

**A. CITY AND COUNTY OF HONOLULU**

1. Department of Public Works
  - a. Construction plan approval
  - b. Work in County Roads Permit
2. Department of Transportation Services - plan approval
3. Department of Land Utilization
  - a. Building Permit for WWPS
  - b. Construction Dewatering Permit (Temporary)
  - c. Sewer Connection Permits
  - d. Sewer Extension, Oversizing and Relief Sewer Requirements
  - e. Sign Permit
  - f. Special Management Area Use Permit
  - g. Street Usage Permit

**B. STATE OF HAWAII**

1. Department of Health
  - a. Community Noise Control for Oahu, Title 11, Chapter 43
  - b. Vehicular Noise Control for Oahu, Title 11, Chapter 42
  - c. Air Pollution Control, Title 11, Chapter 11-60.1
  - d. Construction Plan Approval
  - e. NPDES General Permit: Appendix G - discharges associated with construction activity.



**XIV. ORGANIZATIONS AND PERSONS CONTACTED**

**A. STATE OF HAWAII**

1. Department of Accounting and General Services
2. Department of Business, Economic Development and Tourism
3. Department of Education
4. Department of Land and Natural Resources
5. State Historic Preservation Division
6. Department of Health
7. University of Hawaii
8. U.S. Army Corp of Engineers
9. American Lung Association

**B. CITY AND COUNTY OF HONOLULU**

1. Board of Water Supply
2. Building Department
3. Department of Land Utilization
4. Department of Transportation Services
5. Police Department
6. Department of Public Works

C. OTHERS

1. AT&T Company
2. Gasco, Inc.
3. Hawaiian Electric Company, Inc.
4. Oceanic Cable
5. GTE Hawaiian Tel
6. Kailua Neighborhood Board

## **XV. BIBLIOGRAPHY**

- A. Design Standards of the Div. of Wastewater Management, Volume 1 (Feb. 1984) & Volume 2 (Jul. 1984), Dept. of Public Works, City and County of Honolulu.
- B. Standard Details for Public Works Construction, City and County of Honolulu, September 1984.
- C. Standard Specifications for Public Works Construction, City and County of Honolulu, September 1986.
- D. Islandwide Sewer Adequacy Study (Kailua), City & County of Honolulu, Dept. of Public Works, Div. of Wastewater Management, Akinaka/Fukunaga Engineering Joint Venture, March 1989.
- E. Environmental Assessment for Akumu Street Relief Sewer, November 1990, Dept. of Public Works, City and County of Honolulu.
- F. Final Environmental Impact Statement for Lanikai Flood Control Project, Phase 1, September 1989, Dept. of Public Works, City and County of Honolulu.
- G. Ahuimanu-Kaneohe-Kailua Infiltration/Inflow Report, March 1992, City & County of Honolulu, Dept. of Public Works, Div. of Wastewater Management, Barrett Consulting Group.
- H. State of Hawaii, Department of Business, Economic Development & Tourism, The State of Hawaii Data Book, 1990: A Statistical Abstract, 1987.

**XVI. RESPONSE TO CONTACTS**

ORGANIZATION	REPLIED BY	REPLY DATE	COMMENTS
Dept. of Acct. & General Services	Letter	11/18/94	No comments, Negative Declaration okay.
Dept. of Business, Economic Development & Tourism	Letter	2/18/93	No comments at this time
Dept. of Education	Letter	1/5/95	Must meet DOH noise and dust standards, inform school officials of construction dates next to schools
Dept. of Land & Natural Resources State Historic Preservation Division	Letter	4/21/93	Historic Sites exist; need archaeologist at site
Dept. of Health	Letter	3/13/93	Plans to conform to DOH's Administrative Rules Ch. 11-62
University of Hawaii			
U.S. Army Corps of Engineers			
American Lung Association			
Board of Water Supply	Letter	12/7/94	No objections, submit construction plans during design
Building Department	Letter	2/4/93	No comments at this time
Department of Land Utilization	Letter	12/1/94	Exempt from SMA regulations
Department of Transportation Services	Letter	11/30/94	No objections or comments. Submit construction plans including a traffic control plan during design
Police Department	Letter	2/11/93	Traffic control needed; advise community of dust, noise, traffic conditions which may occur
AT&T	Letter	2/6/93	No comments at this time
Gasco	Letter	2/12/93	Would like to see construction plans
Hawaiian Electric			
Oceanic Cable	Phone	3/1/93	No comments at this time
GTE Hawaiian Tel			
Kailua Neighborhood Board			Send draft E.A. (sent Nov. 14, 1994)
Office of Environmental Quality Control	Letter	7/5/95	Recommendations made (see letter). Comments replied by DWWM 8/1/95

JOHN WAIHEE  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES  
P. O. BOX 119, HONOLULU, HAWAII 96810

ROBERT P. TAKUSHI  
COMPTROLLER

LLOYD I. UNEBASAMI  
DEPUTY COMPTROLLER

LETTER NO. (P) 1982.4

NOV 18 1994

RECEIVED

NOV 22 1994

COPY

AKINAKA & ASSOCIATES, LTD.

Mr. Henry S. Morita  
Executive Vice President  
Akinaka and Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

Dear Mr. Morita:

Subject: Kalaheo Avenue Relief Sewer  
Kailua, Hawaii  
Draft Environmental Assessment

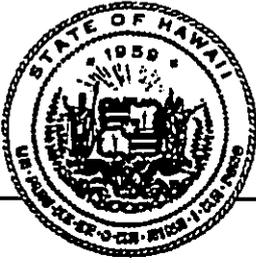
Thank you for the opportunity to comment on the subject action. We have no comments to offer and would have no objection to a negative declaration being filed for this project.

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

Very truly yours,

A handwritten signature in cursive script, appearing to read "Gordon Matsuoka".  
GORDON MATSUOKA  
State Public Works Engineer

RY:jy



DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM

ENERGY DIVISION, 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 587-3800 FAX: (808) 587-3820

JOHN WAIHEE  
Governor  
MUIF HANNEMANN  
Director  
BARBARA KIM STANTON  
Deputy Director  
RICK EGGED  
Deputy Director  
TAKESHI YOSHIHARA  
Deputy Director

RECEIVED

FEB 18 1993

February 16, 1993

AKINAKA & ASSOCIATES, LTD.

Mr. Henry S. Morita  
Executive Vice President  
Akinaka & Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

Dear Mr. Morita:

Subject: Kalaheo Avenue Relief Sewer  
Kailua, Oahu, Hawaii

We wish to inform you that we have no comments to offer on the proposed Environmental Assessment (EA) being prepared by Akinaka & Associates, Ltd. to investigate the impact of the subject project.

Thank you for the opportunity to review the document.

Sincerely,

Maurice H. Kaya  
Energy Program Administrator

MHK:yleis65

cc: Office of Environmental Quality Control

BENJAMIN J. CAYETANO  
GOVERNOR

HERMAN M. AIZAWA, Ph.D.  
SUPERINTENDENT



STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P. O. BOX 2360  
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

January 5, 1995

Mr. Henry S. Morita  
Executive Vice President  
Akinaka & Associates, LTD.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

RECEIVED

JAN 10 1995

AKINAKA & ASSOCIATES, LTD.

Dear Mr. Morita:

SUBJECT: Kalaheo Avenue Relief Sewer  
Kailua, Koolaupoko, Oahu  
A&A Job No: DPWW91-02

We have reviewed the subject draft environmental assessment and have determined that the proposed project may have an impact on area schools if the sewer line replacement is adjacent to school sites.

The Department of Education is concerned about noise, dust, and traffic related to the proposed construction project. We will require that the developer meet Department of Health (DOH) noise and dust standards. If the DOH standards on noise and dust are exceeded during construction then we will require the developer to install air-conditioning at no expense to the DOE for those schools/classrooms being affected.

We request that school officials be informed as to the date when construction will begin next to a school so they can address possible traffic, noise, and dust concerns. If utilities are to be shut off during the school day due to the construction project, school officials should be informed in advance so appropriate action can be taken to inform the students, parents, and staff.

Should there be any questions, please call the Facilities Branch at 733-4862.

Sincerely,

Handwritten signature of Herman M. Aizawa in cursive script.

Herman M. Aizawa, Ph.D.  
Superintendent

HMA:hy

cc: A. Suga, OBS  
R. Hiraishi, WDO

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

JOHN WAHEE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

REF:HP-BEK

APR 1 1993

KEITH AHUE, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II  
DONNA L. HANA'IKE

AQUACULTURE DEVELOPMENT  
PROGRAM

AQUATIC RESOURCES  
CONSERVATION AND  
ENVIRONMENTAL AFFAIRS  
CONSERVATION AND  
RESOURCES ENFORCEMENT

CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
DIVISION

LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

Mr. Henry S. Morita  
Executive Vice President,  
Akinaka & Associates, Ltd.  
250 N. Beretania St., Suite 300  
Honolulu, Hawaii 96817-4716

LOG NO: 7358  
DOC NO: 9303JC02

RECEIVED

APR 2 1 1993

AKINAKA & ASSOCIATES, LTD.

Dear Mr. Morita:

**SUBJECT: Kalaheo Avenue Relief Sewer  
Kailua, Ko'olaupoko, O'ahu  
TMK: 4-2, 4-3, 4-4**

Thank you for the opportunity to review this project. Archaeological surveys have not been conducted previously along the length of the proposed Kalaheo Ave. sewer relief corridor. Given historical and archaeological information from similar areas elsewhere within Kailua ahupua'a, we believe that significant historic sites (burial sites) are likely to be found along Kalaheo Ave., especially in areas outside of established utilities corridors.

The proposed sewer relief system along Kalaheo Ave. will cross three different tax map sections in the ahupua'a of Kailua along the sand accretion berm. In certain areas, this Kailua sand berm has been shown to contain old Hawaiian burials and remnants of Hawaiian occupation layers. Currently, we know of at least six burial sites and one habitation site within this sand berm in Kailua ahupua'a.

Based on our current knowledge of significant historic sites throughout the Kailua sand berm within Kailua ahupua'a, it is likely that historic sites exist within the route of the proposed Kalaheo Ave. relief sewer, especially in areas outside of established utilities corridors. In these areas, a

Henry Morita  
Page 2

qualified archaeologist would need to monitor construction to determine if any historic sites are present, and if so, to gather sufficient information to evaluate their significance. A report of the findings should be submitted to the State Historic Preservation Division for review. If significant historic sites are present, a mitigation plan may need to be developed and mitigated.

Very truly yours,



John P. Keppeler II  
Deputy State Historic Preservation Officer

JC:bek

JOHN WAIHEE  
GOVERNOR OF HAWAII



JOHN C. LEWIN, M.D.  
DIRECTOR OF HEALTH

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

In reply, please refer to:

March 11, 1993

93-023/epo

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MAR 13 1993

AKINAKA & ASSOCIATES, LTD.

Mr. Henry S. Morita  
Executive Vice President  
Akinaka & Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

Dear Morita:

Subject: Kalaheo Avenue Relief Sewer  
Kailua, Oahu, Hawaii

Thank you for allowing us to review and comment on the subject project.  
We have the following comments to offer:

We concur with the proposal to seek alternatives for sewer relief along  
Kalaheo Avenue. All wastewater plans must conform to applicable provisions of  
the Department of Health's Administrative Rules, Chapter 11-62,  
"Wastewater Systems."

If you should have any questions on this matter, please contact  
Ms. Lori Kajiwara of the Wastewater Branch at 586-4290.

Very truly yours,

JOHN C. LEWIN, M.D.  
Director of Health

c: Wastewater Branch

**BOARD OF WATER SUPPLY**

CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET

HONOLULU, HAWAII 96843



December 7, 1994

JEREMY HARRIS, Mayor

WALTER O. WATSON, JR., Chairman  
MAURICE H. YAMASATO, Vice Chairman  
SISTER M. DAVILYN AH CHICK, O.S.F.  
REX D. JOHNSON  
MELISSA Y.J. LUM  
FORREST C. MURPHY  
KENNETH E. SPRAGUE

KAZU HAYASHIDA  
Manager and Chief Engineer

**RECEIVED**

DEC 10 1994

AKINAKA & ASSOCIATES, LTD.

Mr. Henry S. Morita  
Executive Vice President  
Akinaka and Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

Dear Mr. Morita:

Subject: Your Transmittal of November 14, 1994 of the Draft Environmental Assessment (DEA) for the Kalaheo Avenue Relief Sewer

Thank you for the opportunity to review and comment on the DEA for the subject project.

We have no objections to the proposed project. However, the construction plans should be submitted for our review and approval prior to construction to ensure the protection and integrity of our water system.

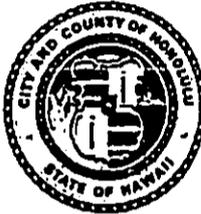
If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

KAZU HAYASHIDA  
Manager and Chief Engineer

BUILDING DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

HONOLULU MUNICIPAL BUILDING  
650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. FASI  
MAYOR

HERBERT K. MURAOKA  
DIRECTOR AND BUILDING SUPERINTENDENT

WILLIAM F. REMULAR  
DEPUTY

PB 93-125

February 2, 1993

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FEB 4 1993

Akinaka & Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

AKINAKA & ASSOCIATES, LTD.

Gentlemen:

Subject: Kalaheo Avenue Sewer Relief

Thank you for affording us the opportunity to comment on the environmental assessment preparation notice for the subject project. However, we do not have comments at this time.

Very truly yours,

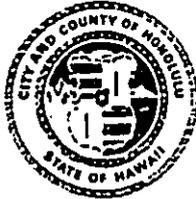
A handwritten signature in dark ink, appearing to read "Herbert K. Muraoka", is written over the typed name.

HERBERT K. MURAOKA  
Director and Building Superintendent

cc: J. Harada

DEPARTMENT OF LAND UTILIZATION  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813 • (808) 523-4432



JEREMY HARRIS  
MAYOR

DONALD A. CLEGG  
DIRECTOR

LORETTA K.C. CHEE  
DEPUTY DIRECTOR

94-08436 (JT)

December 1, 1994

RECEIVED

DEC 2 1994

Mr. Henry S. Morita  
Akinaka & Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

AKINAKA & ASSOCIATES, LTD.

Dear Mr. Morita:

Draft Environmental Assessment (DEA)  
Kalaheo Avenue Relief Sewer - Kailua  
Tax Map Keys: 4-2-various

Thank you for the opportunity to review the above referenced document.

We find that portions of the project are proposed within the Special Management Area (SMA), but are not defined as "development" and are therefore, exempt (Section 25-1.3 (2)(D) and (M), Chapter 25, Revised Ordinances of Honolulu) from SMA regulations.

Should you have any questions, please call Joan Takano of our staff at 527-5038.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Loretta Chee", is written over the typed name of Donald A. Clegg.

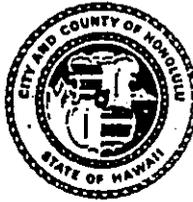
DONALD A. CLEGG  
Director of Land Utilization

DAC:jt  
g:deasewer.jht

DEPARTMENT OF TRANSPORTATION SERVICES  
**CITY AND COUNTY OF HONOLULU**

PACIFIC PARK PLAZA  
711 KAPIOLANI BOULEVARD, SUITE 1200  
HONOLULU, HAWAII 96813

JEREMY HARRIS  
~~FRANK FONG~~  
MAYOR



JOSEPH M. MAGALDI, JR.  
DIRECTOR

ANAR SAPPAL  
DEPUTY DIRECTOR

November 30, 1994

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DEC 2 1994

AKINAKA & ASSOCIATES, LTD.

Mr. Henry S. Morita  
Executive Vice President  
Akinaka & Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

Dear Mr. Morita:

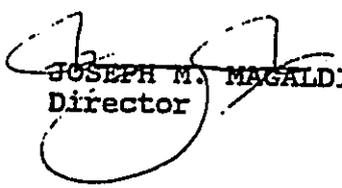
Subject: Kalaheo Avenue Relief Sewer  
Draft Environmental Assessment (EA)  
TMK: 4-4-11

This is in response to your transmittal dated November 14, 1994 requesting our comments on the subject draft EA.

Based on our review, we have no objections or comments to offer at this time. Construction plans, including a traffic control plan, for all work within and affecting the City rights-of-way should be submitted to our department for approval.

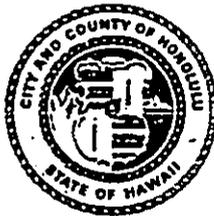
Should you have any questions, please contact Lance Watanabe of my staff at 523-4199.

Sincerely,

  
JOSEPH M. MAGALDI, JR.  
Director

POLICE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

801 SOUTH BERETANIA STREET  
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111



FRANK F. FASI  
MAYOR

MICHAEL S. NAKAMURA  
CHIEF

HAROLD M. KAWASAKI  
DEPUTY CHIEF

OUR REFERENCE CS-LE

February 9, 1993

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FEB 11 1993

AKINAKA & ASSOCIATES, LTD.

Mr. Henry S. Morita, Executive Vice President  
Akinaka and Associates, Ltd.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

Dear Mr. Morita:

Subject: Kalaheo Avenue Relief Sewer  
Kailua, Oahu, Hawaii

This is in response to your undated request for comments relative to the impact of the proposed project for an environmental assessment.

The map included with your request depicts the sewer relief project through Kailua.

When completed, the proposal itself will not impact the services and facilities of the Honolulu Police Department, however the construction phase of it will have a considerable effect on the calls for police services.

Major traffic problems will be created along the route itself and the streets surrounding the construction sites. Traffic will have to be rerouted and/or controlled in some manner to avoid areas under construction.

Another problem will be created with construction vehicles, dust and noise in the area surrounding the actual construction site.

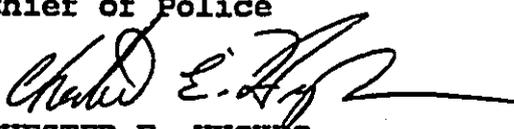
Page 2  
Mr. Henry S. Morita  
February 9, 1993

These factors will all impact calls for police service and thus have its effect on the services provided by this department. We would therefore like to recommend that some kind of traffic control measure be adopted for the duration of the project. In addition, the surrounding neighborhoods should be informed well in advance of the construction timetable and all the problems that can and should be anticipated as a result of this project.

Thank you for the opportunity to comment.

Sincerely,

MICHAEL S. NAKAMURA  
Chief of Police

By   
CHESTER E. HUGHES  
Assistant Chief of Police



96-1408 Waihona Place  
Pearl City, HI 96782  
(808) 455-4185

RECEIVED

FEB 6 1993

AKINAKA & ASSOCIATES, LTD.

Akinaka & Associates, LTD  
250 North Beretania Street  
Suite 300  
Honolulu, Hawaii 96817-4716

RE Project: Kalaheo Avenue Relief  
Kailua, Oahu, Hawaii

Dear MR. Morita;

Thank you for your letter concerning the above project.  
After checking our records, we are pleased to report that your  
project will pose no threat to our fiber optic cable.

As you may know, our fiber optic cable carries a large portion of  
the long distance service for Hawaii, and we work hard to protect  
it. It is people like you that make our job easier. THANK YOU

If we can assist you in the future, please let us know.

Sincerely,

Russell Au  
OPERATIONS SUPERVISOR

**The Gas Company**  
515 Kamakee Street  
PO. Box 3379 Honolulu, Hawaii 96842  
Telephone (808) 547-3333  
Fax (808) 547-3030 547-3561  
Telex 7430292



February 10, 1993

RECEIVED

FEB 12 1993

AKINAKA & ASSOCIATES, LTD.

AKINAKA & ASSOCIATES, LTD.  
250 North Beretania Street, Suite 300  
Honolulu, Hawaii 96817-4716

Attention: Mr. Henry S. Morita  
Executive Vice President

Gentlemen:

Subject: Kalaheo Avenue Relief Sewer  
Kailua, Oahu, Hawaii

This is in response to your letter received on February 2, 1993. Please be advised that The Gas Company maintains an underground gas utility system in the project vicinity. We would appreciate an opportunity to review the preliminary plans of the proposed improvements to minimize any potential conflicts.

Should there be any questions, or if additional information is desired, please call me at 547-3574.

Very truly yours,

THE GAS COMPANY

A handwritten signature in cursive script that reads "Edwin N. Sawa".

Edwin N. Sawa, P.E.  
Manager, Engineering

/RMVENS:jk  
93-127

BENJAMIN J. CAYETANO

GOVERNOR



GARY GILL  
DIRECTOR

**STATE OF HAWAII**  
**OFFICE OF ENVIRONMENTAL QUALITY CONTROL**

220 SOUTH KING STREET  
FOURTH FLOOR  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 586-4196  
FACSIMILE (808) 586-2452

July 5, 1995

Mr. Felix Limtiaco  
Department of Wastewater Management  
650 South King Street  
Honolulu, Hawaii 96813

Attention: Mr. Cedric Takamoto

Dear Mr. Limtiaco:

Subject: Draft Environmental Assessment (EA) for Kalaheo Avenue Relief Sewer,  
Kailua, Oahu

After a review of the draft EA, we recommend that you include the following in the Final EA:

1. Section II-A notes the inadequacy of the sewer system to accommodate wet weather flows. Section II-B, for KK01, notes that over 90% of the sewer line is badly deteriorated, yet concludes in the following paragraph that leaks were not significant. Please provide greater detail or quantification of the infiltration inflow problems along the existing sewer line.
2. What is the effect of existing sewer line conditions on levels of treatment at the sewage treatment plant? Will the volume of flow be reduced by this project? If so, by how much? How will the quality of treatment be improved by this project?
3. Section V-B, Long Term Impacts, mentions development of a tributary area. Please include a fuller discussion, including the number of additional homes and where they will be located. Please explain in what "Development Plan" these new units are described.

Mr. Felix Limtiaco  
July 5, 1995  
Page 2

4. After the implementation of this project, what change in the water quality of Kailua Bay can be expected?

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

Sincerely,



Gary Gill  
Director

GG/NH:kk

c: Akinaka & Associates

August 1, 1995

Office of Environmental Quality Control  
220 South King Street, 4th Floor  
Honolulu, Hawaii 96813

Gentlemen:

Subject: Kalaheo Avenue Relief Sewer, Kailua, Oahu  
Draft Environmental Assessment

This is response to your July 5, 1995 letter regarding the subject project.

1. The significant deterioration mentioned refers to the pipe walls, which will be rehabilitated, either through re-lining (in Kalaheo Avenue) or pipe replacement (the remaining segments from the intersection of Kalaheo Avenue and Kailua Road up to the intersection of Keolu Drive and Akumu Street).

The lack of leaks specifically refers to leaks from pipe joints (the intersections between pipes) and laterals (the branches from the main line in the street to the houses).

2. The goal of this project is to reduce spills and bypasses due to storm influent entering the sewer lines and surcharging the lines. Some reduction of the influent through pipe re-lining and replacement is expected, although no definite percentage reduction can be predicted.

A corollary result of the reduction of storm influent will be a reduction of situations where treatment efficacy is reduced through dilution of the treatment processes by excess flow.

3. The re-lining and replacement are intended primarily to reduce storm influent to mitigate existing spill and bypass problems.

Another part of the total project which is intended to provide for future peak flow is the Kainalu Drive Relief Sewer, which has been preliminarily sized to accept the peak flow from the future tributary area defined by the Development Plan approved by the City Council as of 1995. However, the Kainalu Drive Relief Sewer is not being implemented at this time. Implementation will await the results of the Pilot Project scheduled to begin in 1995 which will rehabilitate a portion of

BENJAMIN J. CAYETANO  
GOVERNOR



FILE COPY

GARY GILL  
DIRECTOR

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
220 SOUTH KING STREET  
FOURTH FLOOR  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 596-4186  
FACSIMILE (808) 596-2452

July 5, 1995

Mr. Felix Limtiaco  
Department of Wastewater Management  
650 South King Street  
Honolulu, Hawaii 96813

Attention: Mr. Cedric Takamoto

Dear Mr. Limtiaco:

Subject: Draft Environmental Assessment (EA) for Kalaheo Avenue Relief Sewer,  
Kailua, Oahu

After a review of the draft EA, we recommend that you include the following in the Final EA:

1. Section II-A notes the inadequacy of the sewer system to accommodate wet weather flows. Section II-B, for KK01, notes that over 90% of the sewer line is badly deteriorated, yet concludes in the following paragraph that leaks were not significant. Please provide greater detail or quantification of the infiltration inflow problems along the existing sewer line.
2. What is the effect of existing sewer line conditions on levels of treatment at the sewage treatment plant? Will the volume of flow be reduced by this project? If so, by how much? How will the quality of treatment be improved by this project?
3. Section V-B, Long Term Impacts, mentions development of a tributary area. Please include a fuller discussion, including the number of additional homes and where they will be located. Please explain in what "Development Plan" these new units are described.

Mr. Felix Lintiaco  
July 5, 1995  
Page 2

4. After the implementation of this project, what change in the water quality of Kailua Bay can be expected?

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

Sincerely,



Gary Gili  
Director

GG/NH:kk

c: Akinaka & Associates

Office of Environmental  
Quality Control

- 2 -

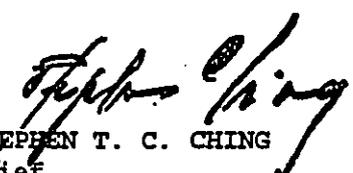
August 1, 1995  
WPP 95-376

the tributary basin upstream of the Kailua Heights pump station. When the Pilot Project's results are known in 1998, the percentage reduction achieved and any additional rehabilitation that may be planned will be taken into account in the final implementation plans for the Kainalu Drive Relief Sewer, which will include a decision on whether the Kainalu Drive Relief Sewer is necessary or not.

4. The effect of spills and bypasses on the water quality of Kailua Bay is nominal compared to the effect of non-point storm pollution runoff, which has a stronger impact. However, the nominal effect of spills and bypasses should become more nominal to the extent of the reduction in spills and bypasses that is anticipated.

Should there be any questions, please contact Cedric Takamoto of the Planning Branch at 523-4067.

Very truly yours,

  
STEPHEN T. C. CHING  
Chief

CT:dl