DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

December 7, 1990
WEP 298

Office of Environmental Quality Control
State of Hawaii
465 South King Street, Room 104
Honolulu, Hawaii 96813

Gentlemen:

Kamehameha Highway Force Main Replacement ~~from Pearl Harbor to~~ Hauula
TMK: 1st Div. 1-1-03: Portions of 3, 4, 7, 28 & 138
and 1st Div. 1-2-21: Portions of 35 & 36

This letter is a Notice of Negative Declaration for the Kamehameha Highway Force Main Replacement, Honolulu, Hawaii, pursuant to Chapter 343, HRS. This notice of determination was based on an environmental assessment prepared by Belt Collins & Associates, after consulting with other agencies and individuals. Four (4) copies of the Final Environmental Assessment are attached. The pertinent data for this notice are as follows.

1. Proposing Agency - Department of Public Works, City and County of Honolulu.

2. Proposed Action - The proposed project consists of constructing a replacement force main along Nimitz Highway adjacent to Keehi Lagoon.

   The existing force main is about 30 years old (installed in 1959) and has been subjected to extreme corrosion. The proposed project is intended to remedy the pipeline's existing state of disrepair and bring it back to its normal operating condition.

   The project site is located approximately 1,500 feet east of the Honolulu International Airport near the Keehi Interchange. Nimitz Highway is located to the north of the project site, Sand Island Industrial Complex to the east, Keehi Lagoon to the south and Keehi Lagoon Beach Park to the west. Moanalua Stream and Kalihi Stream, two major drainageways, traverse the project site at two separate locations.

   The project site encompasses an area of approximately 3.3 acres which includes an approximately 50-foot wide area along the approximately 2,880-foot long force main alignment and is identified by the following Tax Map Key designations:

   TMK: First Division, 1-1-03: portions of 3, 4, 7, 28 and 138
   TMK: First Division, 1-2-21: portions of 35 and 36

The new force main will consist of a 42-inch diameter reinforced concrete low head pressure pipe buried a minimum of about 4 feet (to crown of pipe) beneath the surface of the ground. For the force main to cross Moanalua and Kalihi Streams, either concrete bridges or understream crossings will be used. If concrete bridges are used, they will be similar to the adjacent existing pedestrian bridges.

3. Determination - After reviewing the Environmental Assessment prepared for the project and consulting with other government agencies, community organizations and individuals, we have determined that the proposed project will not have a significant impact on the environment, and an Environmental Impact Statement is not required.

4. Reasons Supporting Determination - Reasons and conditions supporting the determination are based on the following criteria. The proposed project will not:

- affect any rare or endangered flora or fauna;
- destroy any archaeological, historical or cultural resources;
- displace any families or commercial establishments;
- degrade environmental quality;
- conflict with the State's environmental policies and goals expressed in Chapter 344, HRS.

5. Contact Person - Ed Sakamoto
Division of Wastewater Management
Department of Public Works
650 South King Street, 14th Floor
Honolulu, Hawaii 96813-3017
Telephone No. 523-4325

Very truly yours,

C. Michael Sakamoto

SAM CALLEJO
Director and Chief Engineer

Attachments: OEQC Form for Publication
EA, 4 copies

cc: Department of General Planning w/attachment
Department of Land Utilization w/attachment

1990-12-23-OA · FRA

FILE COPY

ENVIRONMENTAL ASSESSMENT
FOR
KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT
(KEEHI LAGOON)

HONOLULU, HAWAII

TAX MAP KEYS:
1st Div. 1-1-03: Portion of 3, 4, 7, 28 & 138
1st Div. 1-2-21: Portion of 35 & 36

This document was prepared pursuant to Chapter 343, H.R.S.

PROPOSING AGENCY: Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RESPONSIBLE OFFICIAL: C. Michael Stout for SAM CALLEJO
Director and Chief Engineer

11/30/90
Date

Prepared by:
Belt Collins & Assoc.

Prepared for:
Division of Wastewater Management

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CHAPTER I

INTRODUCTION

1. PURPOSE OF DOCUMENT

The Division of Wastewater Management of the Department of Public Works, City and County of Honolulu, is proposing a sewer force main replacement along Nimitz Highway adjacent to Keehi Lagoon. The proposed improvement constitutes an agency action which is subject to Section 11-200-9 of the Environmental Impact Statement Rules, Title 11, Chapter 200, Department of Health, State of Hawaii, pursuant to Chapter 343, Hawaii Revised Statutes. Accordingly, this environmental assessment complies with the requirements of the State's Chapter 343, HRS, provision.

2. PROPOSED ACTION AND PROJECT LOCATION

The project site is located approximately 1,500 feet east of the Honolulu International Airport (See Figure 1) near the Keehi Interchange. Nimitz Highway is located to the north of the project site, Sand Island Industrial Complex to the east, Keehi Lagoon to the south and Keehi Lagoon Beach Park to the west. Moanalua Stream and Kalihi Stream, two major drainageways, traverse the project site at two separate locations.

The project site encompasses an area of approximately 3.3 acres (See Figures 2 & 3) which includes an approximately 50-foot wide area along the approximately 2,880-foot long force main alignment and is identified by the following Tax Map Key designations:

TMK: First Division., 1-1-03: portions of 3, 4, 7, 28 and 138.
TMK: First Division., 1-2-21: portions of 35 and 36.

3. AGENCIES CONSULTED

The following is a list of the agencies consulted during the environmental assessment preparation process. Chapter XI of this document shows the agencies that have commented on the proposed project.

Federal Agencies

- o U. S. Army Corps of Engineers
- o National Fish and Wildlife Service
- o Water Resources Division, Department of the Interior
- o National Marine Fisheries Service
- o U. S. Coast Guard

State Agencies

- o Department of Land and Natural Resources
- o Coastal Zone Management Program
- o Department of Health

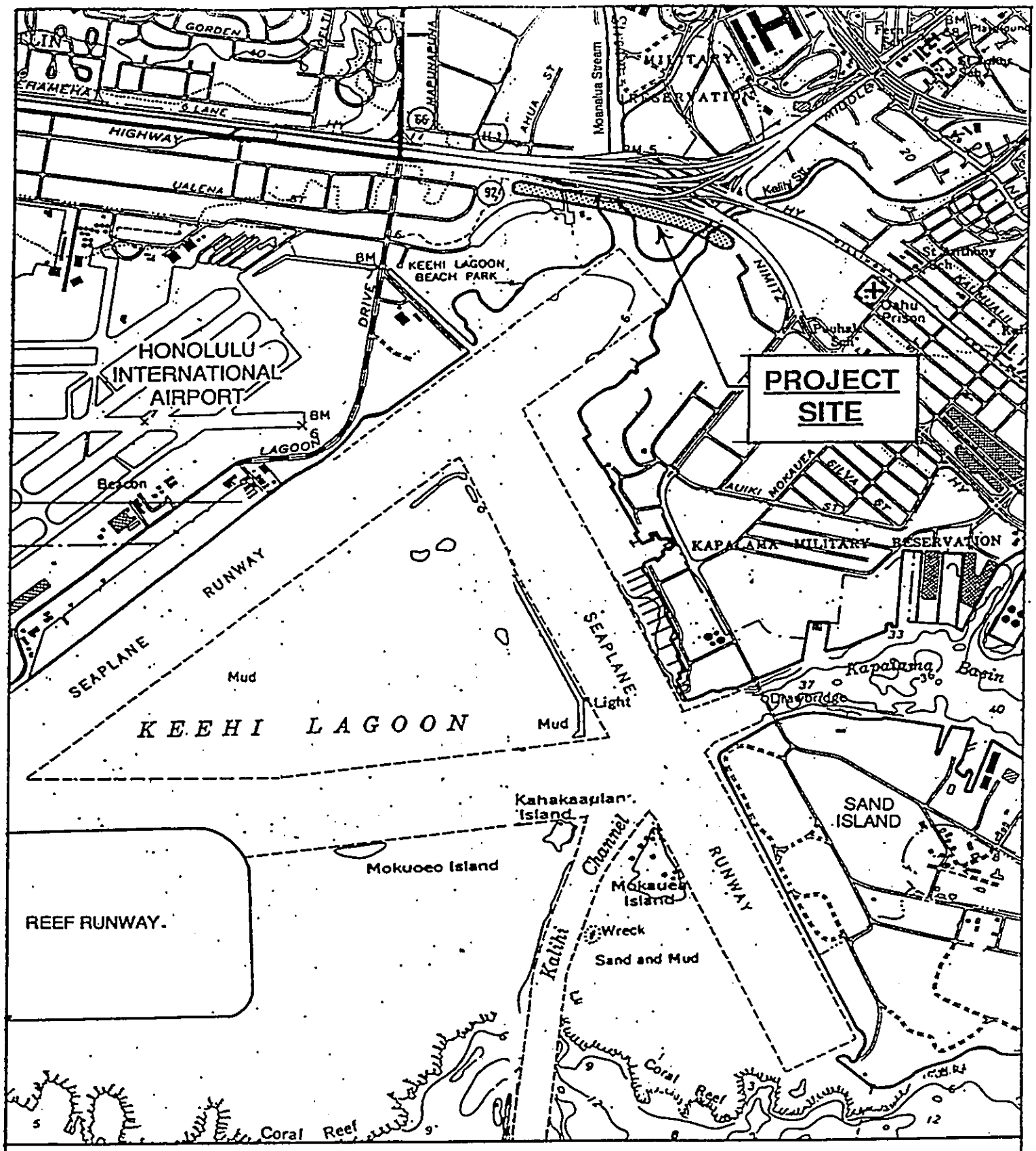
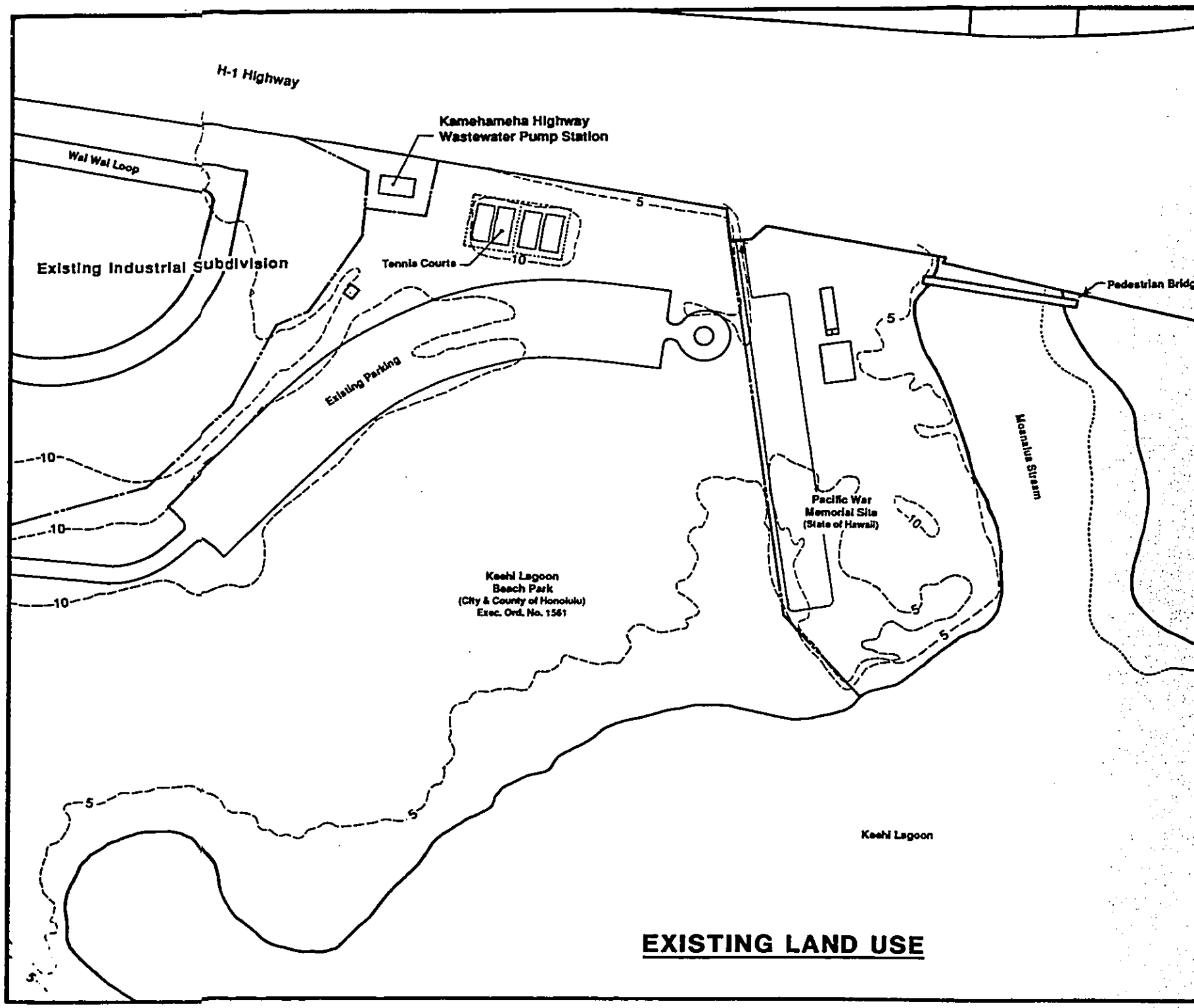


Figure 1
LOCATION MAP

KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT
NIMITZ HIGHWAY - KEEHI LAGOON

Prepared for: Dept. of Public Works
Prepared by: Belt Collins & Assoc.
Honolulu Hawaii



EXISTING LAND USE

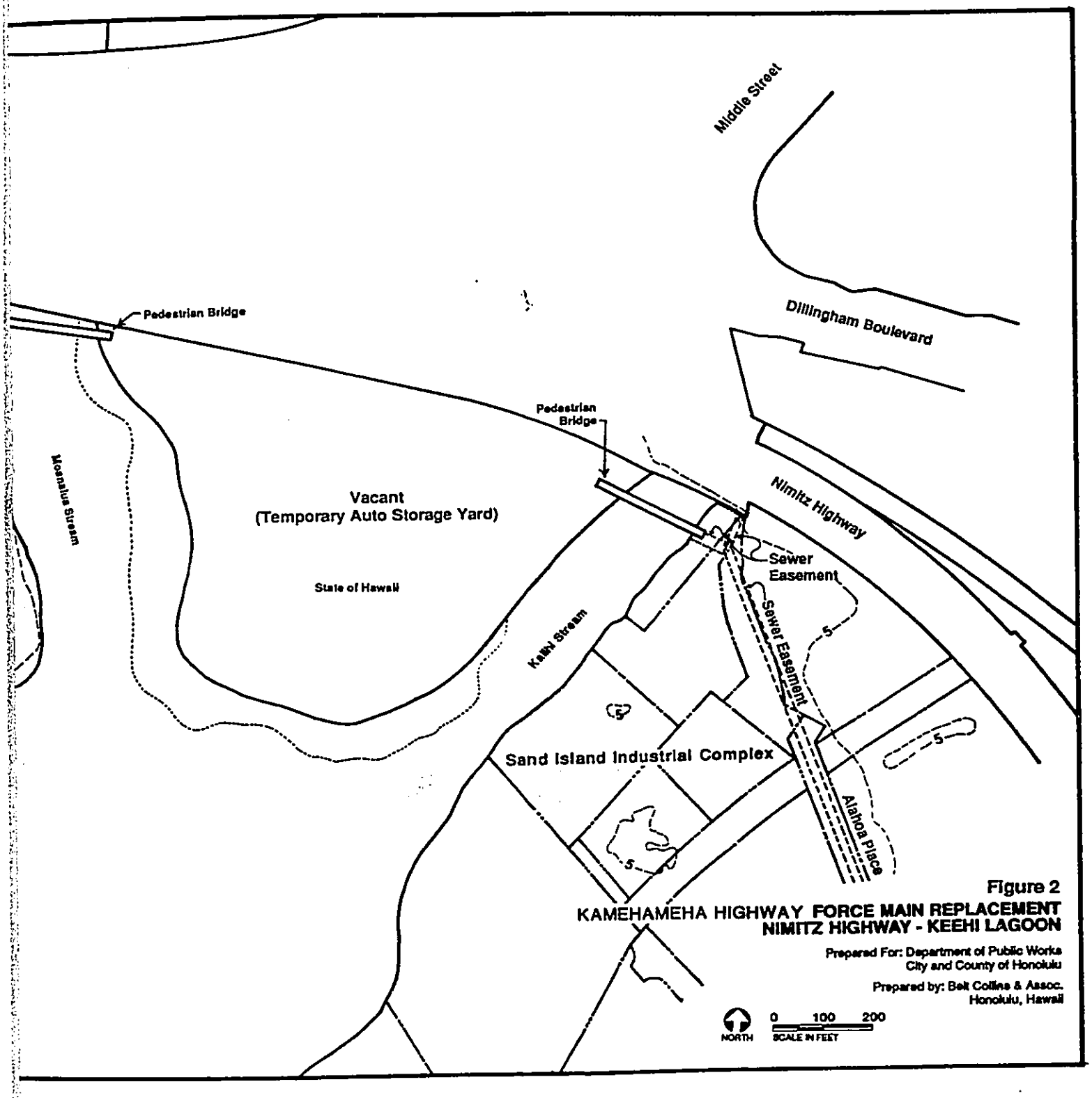


Figure 2
KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT
NIMITZ HIGHWAY - KEEHI LAGOON

Prepared For: Department of Public Works
City and County of Honolulu

Prepared by: Belt Collins & Assoc.
Honolulu, Hawaii

- Department of Transportation
- Department of Business and Economic Development
- Office of Environmental Quality Control

County Agencies

- Department of Land Utilization
- Department of Parks and Recreation
- Department of General Planning
- Department of Transportation Services
- Fire Department
- Police Department
- Board of Water Supply

Public Utilities

- Hawaiian Electric Co Inc
- Hawaiian Telephone Co
- Gasco Inc.
- Oceanic Cablevision
- Pacific Resources Inc.

Others

- Disabled American Veterans Department of Hawaii
- Neighborhood Board No. 15 (Kalihi-Palama)

CHAPTER II

PROJECT DESCRIPTION

1. PROJECT DESCRIPTION

The proposed action calls for the replacement of an existing 36-inch diameter sewer force main with a new 42-inch diameter force main between the Kamehameha Highway Wastewater Pump Station (WWPS) along Nimitz Highway and a sewer gravity line on the east bank of the Kalihi Stream (See Figure 3). The new force main will be installed adjacent to and parallel with the existing force main. The existing line will remain intact, and possibly be repaired by slip lining or insituform processing, and kept in reserve for emergency by-pass operations and/or additional flow capacity.

The approximately 2,880-foot long force main, which is to be replaced, is part of the existing Kamehameha Highway WWPS which collects wastewater from the Honolulu International Airport, Aliamanu Housing, Salt Lake Moanalua, Moanalua Gardens and Keehi Lagoon Park areas and pumps the wastewater to the existing Sand Island gravity sewer line in the adjacent Sand Island Industrial Complex.

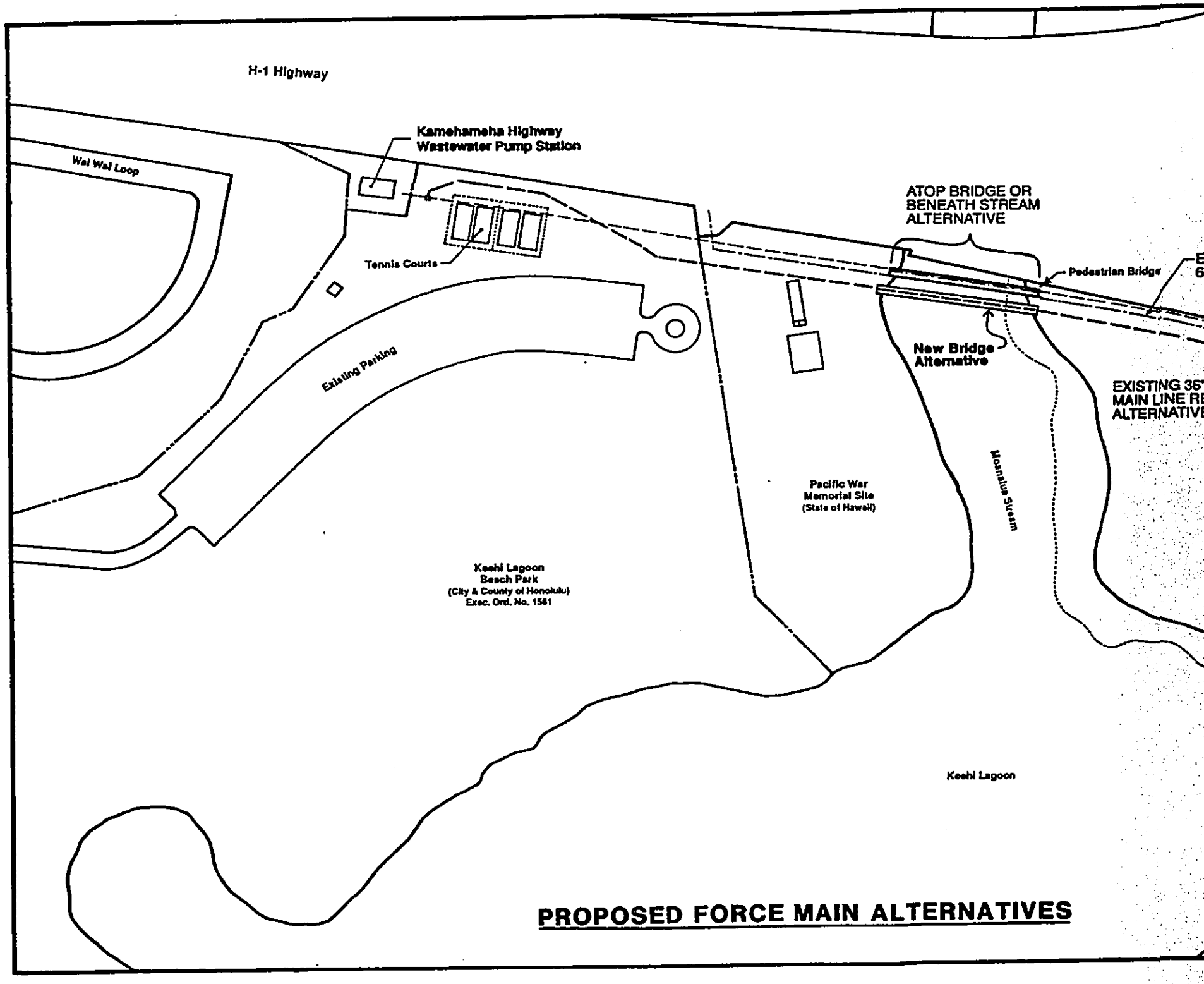
2. PROJECT OBJECTIVE

The existing force main is about 30 years old (installed in 1959) and has been subjected to extensive corrosion. The proposed project is intended to remedy the pipeline's existing state of disrepair and bring it back to its normal operating condition. Records show that breaks in the line have already occurred which only substantiates the need for remedial action.

3. TECHNICAL DESCRIPTION OF PROPOSED ACTION

The proposed 42-inch force main would be located about 40 feet makai of and parallel with the existing force main (See Figures 3 - 5). The new alignment will avoid impacting existing electrical, telephone and gas lines adjacent to the Nimitz Highway right-of-way. At the Keehi Lagoon Beach Park tennis court site, the force main will be located mauka of the recreational facility. By providing a parallel replacement line for the existing force main, the sewer system can continue to operate while construction on the new line is in progress.

The force main will be buried a minimum of about 4 feet (to crown of pipe) beneath the surface of the ground. An easement for the new force main will be obtained from the affected property owners. In establishing an alignment for the force main, coordination was made with the State of Hawaii's Keehi Lagoon Master Plan and with other agencies including the State Department of Land and Natural Resources, Disabled American Veterans Department, State Department of Transportation, City and County of Honolulu Department of Land Utilization, PRI Gasco, Inc., Hawaiian Electric Company and Hawaiian Telephone Company.



PROPOSED FORCE MAIN ALTERNATIVES

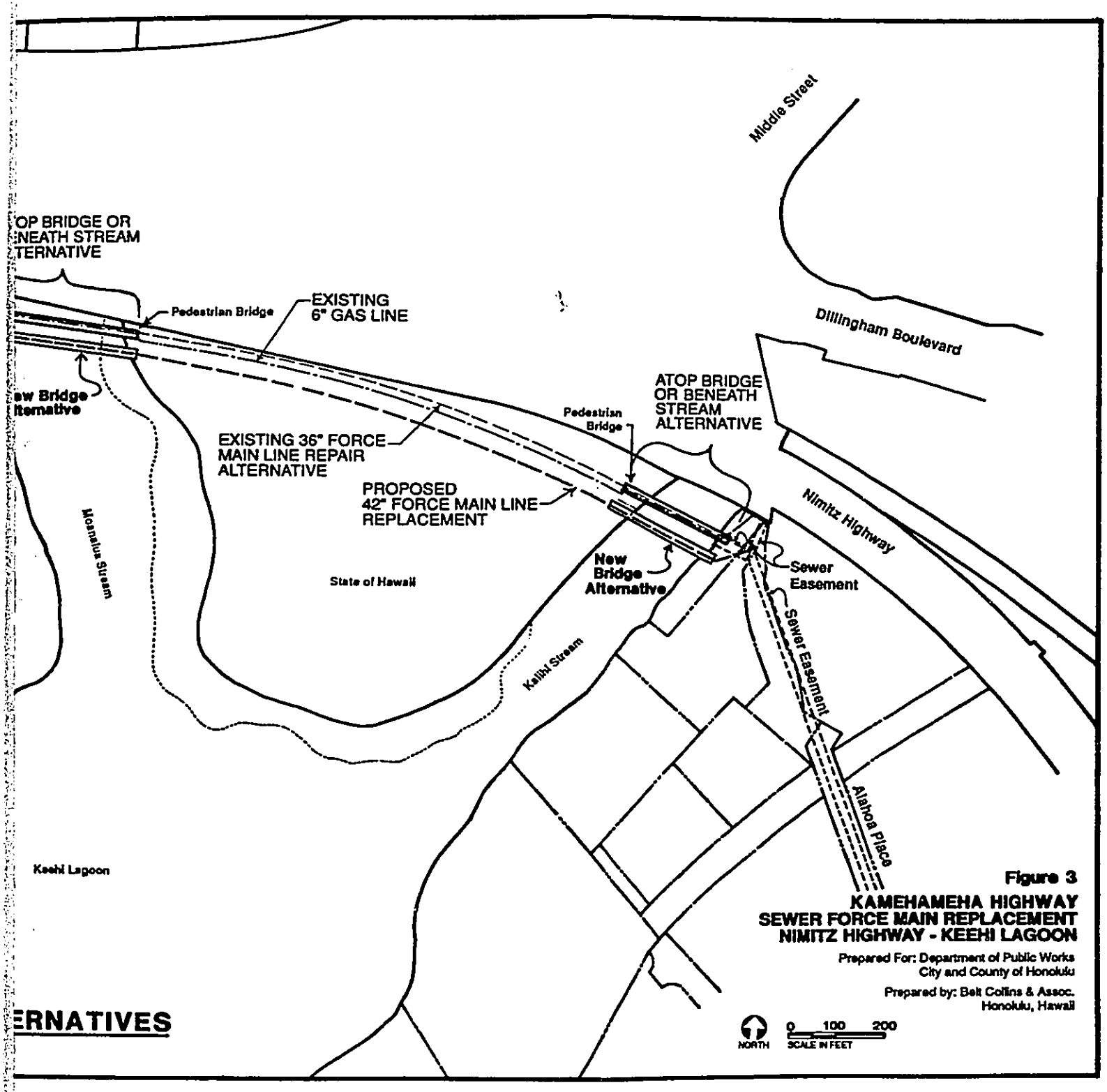
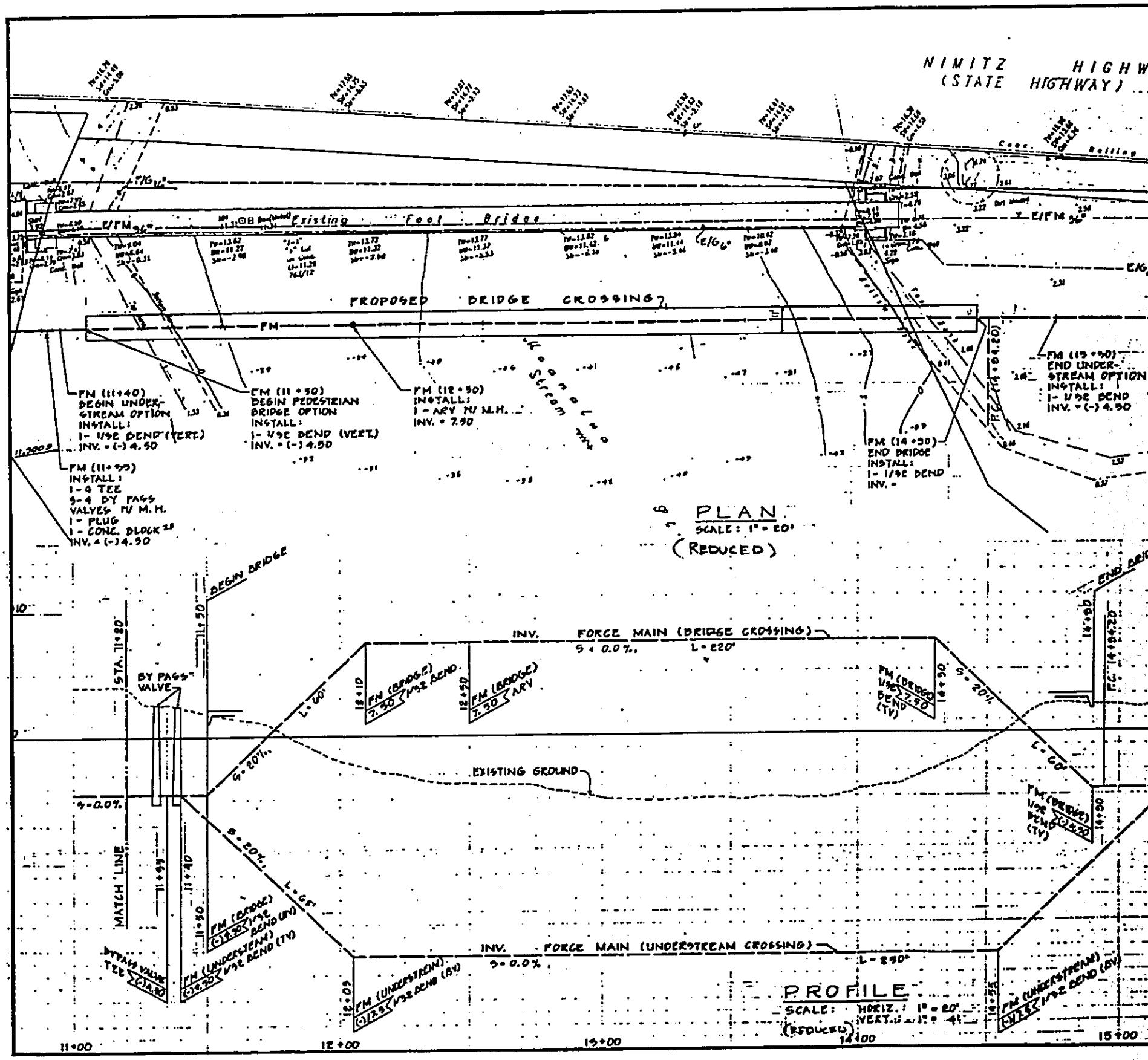


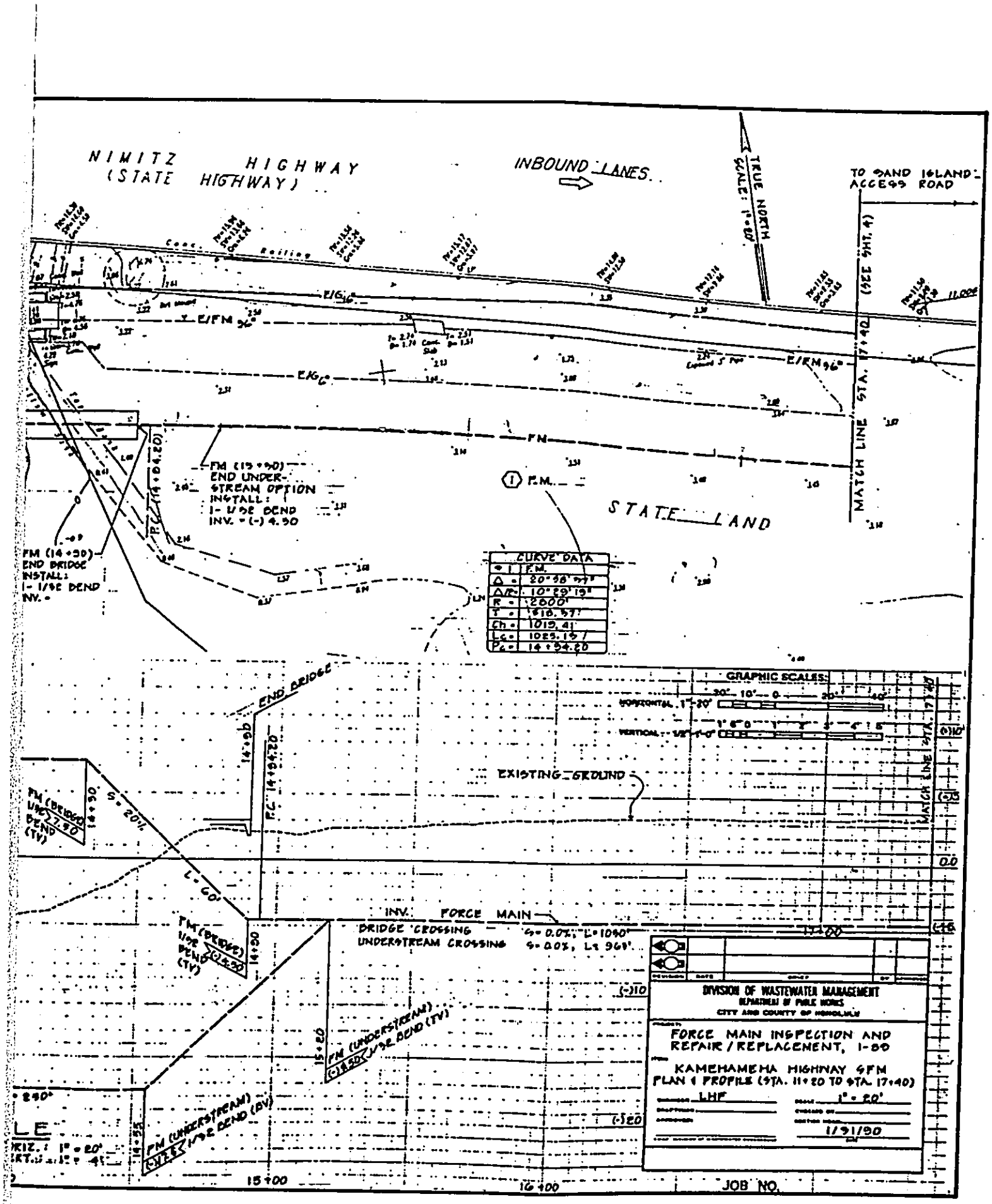
Figure 3

KAMEHAMEHA HIGHWAY
SEWER FORCE MAIN REPLACEMENT
NIMITZ HIGHWAY - KEEHI LAGOON

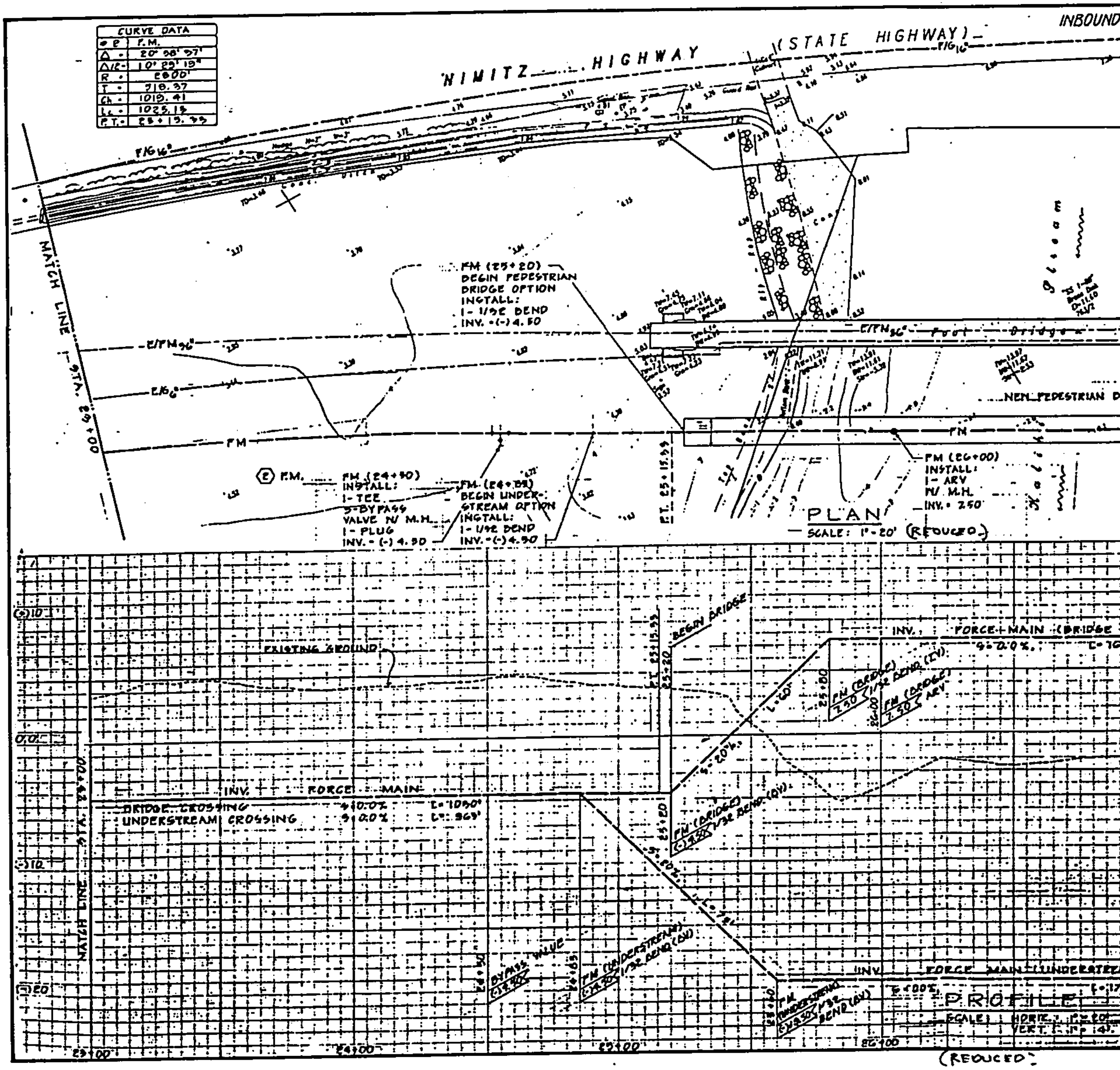
Prepared For: Department of Public Works
City and County of Honolulu

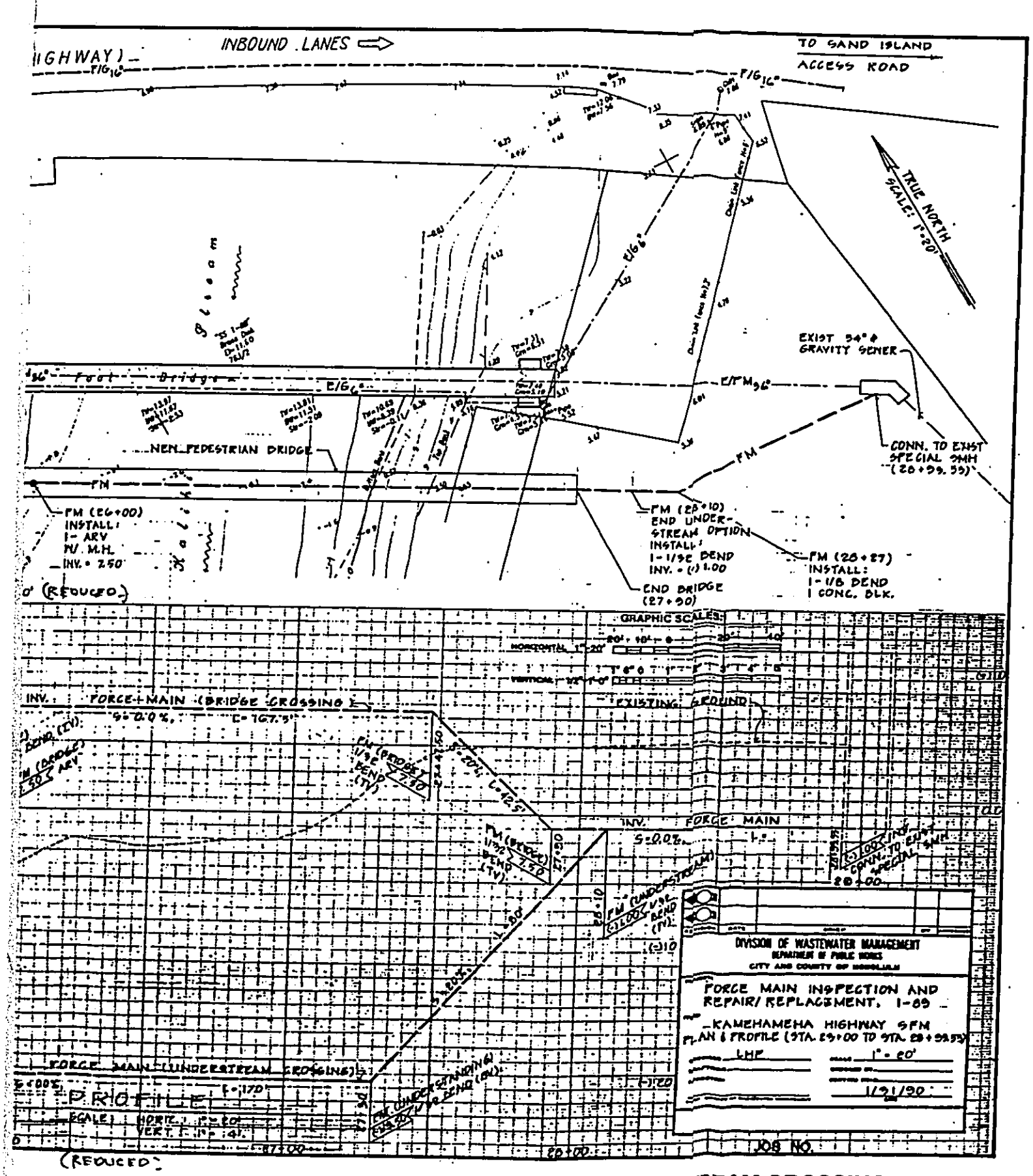
Prepared by: Belt Collins & Assoc.
Honolulu, Hawaii


NIMITZ HIGHWAY (STATE HIGHWAY)
Existing Foot Bridge
PROPOSED BRIDGE CROSSING
FM
E/FM
E/IG
Kapalama Stream
FM (11+40) BEGIN UNDER-STREAM OPTION INSTALL: 1- 1/8E BEND (VERT.) INV. = (-) 4.50
FM (11+50) BEGIN PEDESTRIAN BRIDGE OPTION INSTALL: 1- 1/8E BEND (VERT.) INV. = (-) 4.50
FM (11+99) INSTALL: 1-4 TEE 3-4 BY PASS VALVES IN M.H. 1- PLUG 1- CONC. BLOCK INV. = (-) 4.50
FM (12+50) INSTALL: 1 - ARV IN M.H. INV. = 7.50
FM (13+50) END UNDER-STREAM OPTION INSTALL: 1- 1/8E BEND INV. = (-) 4.50
FM (14+30) END BRIDGE INSTALL: 1- 1/8E BEND INV. =
PLAN
SCALE: 1" = 20'
(REDUCED)
BEGIN BRIDGE
STA. 11+80
BY PASS VALVE
MATCH LINE
INV. FORCE MAIN (BRIDGE CROSSING)
S = 0.0%, L = 220'
S = 20%, L = 60'
S = 20%, L = 65'
S = 20%, L = 60'
S = 0.0%
EXISTING GROUND
FM (BRIDGE) 7.50 1/8E BEND
FM (BRIDGE) 7.50 ARV
FM (BRIDGE) 1/8E BEND (TV) 7.50
FM (BRIDGE) (-)8.50 1/8E BEND (BV)
FM (UNDERSTREAM) (-)8.00 1/8E BEND (TV)
BYPASS VALVE TEE (-)8.50
FM (UNDERSTREAM) (-)8.5 1/8E BEND (BV)
INV. FORCE MAIN (UNDERSTREAM CROSSING)
S = 0.0%, L = 290'
FM (BRIDGE) 1/8E BEND (TV) (-)4.50
FM (UNDERSTREAM) (-)7.5 1/8E BEND (BV)
PROFILE
SCALE: HORIZ.: 1" = 20'
VERT.: 1" = 4'
(REDUCED)
11+00
12+00
13+00
14+00
15+00

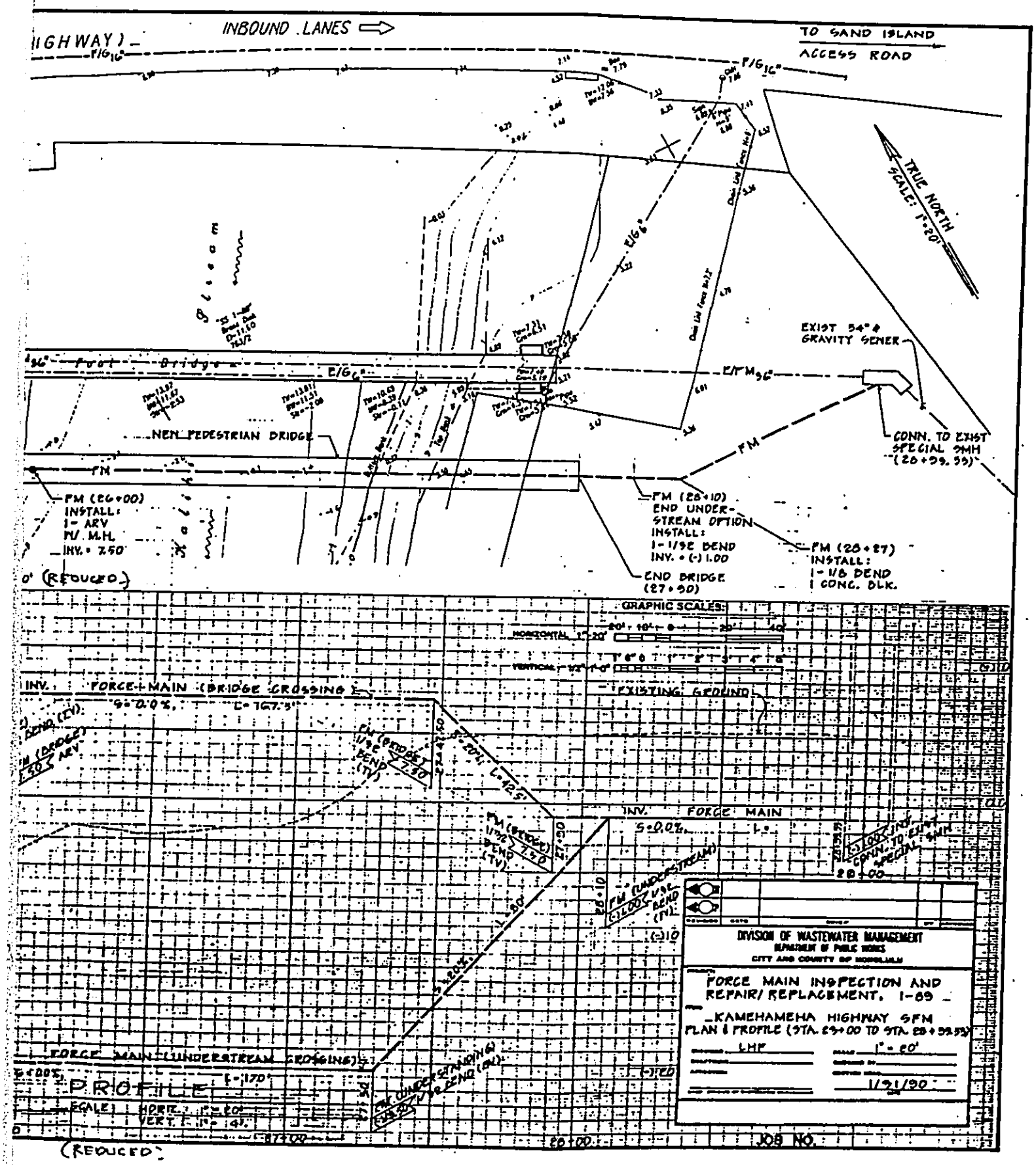


MOANALUA STREAM CROSSING Figure 4


CURVE DATA
NIMITZ HIGHWAY (STATE HIGHWAY)
INBOUND
MATCH LINE STA. 23+00
FM (25+20)
BEGIN PEDESTRIAN BRIDGE OPTION
INSTALL:
1- 1/32 BEND
INV. = (-) 4.50
NEW PEDESTRIAN
FM (24+90)
INSTALL:
1- TEE
3- BYPASS VALVE W/ M.H.
1- PLUG
INV. = (-) 4.50
FM (24+89)
BEGIN UNDER-STREAM OPTION
INSTALL:
1- 1/32 BEND
INV. = (-) 4.50
FM (26+00)
INSTALL:
1- ARV
W/ M.H.
INV. = 2.50
PLAN
SCALE: 1"=20' (REDUCED)
EXISTING GROUND
BEGIN BRIDGE
INV. FORCE MAIN
BRIDGE CROSSING
UNDERSTREAM CROSSING
BYPASS VALVE
PROFILE
SCALE: HORIZ. 1"=20'
(REDUCED)
23+00
24+00
25+00
26+00



KALIHI STREAM CROSSING Figure 5



KALIHI STREAM CROSSING Figure 5

The 42-inch force main, which will be designed to carry a maximum daily flow of 27.6 million gallons per day (MGD) and a peak flow of 39.9 MGD to meet projected demand increases, will be constructed of reinforced concrete low head pressure pipe with"T-Lock" liner. Construction details of the pipe will be based on the City and County of Honolulu, Division of Wastewater Management's Design Standards and other State and City agency design requirements, as applicable.

As a result of a soils and foundation investigative study by Dames & Moore, consultant engineers, concrete piles as deep as 190 feet would be provided as vertical supports in the project area's soft soil for the force main replacement.

The proposed force main replacement will require crossing of the Moanalua and Kalihi streams. Two alternatives for crossing the streams, by bridge and by understream crossing, were explored (See Figures 6 & 7). Engineering studies, including this environmental assessment, were conducted to determine which of the two is the more cost effective, durable, aesthetic and environmentally sensitive and would minimize down time and overcome the difficulty of by-pass pumping.

4. DEVELOPMENT TIMETABLE

Replacement of the existing 36-inch force main is planned to begin about August 1991, after all governmental permits and approvals are obtained, and will be completed in approximately 15 months.

5. ESTIMATED CONSTRUCTION COST

The estimated construction cost for the new 42-inch parallel force main over the land section of the project site is $3.6 million, based on 1990 dollars (estimates prepared by SSFM Engineers, Inc.). This cost includes trenching, pile installation, installation of the force main, backfilling and relandscaping. If the project includes the bridge crossing alternative, the total project cost would be $4.5 million. If the understream crossing alternative is selected, the total cost would be $4.9 million. An additional $2.4 million will be required if the existing force main is repaired.

SSFM ENGINEERS, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
FAX: (808) 521-7348

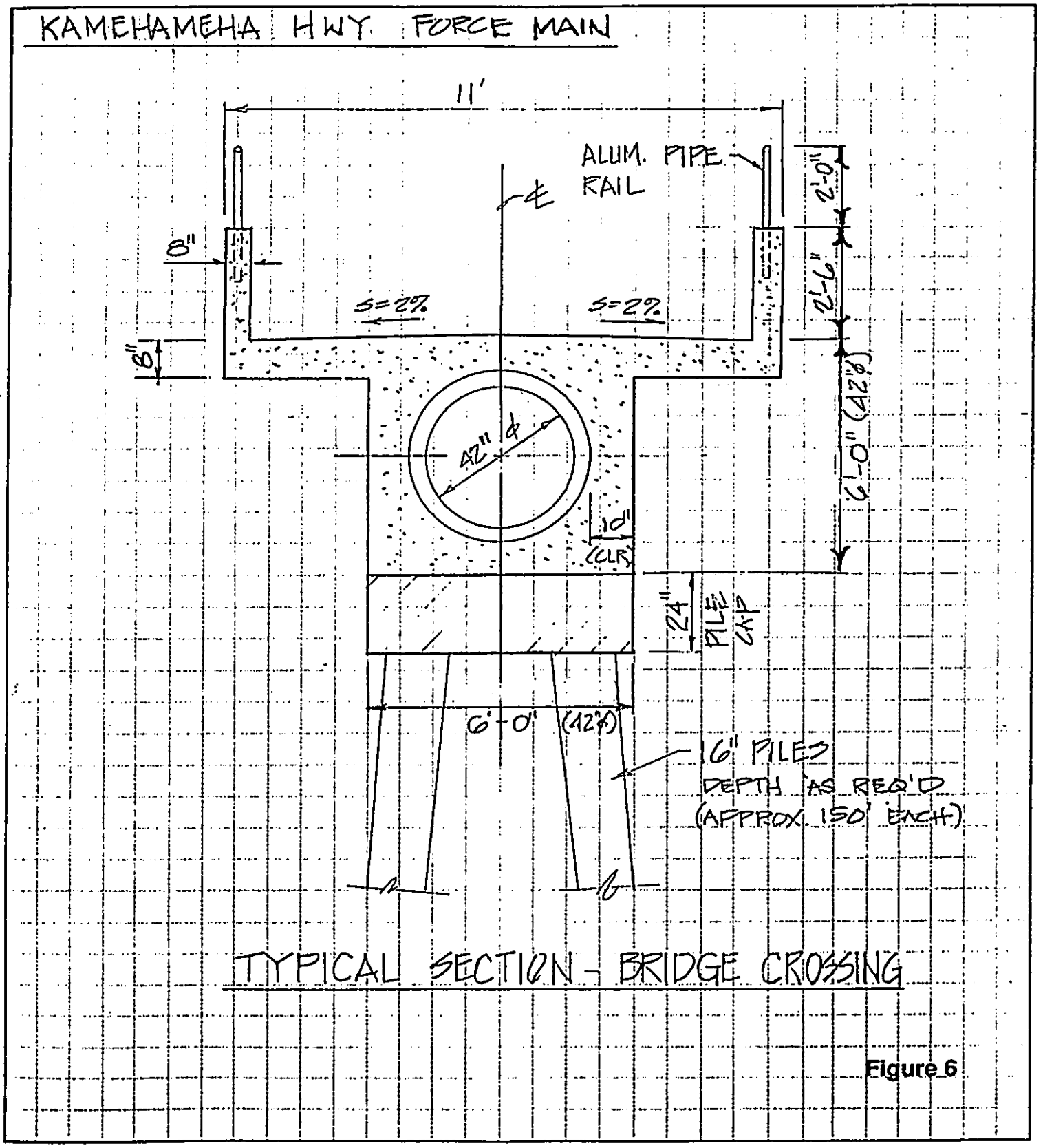


Figure 6

SSFM ENGINEERS, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
FAX: (808) 521-7348

KAMEHAMEHA HWY F.M.

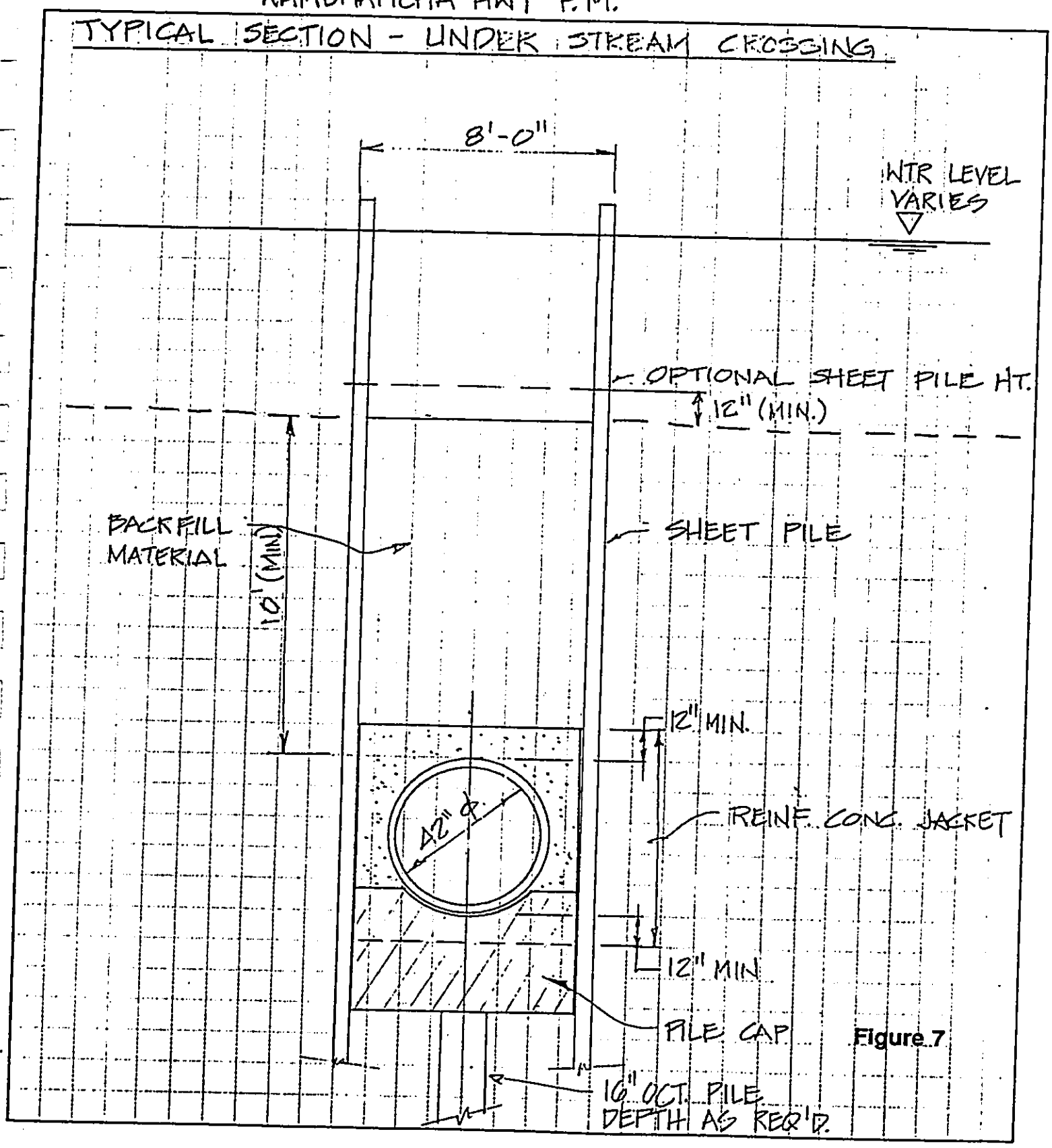


Figure 7

CHAPTER III

LAND USE POLICIES

1. FEDERAL LAND USE POLICIES

The proposed action involves work within the waters of Moanalua and Kalihi Streams. Both of these water courses are classified as navigable. Thus, the proposed action will require a U.S. Army Corps of Engineers Permit and, if a bridge is constructed, a Bridge and Causeway Permit. The Environmental Protection Agency and U.S. Fish and Wildlife Service are other federal agencies which will be involved in the review of the proposed action as part of the Corps of Engineers Permit approval process.

2. STATE LAND USE POLICIES

The land portion of the project site is located within the State Urban District. Land use regulation and administration of this area is under the jurisdiction of the City and County of Honolulu. The waters of Moanalua and Kalihi Streams, however, are within the State's Conservation District and are subject to the State Department of Land and Natural Resources' rules and regulations. Any work involving dredging in the waters of the State of Hawaii must apply for a Department of Health Section 401 Water Quality Certification.

Any work which involves a federal permit such as a Corps of Engineers Permit, must apply for a Coastal Zone Management Certification which assures that the proposed action complies with the policies of the Hawaii CZM Program.

The State Department of Transportation (DOT) is presently preparing a recreational master plan for the Keehi Lagoon area. The City and County force main replacement project is located within the DOT's study area. Thus, implementation of the force main project is being coordinated with the State DOT.

3. CITY AND COUNTY OF HONOLULU LAND USE POLICIES

The City and County has land use control jurisdiction over the land portion of the project site. The following are the land use policies which affect the property.

General Plan: The City and County of Honolulu General Plan is a policy document on the long-term growth and development of the island of Oahu. It sets forth policies in the areas of population, physical development, urban design, housing, economic activity, transportation, utilities, energy, public safety, culture and recreation, natural environment, health and education, and government operations. The objectives and policies of the General Plan that are relevant to the proposed action are discussed below:

Utilities

Objective: To maintain a high level of service for all utilities.

Policy: Maintain existing utility systems in order to avoid major breakdowns.

Plan for the timely and orderly expansion of utility systems.

Natural Environment

Objective: To protect and preserve the natural environment.

Policy: Protect Oahu's natural environment, especially the shoreline, valleys and ridges from incompatible development.

Protect the natural environment from damaging levels of air, water and noise pollution.

Primary Urban Center Development Plan: The Keehi Lagoon Beach Park is designated Park, the Disabled American Veterans site and the land between the two streams are designated Public Facilities, and the east bank of the Kalihi Stream is designated Industrial by the Development Plan. The proposed action is a permitted use in these DP designations.

The Public Facilities Map of the Development Plan shows no specific master planned improvement for the project site except for a possible HART alignment.

Zoning: Keehi Lagoon Beach Park, Disabled American Veterans site and the land between the two streams are zoned P-2 Preservation, Moanalua Stream is zoned P-1 Preservation and the east bank of Kalihi Stream is zoned I-2 Industrial. The proposed action is a permitted use on these zoned lands.

Special Management Area: The proposed action is located within the Special Management Area (SMA) and is therefore subject to the SMA Rules and Regulations of the City and County of Honolulu. The Department of Land Utilization recently indicated in a letter dated September 20, 1990 that the proposed project is exempted from the SMA requirements.

Shoreline Setback: The proposed project is not located within the 40' setback area of the shoreline. The shoreline is situated more than 500 feet from the project site and where it is interrupted by the streams, both sides of the streams are marked at the shoreline (ref. HRS *SS*205A-42, 205A-49).

4. SUMMARY OF REQUIRED LAND USE PERMITS AND APPROVALS

The proposed action will require permits and approvals from Federal, State and City and County agencies before the project can proceed. The following is a summary list of the required major permits and approvals.

Federal Permits and Approvals:

U.S. Army Corps of Engineers Permit
U.S. Coast Guard Bridge Permit (may not be required)

State Permits and Approvals:

Conservation District Use Application
Department of Health 401 Water Quality Certification
Coastal Zone Management Certification

CHAPTER IV

ENVIRONMENTAL CHARACTERISTICS

1. EXISTING LAND USE AND PHYSIOGRAPHY

The existing force main extends over State and City and County of Honolulu lands makai of the Nimitz Highway and crosses Moanalua and Kalihi Streams via two pedestrian bridges.

Keehi Lagoon was significantly altered from a very shallow bay with reefs, mud flats and fishponds along the shore to an embayment with deep channels. Virtually all of the land surrounding the lagoon, including the project site, is fill from the various dredging operations which were initiated by the construction of sealanes and mooring basins for seaplanes (which are no longer in operation), construction of the Honolulu International Airport and expansion of the Honolulu Harbor.

Existing land use along the western portion of the project site includes the City's Department of Public Works Kamehameha Highway Wastewater Pump Station and the City's Keehi Lagoon Beach Park. East of the park is the Disabled American Veterans' facility, which includes the Pacific War Memorial and two multi-purpose meeting facilities. The project site also traverses two vacant areas: one located between the two streams and the other on the eastern bank of the Kalihi Stream.

The major recreational activities in Keehi Lagoon occur in a distant area from the project site in front of the Keehi Boat Harbor, Keehi Marine Center and La Mariana Sailing Club. Major water activities also occur offshore at Sand Island. These activities, which include water skiing, jet skiing, sailing, boating, fishing, canoeing, etc., will not be impacted by the proposed project.

The topography of the site is relatively level with elevations ranging from approximately 0 to 7 feet above mean sea level. The highest point of the force main alignment (invert) is at the two bridge crossings at elevation 7.5 feet.

2. CLIMATE

The climate in the project area is characterized as having abundant sunshine, prevailing northeast tradewinds, relatively constant temperatures and moderate humidities. On occasions, during the winter months, the persistence of the northeasterly tradewinds diminish or give way to southerly winds, a situation locally known as "Kona weather".

Rainfall is relatively low, averaging 20 to 25 inches a year, with considerable monthly rainfall variations. During the cooler winter season, when occasional major storms provide much of the rain, monthly quantities of rainfall are more variable than in the summer season when the rain occurs primarily from showers that form as the moist tradewinds pass over the Koolau Mountains. The tradewind rainfall occurs more frequently at night; daytime showers are

usually light. On the average, about 50 percent of the total annual rainfall occurs during the three wettest months, December through February.

Equable temperatures are produced by the constant amount of incoming solar energy, combined with the tempering effect of the ocean. The average monthly temperatures range from 81.0 degrees (F.) during the warmest months (August and September) to 72.6 degrees (F.) during the coolest months (January and February).

3. NEARSHORE AND MARINE ENVIRONMENT

The project site is located near the mouth of Moanalua and Kalihi streams. The head of these streams is located in Moanalua Valley, approximately 7 miles from the ocean, and Kalihi Valley, approximately 6 miles from the shoreline, respectively.

At the project site, the Moanalua Stream is approximately 270 feet wide and 5 feet deep; Kalihi Stream is about 170 feet wide and 3 to 5 feet deep. Water levels vary from approximately 0 to 3 feet from mean sea level depending on tidal conditions. The velocity of the water that passes through the project site is relatively slow. At the pedestrian bridges, the velocity is more influenced by the tidal exchange with the sea.

The stream water is primarily brackish composed of a mixture of freshwater drained from the uplands and sea water from Keehi Lagoon. Particulates in the water (especially from sedimentation) is extensive, especially after a heavy rainfall over the city. On normal or typical days, the water quality is more influenced by the seawater from the lagoon.

The stream bottom is composed of a layer of silt over a deep grayish organic clayey silt material which reach more than 150 feet below stream bottom. Much of this material are sediments brought to the area from the mauka land through centuries of erosion.

Installation of the force main across the two streams will impact the water courses. The impact will occur during construction and not during the long-term operation of the pipeline. Construction will require about 6 to 8 months for the bridge or the understream crossing, whichever is selected.

The material to be dredged is comprised of sediments from upstream sources. During excavation, water clarity will be temporarily degraded, but flushing actions by the stream and lagoon will bring the quality of the water back to its original condition. The adjacent marine areas within Keehi Lagoon will not be adversely affected by sedimentation since the lagoon has been a long-term depository of these streams. During heavy rainfall, with its associated runoff, conditions in the streams duplicate the conditions that might exist during installation of the proposed force main.

The water quality of Keehi Lagoon is designated as Class A by the State Department of Health. While there is visible evidence of substantial sediment discharge from Kalihi and Moanalua streams, under the Class A standards no new sewage or industrial discharges are permitted into the lagoon with the exception of certain levels of non-contact thermal and floating dry dock marine railway discharges. Sedimentation from the streams is heaviest near Keehi Lagoon Beach Park at the stream outlet where tidal flushing is at its lowest point in the lagoon. However, despite inner lagoon sedimentation, these water quality standards are intended to allow both recreational use and aesthetic enjoyment of the lagoon.

During construction, provisions will be made to minimize the possibility of sewage spillage and discharge into waterways.

The benthic environment of the nearshore portion of Keehi Lagoon resembles those of reef flats in the more protected parts of Pearl Harbor and Kaneohe Bay, and is generally poorly populated by micro-algae, invertebrates and demersal fishes. Fishlife, which is highly mobile, will temporarily move outside of the project area during construction and return when construction is completed. No marine life impact is anticipated when the project is in operation.

4. SURFACE WATER AND DRAINAGE

Other than Moanalua and Kalihi streams, which traverse the property and discharge into the Keehi Lagoon, the project site has no surface water feature or wetland. Near the force main site along the makai boundary of the Nimitz Highway, a shallow unlined drainage ditch conveys surface runoff from the highway area into Moanalua Stream. The proposed action will not impact this man-made feature.

Construction of the proposed project may create the potential for erosion and sedimentation. The project area is comprised of landscaped lawns and undeveloped areas inhabited by sparse vegetation. Trenching and installation of the pipeline in the landscaped areas would expose soil to surface runoff. However, in the undeveloped portion of the project site where the land is sparsely vegetated, the ground is already exposed to the weathering process.

The project site is relatively level and drainage tends to be by direct ground percolation. No apparent drainage pattern exists. Runoff from the construction area, if it does reach the streams and lagoon, especially during very heavy rainfall, would result in a temporary degradation of the lagoon's water clarity. Flushing by the streams and tidal condition of the lagoon will help disperse sedimentation generated by the proposed project.

To minimize potential erosion and sedimentation, trenching will be conducted in compliance with existing County grading, erosion and sediment control ordinances.

5. GEOLOGY AND SOILS

The project site is located on the coastal plain of Oahu's south central coast, geologically referred to as the Honolulu Plain. This plain and much of the rest of the southern coast of Oahu is underlain by a broad elevated coral reef, covered by alluvium originating from the upland areas of the region. The coral reef rocks were deposited during prehistoric time when the sea level was higher.

In general, the soils on the surface of the project site are classified by the U.S. Department of Agriculture, Soil Conservation Service as fill land, mixed (FL). They are the result of past dredging operations and are comprised of silty sand and coral gravel which characteristically have high porosity and permeability. This land type is used for urban development including airports, housing areas, and industrial facilities. There is no agricultural capability classification for this type of soil.

Prior to the extensive alteration of the Keehi Lagoon shoreline, the lagoon was an open embayment that encompassed Honolulu Harbor. Most of the embayment was shallow reef and

mud flat, with deep areas being confined to stream outlets through the reef. Salt marsh fishponds lined the embayment's shore and extended inland around the lower reaches of the four major streams which flowed into this area (Moanalua, Kalihi, Kapalama and Nuuanu Streams).

In 1989, Dames & Moore conducted a subsurface soil investigation of the site. Their test borings show that along Moanalua Stream a layer of clayey silt with well-rounded cobbles and boulders exist to a depth of approximately 5 feet below the surface, which may have been river-washed alluvium. Below this layer is a stratum of marine coralline sand and alluvial mixture. At approximately 10 to 11 feet below the surface, a layer of soft dark gray organic clayey silt exists. This organic estuary deposit was encountered to a depth of 153 to 155 feet, where dark gray silty clayey well-rounded basalt cobbles and gravel were encountered. Test borings were terminated at the depth of 161 feet below the surface.

Borings were also taken near the Kalihi Stream. To a depth of approximately 6 feet below the surface, dark brown silty coralline sand and gravel, probably fill, were encountered. Soft estuary silt was found to a depth of 110 feet. Between 110 and 130 feet, a dark gray organic clayey silt mixed with well-rounded basaltic cobbles and gravel were discovered. Dark brown clayey silt, which appears to be a very old alluvium, was found below the basaltic alluvium.

According to the State Department of Transportation, Materials Testing Laboratory personnel, the Keehi Lagoon area is probably settling at a rate of 3/4 to 1 inch per year. Continuous settlement of the general area is a potential problem for structures and utilities. In accordance with the soil investigation recommendations, 16-1/2 inch octagonal pre-stressed concrete piles will be installed with the construction of the force main replacement.

6. FLORA

Vegetation on the project site consists generally of introduced species typically associated with filled lands and urban development. No Federal or State listed or candidate threatened or endangered plant species are known to exist on the property.

In Keehi Lagoon Beach Park and the Pacific War Memorial site are introduced species, such as coconut palm tree, banyan and grass. Vegetation on the central area between Moanalua and Kalihi Streams is sparse and consists of plants which are hardy and drought resistant, highly salt tolerant and adapted to disturbed dry areas. These plants include kiawe (Prosopis pallida), heliotrope (Heliotropiuim curassavicum), haole koa (Leucocephala leucaena), and several weedy species of grass. Predominant along the shoreline at the mouth of Moanalua and Kalihi Streams is the American mangrove (Rhizophora mangle).

Installation of the force main will require removal of vegetation, primarily grass, in the proposed pipeline alignment. Once construction is completed, vegetation will be re-established either by the construction contractor or by the natural processes.

7. FAUNA

Wildlife in the project area is essentially limited to mammals and birds which have adapted to the urban environment. Mongoose, rats, mice, feral dogs and cats are common. A variety of lowland urban birds, such as common myna, zebra dove, spotted dove, house finch and sparrow, and migratory birds, such as Pacific golden plover, ruddy turnstone and wandering tattler, frequent the project area. No Federal or State listed or candidate threatened or endangered bird

species are known to inhabit the project site. The bird species that would be affected by the project are highly mobile and would be able to stay a distance from the construction activity and return once construction in the area is completed.

8. HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES

The project site is located in an area where extensive dredging and filling of Keehi Lagoon took place. It is highly unlikely that there are sites of archaeological significance. Additionally, more than 40 percent of the project area has been graded and extensively landscaped and thus significantly altered. In the event unanticipated archaeological sites are uncovered during the project's construction, the contractor will halt work in the area and contact the Historic Sites Section of the State Department of Land and Natural Resources. Work will not resume until clearance is obtained from the State agency.

9. VISUAL CHARACTER

The project site is situated in a highly urbanized area where views are dynamic and in a constant state of flux. Views consist of a variety of building types, highway structures, bridges and landscape treatment. According to the Coastal View Study (1987), the primary natural visual resource of this area is Keehi Lagoon.

Visual features of the project site at the Keehi Lagoon Beach Park and Pacific War Memorial property consist of large, well-maintained, open lawns. Visual features of the central area between Moanalua Stream and Kalihi Stream consist of scattered vegetation adapted to a harsh and disturbed environment as well as gray-toned areas of exposed soil.

From the mauka area, motorists on Nimitz Highway and the Keehi Interchange have views of the project site and Keehi Lagoon.

The proposed action will not adversely impact the visual quality of the area. Except for the bridge crossing alternative, the proposed underground pipeline replacement will not obstruct existing views of the area. The visual impact of the bridge crossing alternative would be mitigated by its similar construction and profile of the existing bridge.

10. AIR QUALITY

Present air quality in the project area is estimated to be generally good due to the northeast tradewinds which are predominant throughout the year and carry emissions and other air pollutants from inland areas out to sea. However, State of Hawaii standards for particulates, carbon monoxide and ozone have been exceeded in the Honolulu area in recent years. Because the lagoon is situated between the Honolulu International Airport and the light industrial area in Kalihi Kai, it is susceptible to periods of lower air quality when tradewinds give way to southerly winds. Localized problems of poor air quality generally occur along the heavily traveled roadway corridors, such as Nimitz Highway and Sand Island Access Road, and nearby concentrations of industrial activity.

Air Quality Standards (AQS) applicable to the Keehi Lagoon area are set by the State Department of Health and the U.S. Environmental Protection Agency. DOH standards are generally set at a more stringent level than national standards. Stations established to monitor compliance with

the AQS standards are located in a number of areas across Oahu. The long-term sampling station closest to Keehi Lagoon is located approximately one mile away at the Kalihi Kai Fire Station.

Ambient air quality at and adjacent to the project site is not expected to be affected except in the short-term, during construction, particularly during grading operations. Fugitive dust emissions will arise from trenching and backfilling within the project site. There will also be a short-term indirect impact from slow moving construction equipment traveling to and from the project area and a temporary increase in local traffic caused by commuting construction workers. All of these impacts are expected to be small considering the size of the proposed action.

In keeping with State Department of Health and City and County rules, adequate dust control measures will be employed during construction to minimize airborne particulates. Adherence to approved erosion control plans and the use of mitigative methods such as water sprinkling will reduce the potential for adverse air quality impacts.

Emissions from construction equipment could also degrade ambient air quality. On-site mobile and non-mobile construction equipment will emit some air pollutants in the form of engine exhausts. With proper equipment maintenance by the contractor, the adverse impacts of emissions from equipment can be minimized. Indirectly, slow-moving construction vehicles on roadways adjacent to the project area can obstruct the normal free flow of traffic to such an extent that overall vehicular emissions are increased. This impact can be mitigated by moving heavy construction equipment during periods of low traffic volume on the affected roadways.

Notably, tradewinds will disperse airborne pollutants and particulate matter in a southwesterly direction. These prevailing tradewinds have an average frequency of more than 90% during the summer and 50% during January. The mean monthly velocity of the winds vary between 10 to 15 miles per hour. These winds would disperse airborne pollutants and particulate matter across Keehi Lagoon or toward Honolulu International Airport and out over the ocean. This dispersal effect would minimize impacts to populated areas of Kalihi and downtown Honolulu.

11. NOISE IMPACT

The project site is located approximately 1,500 feet east of the Honolulu International Airport. During tradewind conditions, aircraft depart from Runway 8R over the Sand Island area. During Kona wind conditions (about 10 percent of the time), aircraft approach Runway's 26R, 22L and 22R over the project site. Aircraft noise at ground level at the project site reaches levels near or within the 65 L_{dn} (day-night sound level, the equivalent A-weighted sound level, in decibels).

The project site is also located in close proximity to a number of major transportation routes. Traffic from Nimitz Highway is shown to cause maximum hourly noise levels of 65 dBA at distances of 250 to 350 feet from the right-of-way. During evening periods when traffic volumes decrease by about one-third, average hourly noise levels correspondingly decrease to approximately 60 dBA.

Construction activities at the project site will create a temporary increase in noise levels. Sources for this noise will include heavy construction vehicles and power equipment, including pile drivers and backhoes, operating on the site. Mitigation measures, however, will be

employed and will include the use of mufflers on construction equipment and vehicles and limiting construction hours to daylight hours. Since the project area is surrounded by industrial and recreational uses, construction noise would not have an adverse impact on residential areas. No long-term noise impacts are expected once the project construction is completed.

12. NATURAL HAZARDS

The major natural hazard to the project site is flooding generated by severe rainstorms and hurricane wave-induced coastal inundation. Because Keehi Lagoon is well protected by the coastal reef extending seaward from the outer lagoon area, flooding from tsunami inundation is not a potential hazard for the project site.

According to the Flood Insurance Rate Maps (FIRM) prepared by the U.S. Army Corps of Engineers, the project site is located within the following flood hazard areas (See Figure 8).

Special Flood Hazard Areas Inundated by 100-Year Flood:

Zone AE: Base flood elevations determined (elevation is 4 feet above mean sea level)

Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.

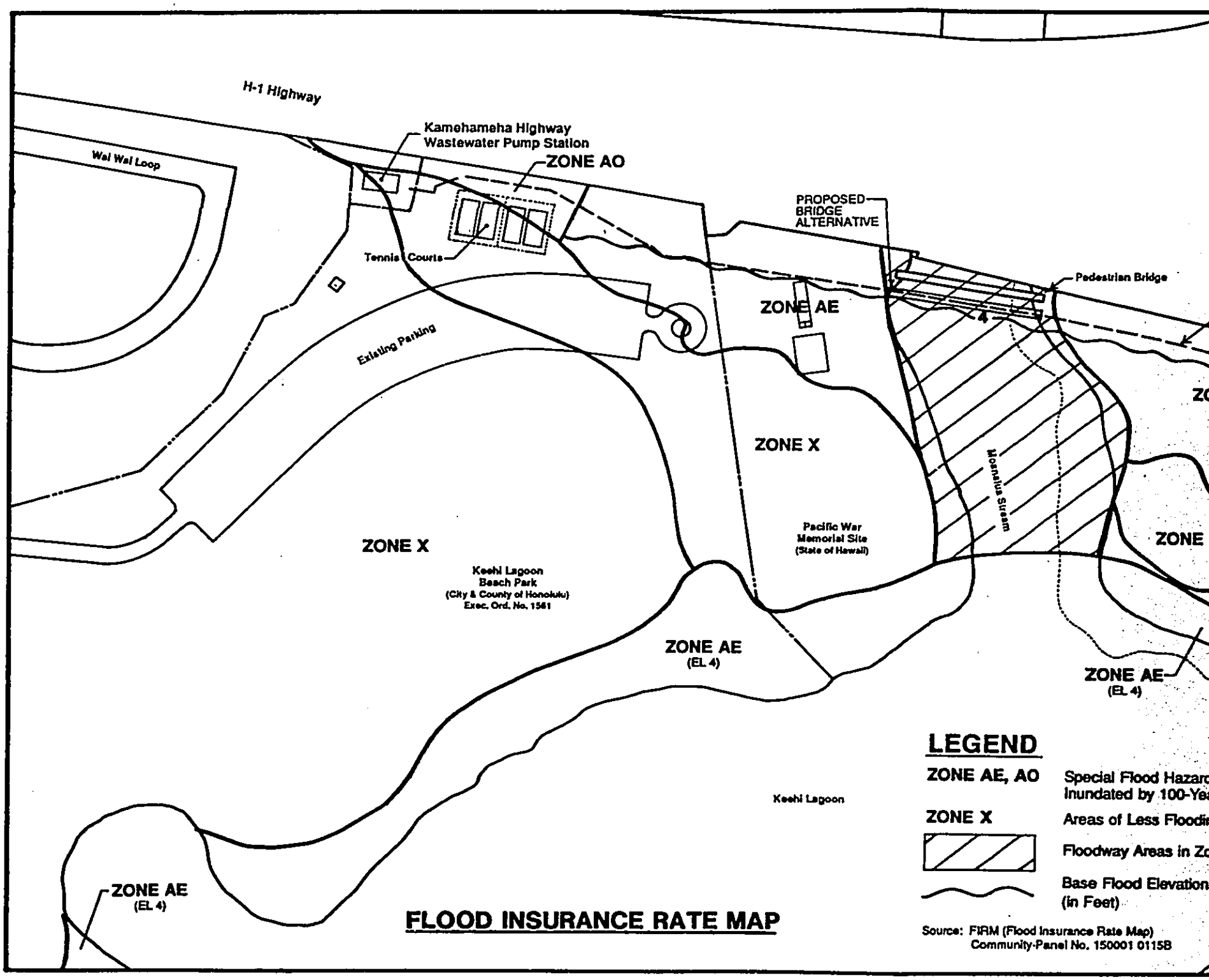
Other Flood Areas:

Zone X (shaded): Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square miles; and areas protected by levees from 100-year flood.

The understream crossing alternative generally would not be impacted by any flood hazard condition. There may be some erosion of stream bottom material during severe 100-year storms, but protective measures such as a concrete sleeve around the force main would prevent any damage to the pipeline. After such storms occur, conditions would return to normal and stream sediments would re-settle over the pipeline.

The bridge crossing alternative will be subject to stream flooding and wind or hurricane-generated wave effects. The proposed structure, however, will be designed to essentially withstand these severe weather conditions. A concrete structure and deep support pilings will provide strength and stability. The impact of these severe conditions, thus, would be minimal.

During construction of the understream crossing, the water course will be partially blocked by interlocking metal sheet piles in the trenched section of the stream and possibly by an accompanying levee that would provide access for construction equipment installing the sheet piles. This operation will not significantly affect the flow of water in the stream, but during flood conditions, water level mauka of the sheet piles and levee would rise and possibly overbank upstream. Precautions, such as preventing debris from blocking the stream's passageway at the levee, removing portions of the sheet piles and levee when flooding creates significant backup, etc., would be taken to avoid upstream flood impacts. Additionally, work on the project is scheduled to occur during the summer and fall months when storm conditions are less prevalent.


H-1 Highway
Kamehameha Highway
Wastewater Pump Station
ZONE AO
Wai Wai Loop
PROPOSED
BRIDGE
ALTERNATIVE
Tennis Courts
Pedestrian Bridge
ZONE AE
Existing Parking
ZONE X
Pacific War
Memorial Site
(State of Hawaii)
Moanalua Stream
ZONE
ZONE X
Keehi Lagoon
Beach Park
(City & County of Honolulu)
Exec. Ord. No. 1561
ZONE AE
(EL 4)
ZONE AE
(EL 4)
Keehi Lagoon
ZONE AE
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Special Flood Hazard
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Base Flood Elevation
(in Feet)
FLOOD INSURANCE RATE MAP
Source: FIRM (Flood Insurance Rate Map)
Community-Panel No. 150001 0115B

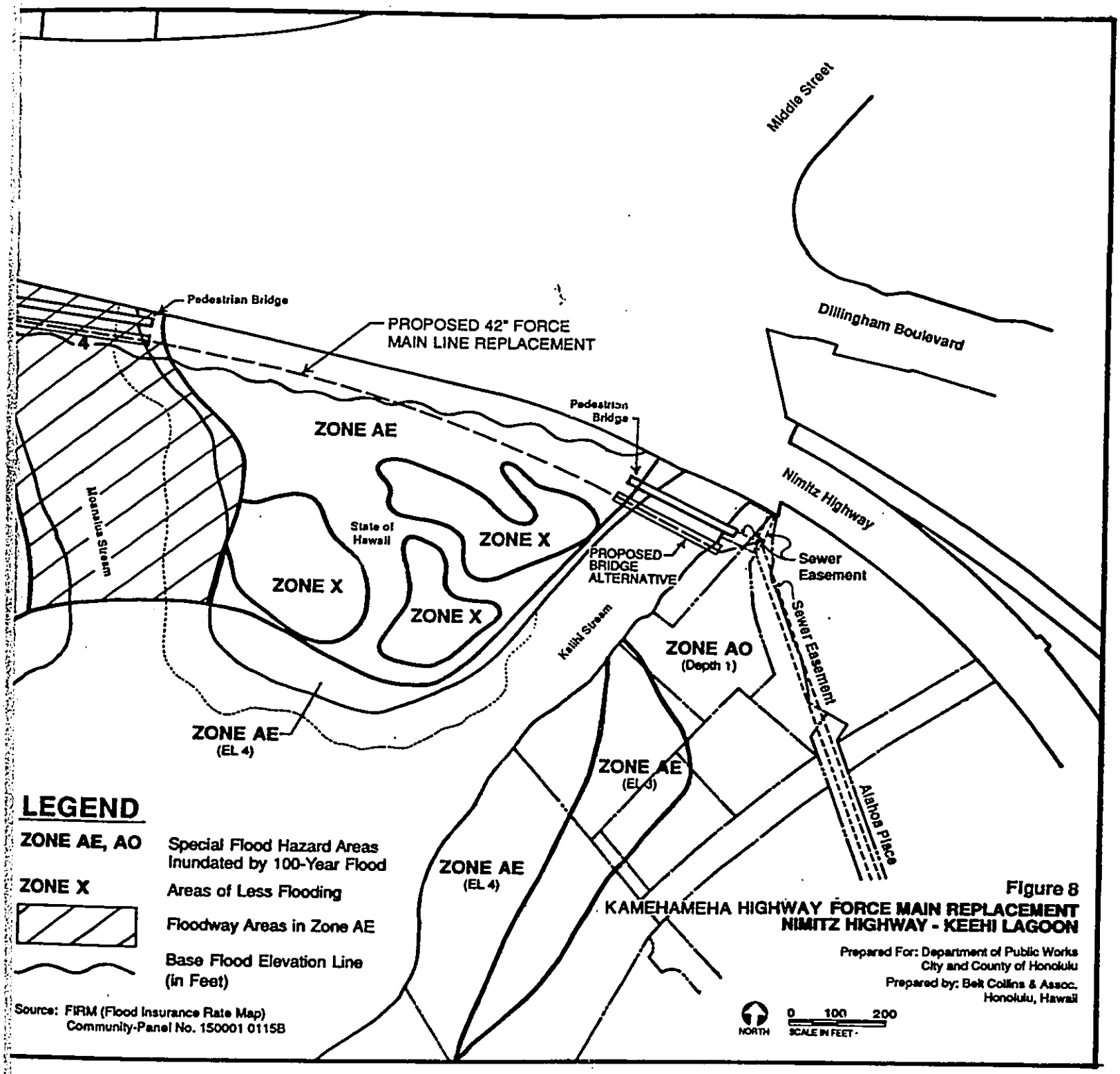

Figure 8

KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT
NIMITZ HIGHWAY - KEEHI LAGOON

Prepared For: Department of Public Works
City and County of Honolulu

Prepared by: Belt Collins & Assoc.
Honolulu, Hawaii

An alternative to constructing a levee is the use of a pile driver atop a barge which would float into position to place the sheet piles into the stream bed. This procedure would involve less interference with the stream's flow of water.

Construction of the bridge crossing will not result in the installation of interlocking sheet piles but in the placement of concrete octagonal piles which may be installed by pile driving equipment mounted atop a barge or by a pile driver maneuvered into position over a temporary levee. Once completed, however, the bridge supports could result in an obstruction in the water and cause flood waters to back up. This effect would be minimal, since the bridge crossing piles will be less extensive than existing structures in the stream and will occupy a small portion of the stream's cross-sectional area. The proposed bridge crossing, notably, will have less piles than the existing bridge structure, Since the proposed bridge crossing will have deeper piles (than the existing bridge)with a higher load capacity, less piles will be required for structural support. The pile or column widths will be the same as the existing bridge columns.

13. PUBLIC SERVICES AND FACILITIES

Water Supply Systems - There is no direct existing water system that serves the project site. The Board of Water Supply of the City and County of Honolulu, however, supplies water to the surrounding areas. The existing system is within the Low Service System which distributes water to the area between Moanalua and Makapuu Point. The primary sources of the Low Service System include the Punanai, Kalauao, Kaamilo, Moanalua and Wilder Wells and the Halawa and Kalihi Shafts.
The existing transmission system in the project area includes a 48-inch transmission line that runs from Kalihi Street along Dillingham Boulevard and Kamehameha Highway to the intersection of Kilihau Street and Puuloa Road; a 16-inch transmission line that extends along the entire length of Lagoon Drive; and a 12-inch transmission line along Sand Island Access Road. The proposed project will not require the use of Board of Water Supply water. Secondary impacts may occur when the increased replacement line size allows further community growth and a consequent demand for more public services.

Wastewater Disposal - The Keehi Lagoon area is serviced by the Sand Island Wastewater Treatment Plant (WWTP) which is located at the southern point of Sand Island. The area around Lagoon Drive is sewered by the Department of Transportation Airports Division sewer system which connects with the municipal system at Aolele Street. Sewage from this system then enters the Kamehameha Highway Wastewater Pump Station which in turn pumps the sewage via the 36-inch force main at the project site to the 54-inch gravity sewer line east of the Kalihi Stream Bridge. This gravity line then follows Nimitz Highway to the Hart Street Wastewater Pump Station where the sewage is pumped across Honolulu Harbor to Sand Island and the wastewater treatment plant. The City and County of Honolulu is presently preparing an Island-Wide Sewer Adequacy Study.

The Sand Island Wastewater Treatment Plant services the area between Kuliouou and the Airport. Many of the connecting lines are at or near capacity, including the 54-inch gravity line that sewers the Kapalama and Airport area. In addition, the remaining portion of the 54-inch line from Waiakamilo Road to the Kamehameha Highway Wastewater Pump Station (including the project's 36-inch force main) is near capacity and will require relief in the future.

The Sand Island Wastewater Treatment Plant has a capacity of 82 mgd. It discharges the treated effluent into the Sand Island Ocean Outfall which in turn discharges the effluent through a long diffuser located two miles offshore at a depth of 240 feet.

The Sand Island Wastewater Treatment Plant is expected to be near capacity within five to 10 years even without the proposed project. Land has been set aside next to the treatment plant for expansion. The Division of Wastewater Management of the Department of Public Works is presently studying the system's future requirements but cannot prepare definite plans until a Waiver of Secondary Treatment Permit is approved by the Federal Environmental Protection Agency.

Solid Waste Disposal - During construction, solid waste (primarily construction debris) will be generated, but by contractual agreement it will be removed from the site by the contractor. Solid waste is currently disposed of at the Kapaa or Kalaheo landfills. Once the force main replacement is installed, the proposed project will not result in any direct generation of solid waste.

Electrical Power and Communications - The Hawaiian Electric Company provides power to the project area via 12KV distribution lines from Keehi, Kapalama and Sand Island Substations.

Telephone service in the project area is provided by Hawaiian Telephone Company.

During construction, the proposed project may temporarily require electrical services, but once completed, the proposed action will not require electrical power.

Synthetic Natural Gas Lines - A 6-inch synthetic natural gas pipeline currently traverses the project site along a similar alignment as the sewer force main. Its source is Gasco which brings its supply from Barbers Point and serves customers along its pipeline route to Honolulu. The gas line system at Keehi Lagoon will not be impacted by the proposed project.

14. CIRCULATION

Nimitz Highway provides access to the project site and Pacific War Memorial. Access to the Kamehameha Highway Wastewater Pump Station is via Keehi Lagoon Beach Park entrance road.

Nimitz Highway is a six-lane right-of-way which provides vehicular access to the Honolulu International Airport and surrounding industrial areas. It is under the jurisdiction of the State of Hawaii, Department of Transportation. Portions of Nimitz Highway are presently at or over their capacity to accommodate traffic during peak periods.

The State of Hawaii is considering improvements to Nimitz Highway to increase traffic flow capacity. The most significant improvement is the planned Makai Viaduct project which would involve the construction of a two-lane viaduct for high occupancy vehicles over the center median on Nimitz Highway between the Keehi Interchange on the H-1 Freeway and Pacific Avenue. This project would relieve intersection capacity problems along Nimitz Highway.

Planned also is a light-rail transit system along Nimitz Highway. According to preliminary plans (Honolulu Rapid Transit Project, Alternative Analysis, Draft Environmental Impact Statement, Parsons Brinckerhoff), the alignment for the system is within the existing Nimitz

Highway right-of-way. The proposed force main alignment will be in the adjacent properties within newly created easements. If both alignments are kept as planned, conflict between the two systems should not occur.

In summary, the proposed project will not contribute to the existing and future traffic in the area. There will not be a need to improve existing road networks or construct new rights-of-way to accommodate the pipeline replacement.

15. EASEMENTS

The force main replacement will require an easement through State lands. No private property will be affected. Creation of the easement will likely involve acquisition of land interest by the City and County of Honolulu.

16. OTHER PUBLIC FACILITIES

The project site is located within the Keehi Lagoon Beach Park and Disabled American Veterans site. The proposed project will not result in any long-term impact on these facilities nor on any other public facilities such as schools, libraries, medical facilities and community centers. No shoreline accesses will be curtailed or affected and no public beaches or shoreline areas will be reduced in size or altered. The State Department of Transportation is developing a recreational master plan for the Keehi Lagoon and shoreline area and plans for the force main replacement are being coordinated with the State's planning and construction efforts.
During construction, there will be temporary disruption in access to certain areas in the adjacent land. Measures will be taken to assure continued access to those areas.

CHAPTER V

SOCIO-ECONOMIC CONSIDERATIONS

1. SOCIAL CONSIDERATIONS

The proposed action will involve a force main replacement that will serve the Honolulu International Airport, Aliamanu Housing, Salt Lake, Moanalua, Moanalua Gardens, Mapunapuna Industrial and Keehi Lagoon Park areas. These communities are highly populated and urbanized and are serviced by extensive infrastructure which includes the City and County's Sand Island Wastewater Treatment Plant. A failure in this sewer system will have a significant impact on the domestic, commercial and industrial enterprises in the area. The proposed action is intended to maintain a well-operating system in the project area.

The proposed project will not directly displace any existing homes or generate a demand for new housing units. Indirect or secondary impacts, however, may be generated from a larger replacement pipe size. The larger force main would allow more homes and commercial/industrial facilities to connect with the utility line and consequently generate more demand for public services and facilities.

2. ECONOMIC CONSIDERATIONS

The proposed project will sustain the operation of a reliable sewer system to service the commercial, industrial and residential uses in the project vicinity. Additionally, construction of the proposed project is expected to result in short-term economic benefits such as increased or mobilized employment in the construction industry, increased personal income and increased tax revenues for the local government. The project cost will not result in a tax assessment and direct user charge for the service area.

Construction employment and income effects of the proposed project entail direct, as well as indirect and induced impacts in the economy. For example, during the project construction phase, direct employment would include the number of construction workers required to install the pipeline. Indirect employment would refer to employment generated in firms supplying materials and services needed to install the pipeline. Induced employment refers to the additional jobs created throughout the economy when construction employees and proprietors of supply firms spend their wages and salaries. When indirect and induced employment are added to direct employment, the result is a multiplier effect. That is, in the economy as a whole, more than one job is generated for each job created or mobilized at the project site.

It is anticipated that the pipeline installation will require mobilization of approximately 25 to 30 jobs in the construction industry. Additionally, as indicated above, the multiplier effect would generate or impact about 35 to 42 other jobs throughout the local economy.

Labor income in the form of wages and salaries received by those filling the 25 to 30 mobilized construction jobs represent personal income of up to approximately $1.4 million. Based on Tax Foundation of Hawaii data, it is estimated that about 13 percent of personal income is paid by

Hawaii households to both State and County governments for all personal taxes, including general excise taxes on retail sales, fuel taxes, property taxes and income taxes. Applying this percentage factor to personal income generated by construction, the result is about $190,000 in tax revenues.

CHAPTER VI

SUMMARY OF MAJOR IMPACTS

1. GENERAL IMPACTS

The long-term effects of the proposed project will be primarily beneficial. The intent of the proposed project is to sustain the operating condition of the existing sewer system. It is not anticipated that there will be any long-term adverse effects.

Some adverse impacts generated by the proposed project are anticipated during the project's construction phase. These impacts would include construction noise, dust, sedimentation and water turbidity. The majority of the work will be located away from the main activities of the Keehi Lagoon Beach Park and Disabled American Veterans facility, so construction of the project will not have any major adverse impacts on surrounding uses. One of the features of the Disabled American Veterans facility, the Pacific War Memorial structure, is located near the project site and may be affected by the project's dewatering process. (To mitigate this possible impact, the project contractor will be required to install interlocking sheet piles at a depth of 20 to 25 feet along the trench sides to minimize water infiltration.)

A portion of the construction work will be adjacent to existing tennis courts and will cross the driveway to the Disabled American Veterans parking area. Since construction will occur for only a few months at those locations, the affected uses would be only temporarily inconvenienced. Considering the small size of the project, the impacts should be minor in scale. Mitigative measures, as an added precaution, would be applied, as necessary, to reduce or eliminate impacts.

2. IMPACTS FROM PROPOSED BRIDGE CROSSING ALTERNATIVE

If the bridge crossing alternative is selected, it would involve construction of a bridge similar in form and profile to the existing pedestrian bridge. The bridge itself will also require support over the water, which the project engineers expect, at this time, to be in the form of concrete piles. These piles would be installed by a pile driver that would maneuver into position over a temporary levee across the stream. The levee will be built in sections to allow the continuous flow of water in the stream. As an alternative, a pile driver mounted atop a barge could be used to install the piles into the water.

The piles will be spaced to allow small crafts to navigate beneath the bridge with column spacing wider than the column spacing beneath the existing pedestrian bridge. During construction, scaffolds may be utilized to construct the crossforms for the bridge which consequently may result in some hinderance to potential small vessels navigating beneath the structure. Alternatively, the crossforms may be installed by a land–based crane which would not enter the water or a crane mounted on a barge.

The pile driving operation of the project would result in temporary turbidity of the streams' water clarity. These impacts are expected to be only short-term lasting for about 3 to 4

months. Once construction is completed, the streams' water quality would return to its original condition. Fishlife would resume in the area and plants would revegetate.

3. IMPACTS FROM PROPOSED UNDERSTREAM CROSSING ALTERNATIVE

If the understream crossing alternative is selected, it would involve excavating a trench about 16 to 18 feet below the stream bed in Moanalua and Kalihi streams. The excavation process would involve installation of two rows of sheet piles across the stream by a pile driver atop a temporary levee or a barge. Once the sheet piles are in place, a backhoe will trench the area between the piles. Concrete piles of up to about 150 to 185 feet then will be driven into place at maximum spacing of 20 feet to support the lateral position of the force main. Dewatering will take place, followed by the laying of concrete and the force main. After the installation is completed, the sheet piles may be removed and the stream bed backfilled. The trenching operation will be done in sections to allow the water within the stream to continuously flow.

Approximately 4,000 cu. yd. of material is expected to be excavated from the stream. This material will be placed and spread on the project site between the two streams where the land is bare and the soil is similar to the excavated material. A portion of the material will be saved to backfill the trenched area.

Dewatering of the trench would involve a diesel pump and hose to remove water from the trench and convey it to an adjoining downstream area. The trenching and dewatering process will generate turbidity and sedimentation in the water. Because there is adequate flushing action within the stream, the water-suspended particulates are expected to dissipate with the area's natural tidal exchange. Water quality would then return to its original condition. If the tidal exchange in the streams is not adequate to dissipate and flush the silt out of the area, mitigative measures such as construction and use of a silt basin may be employed or use of silt screens around the construction area and where the water is pumped back into the stream.

The trenching operation is expected to disturb some onshore vegetation in the project area, but these impacts are minor in scale and temporary in nature. The construction contractor will be required to regrass and restore vegetation which are displaced during construction.

CHAPTER VII

ALTERNATIVES

Several alternatives were evaluated for the repair or replacement of the existing 36-inch diameter force main. The alternatives are described below.

ALTERNATIVE NO. 1

An alternative to the proposed action is to do nothing. This "no action" approach would result in no sewer line replacement in the project area. The real effect of this alternative is there will be no corrective measure to fix or replace the existing force main which is aging and gradually deteriorating. Leaving the force main in its existing condition only increases the possibility of more frequent line breaks or leaks resulting in sewage by-pass into the environment. Studies have shown that repairing the force main will not be a viable long-term solution to the problem. Therefore, the remaining option for the City is to replace the existing force main with another pipeline.

ALTERNATIVE NO. 2

This alternative proposes to repair the existing force main using an internal polyethylene slip liner pipe or Insituform liner. This alternative, however, cannot accommodate the current and future wastewater demands.

The insituform process involves internal strengthening of the existing pipeline. The inside diameter of the force main, notably, will be reduced and will affect the capacity of the pipe. According to design computations, the present and proposed design peak flows will exceed the capacity of the repaired pipeline.

Slip lining of the existing force main is not a viable option since it does not add structural support to the existing main. Grouting of annular space between the slip liner and existing concrete cylinder pipe may add some strength to the pipe system.

Based on a corrosion analysis, the existing force main is in a very corrosive environment. The existing force main is constructed of concrete cylinder pipe, which is noted for poor resistance to corrosion of internal concrete liner, internal steel cylinder and external prestressing strands.

ALTERNATIVE NO. 3

This alternative proposes construction of a 36-inch diameter reinforced concrete parallel force main sized for present peak flow of 30 MGD and repair of the existing force main by slip lining or Insituform, to provide additional force main capacity. With the repaired line, this alternative will meet design flow requirements for future peak flow demand.

ALTERNATIVE NO. 4

This alternative proposes a parallel 42-inch reinforced concrete low head pressure pipe with "T-Lock" liner to reduce internal corrosion. A bridge crossing and understream crossing were evaluated as possible means of traversing Moanalua and Kalihi Streams. According to calculations, the 42-inch force main can accommodate the existing and future peak flows based on an understream crossing. The bridge crossing option, however, requires additional potential head due to the elevation of a connecting manhole structure. Thus, should the bridge crossing option be selected for this alternative, it is assumed the Kamehameha Highway WWPS will be modified in the future to accommodate the future flow demand. The repair of the existing force main is not included in this alternative.

ALTERNATIVE NO. 5

This alternative is similar to alternative no. 4 except the force main will be constructed of polylined ductile iron to resist internal corrosion. Ductile iron pipe can be obtained with a ball joint fitting to provide maximum flexibility. The new force main should be protected from the corrosive environment by use of a cathodic protection system. Although this alternative will provide a stronger pipe, it cannot accommodate the needed head required for transmission over the proposed bridge crossing. Similar to Alternative No. 4, then, should the bridge crossing option be selected for this alternative, it is assumed the Kamehameha Highway WWPS will be modified in the future to accommodate the future flow demand. The repair of the existing force main is not included in this alternative.

ALTERNATIVE NOS. 6 - 8

Three other alternatives were evaluated. Two alternatives proposed the use of a 48-inch diameter pipe; one that would involve a reinforced concrete low head pressure pipe with "T-Lock" liner and the other a high density polyethylene pipe with special trench section construction. The special trench section consists of backfill with strict compaction requirements around the pipe. It would require stabilization fabric and dewatering during construction. Both alternatives would provide increased pipe capacity to accommodate future flow requirements, but their bridge crossing option would not accommodate the needed future design flow. The maximum flow through these pipes using the existing WWPS is 26,100 to 27,100 gpm. Further, these pipes cannot maintain the absolute minimum flow velocity of 1.75 fps during low pump flow operations. Therefore, these two alternatives, proposing the 48-inch diameter pipes, were not recommended.

The third alternative proposed the use of a 42-inch high density polyethylene pipe with special trench section construction. This alternative is similar in alignment and design as the 48-inch high density polyethylene pipe alternative. The 42-inch diameter pipe was studied for an understream crossing using a deeper excavation of 20 feet below the bottom of the stream bed. A deeper excavation was assumed so that stream scouring during severe storms would not have any impact on the flexible pipe. According to calculations, the allowable limits of ring deflection were exceeded for the understream crossing option. This alternative thus was not recommended due to high internal pressures and concerns for buckling of the pipeline in poor trench conditions. None of these three alternatives include the repair of the existing force main.

SUMMARY OF ALTERNATIVES COST ESTIMATES

The following construction cost estimates are for the alternatives which have been found preliminarily acceptable for implementation.

Alternative No. 1
No Action
Estimated Cost: $0

Alternative No. 2
Repair Existing Force Main
Estimated Cost: $2,924,000

Alternative No. 3
New 36-Inch Diameter Parallel Force Main with Bridge Crossing and Repair of Existing Force Main
Estimated Cost: $6,497,000

Alternative No. 4
New 42-Inch Diameter Reinforced Concrete Parallel Force Main and Bridge Crossing (No repair of Existing Force Main)
Estimated Cost: $4,546,000

Alternative No. 5
New 42-Inch Diameter Polylined Ductile Iron Parallel Force Main and Bridge Crossing (No repair of Existing Force Main)
Estimated Cost: $5,011,000

As indicated in the project description, the recommended alternative is Alternative No. 4 which consists of a new 42-inch diameter reinforced concrete parallel force main with bridge crossing.

CHAPTER VIII

SUMMARY OF MITIGATION MEASURES

The most noticeable impacts generated by the proposed project would be construction related, such as noise, dust, turbidity in the streams and removal of vegetation. Since these are construction-related impacts, they would be short-term and temporary in nature. Moreover, these impacts would be minor in scale and could be reduced or eliminated by mitigative measures. Once construction is completed, these adverse impacts would no longer occur.

In keeping with State Department of Health and City and County rules and regulations, adequate dust control measures will be employed during construction to minimize airborne particulates. *Adherence to approved erosion control plans and the use of mitigative methods such as water* sprinkling will reduce the potential of adverse air quality impacts. Specifically, during construction operations, the contractor will be required to comply with Paragraph 11-60-5, Fugitive Dust, Chapter 60, Air Pollution Control, Title 11, Administrative Rules, State of Hawaii, pertaining to dust control.

On-site mobile and non-mobile construction equipment will emit some air pollutants in the form of engine exhausts. With proper equipment maintenance by the contractor, the adverse impacts of these emissions can be minimized. Indirectly, slow-moving construction vehicles on public roadways adjacent to the project area can obstruct the normal free flow of traffic to such an extent that overall vehicular emissions are increased. This impact on the affected roadways can be mitigated by moving heavy construction equipment during periods of low traffic volume.

Tradewinds will disperse airborne pollutants and particulate matter in a southwesterly direction across Keehi Lagoon or toward Honolulu International Airport and out over the ocean. This dispersal effect would minimize impacts to populated areas of Kalihi and downtown Honolulu.

Construction activities at the project site will create a temporary increase in noise levels. Sources for this noise include heavy construction vehicles and power equipment, including pile drivers and backhoes, operating on the site. Mitigation measures will be employed and include the use of mufflers on construction equipment and vehicles and limiting construction hours to daylight hours. Although the project area is surrounded by industrial and recreational uses and will not impact residential areas, the contractor will be required to comply with the provisions of Title 11, Chapter 43, "Community Noise Control of Oahu", of the State Department of Health Administrative Rules. A Community Noise Permit shall be obtained by the contractor from the Department of Health for activities which generate noise in excess of 60 dbA. No long-term noise impacts are expected once the project construction is completed.

Construction of the force main bridge could utilize equipment that would create little turbidity in the water. Instead of working directly in the water and on the stream bed, the contractor could use equipment that is land-based or mounted on a barge to install the bridge pilings so stream turbidity would be reduced. Additionally, more powerful equipment could be employed to install the piles in order to complete the work in a shorter period of time and thus impacting

less the quality of the water. Finally, the construction contractor could replant the areas which were trenched and backfilled so nature could more rapidly resume its revegetation process.

Similar to the bridge crossing alternative, construction of the understream crossing could use land-based equipment or barge-mounted equipment to install the force main. It could be conducted in two parts, i.e., halfway across the stream at a time, to allow the flow of the stream to continue. During the dewatering process, silt would tend to be drawn back into the construction area as water is pumped out of the trench and disposed elsewhere in the stream. The natural tidal action in the stream will disperse, dilute and remove the silt from the project area, however, silt basins could also be constructed to assist in the desilting process. The project area and nearshore Keehi Lagoon waters have similar stream beds and ocean floor conditions and thus sedimentation would not result in a negative impact on the local environs.

Other mitigative measures may include limiting the time of trenching to periods when the water is not already turbid. This would then avoid any compounding effects in the water. Usually, natural turbidity is caused by heavy rainstorms which bring silt to the project area from upstream areas. As with the bridge crossing alternative, the contractor could replant the onshore construction area to assist nature in its revegetation process.

Should construction vehicles require special traffic devices on public roadways to attain access to the site, the contractor will comply with the safety precautions and measures in the "Rules and Regulations Governing the Use of Traffic Control Devices at Work Sites On or Adjacent to Public Streets and Public Highways", adopted by the State Highway Safety Coordinator, and the Manual on Uniform Traffic Control Devices for Streets and Highways, Part IV Traffic Controls for Highway Construction and Maintenance Operation", U.S. Federal Highway Administration, dated 1981.

CHAPTER IX

DETERMINATION

An evaluation of the above alternatives has resulted in the recommendation of alternative no. 4 for the project as the most feasible. Also, this assessment presently shows that the project will have no significant impacts on the environment and an Environmental Impact Statement is not required. Therefore, in accordance with the provisions of Chapter 343, Hawaii Revised Statutes, a Negative Declaration is determined to be in order.

CHAPTER X

FINDINGS AND REASONS SUPPORTING THE DETERMINATION

The following findings and reasons support the determination that there will be no significant effect on the environment as a result of this project:

1. There will be no direct social or economic impacts resulting from the proposed action.

2. The impacts associated with construction activities are short-term and temporary. All short-term impacts will be minimized in accordance with applicable City and County of Honolulu, State of Hawaii and Federal rules and regulations.

3. There will be no long-term adverse impact on water quality in Moanalua Stream, Kalihi Stream and Keehi Lagoon.

4. No rare or endangered wildlife or flora will be affected by the proposed action.

5. No archaeological, cultural or historical sites exist on the property. Should any significant archaeological feature be uncovered by construction work on the project site, appropriate measures for evaluating and determining courses of action will be required in the construction contract provisions.

6. There will be no significant adverse impact on the visual environment.

7. The proposed wastewater improvement will support planned development designated on the Development Plan Land Use Map and is consistent with the Development Plan Public Facilities Map.

8. The primary benefit of this proposed action is to repair or replace an aging force main which has also experienced breakages and to assure a reliable wastewater collection system that serves the Honolulu International Airport, Aliamanu Housing, Salt Lake, Moanalua, Moanalua Gardens and Keehi Lagoon Park areas.

CHAPTER XI

COMMENTS AND RESPONSES FROM AGENCIES

A draft environmental assessment for this project was transmitted to the following agencies for comment. The agencies that responded are indicated below. Comments from these agencies have been incorporated into this environmental assessment.

Federal Agencies	Agencies Responded	Agency Letter Attached in this Chapter	No Response
U.S. Army Corps of Engineers	x	x	
National Fish and Wildlife Service	x	x	
Water Resources Division, Department of the Interior	x	x	
National Marine Fisheries Service			x
U.S. Coast Guard	x	x	
State Agencies			
Department of Land and Natural Resources	x	x	
Coastal Zone Management Program			x
Department of Health	x	x	
Department of Transportation	x	x	
Department of Business and Economic Development	x	x	
Office of Environmental Quality Control	x	x	
County Agencies			
Department of Land Utilization	x	x	
Department of Parks and Recreation	x	x	
Department of General Planning	x	x	
Department of Transportation Services	x	x	
Fire Department	x	x	
Police Department	x	x	
Board of Water Supply	x	x	
Public Utilities			
Hawaiian Electric Co. Inc.	x	x	
Hawaiian Telephone Co.	x	x	
Gasco Inc.	x	x	
Oceanic Cablevision			x
Pacific Resources Inc.			x

Others	Agencies Responded	Agency Letter Attached in this Chapter	No Response
Disabled American Veterans Department of Hawaii			x
Neighborhood Board No.15			x

90.4475

U.S.Department of Transportation
United States Coast Guard

Commander (osa)
Fourteenth Coast Guard District

RECEIVED
DEPT OF PUBLIC WORKS
SEP 18 4 47 PM '90
TO

Prince Kalaniamole
Federal Building
300 Ala Moana Blvd.
Honolulu, Hawaii 96850-4982
Phone: (808) 541-2315

16560/SF
Serial 32461
17 SEP 1990

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

October 17, 1990

WEP 90-256

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

In response to your letter WEP 90-180K of 23 July 1990, your Draft Environmental Assessment for Kamehameha Highway Force Main Replacement (Keehi Lagoon) has been reviewed. From the Coast Guard perspective, we do have a concern with the proposed bridge.

Bridges which cross navigable waters generally require a U. S. Coast Guard Bridge Permit which may in turn require a more thorough environmental document. However, based on the Draft Environmental Assessment, the proposed bridge may meet the criteria of 33 CFR 115.70 for advanced approval and not require a Coast Guard Bridge Permit. We will need additional information from you to make this determination. Please complete the enclosed BRIDGE PROJECT QUESTIONNAIRE and return it to us. Upon receipt of your completed questionnaire, we should be able to expeditiously determine if a Coast Guard Bridge Permit will or will not be required for your bridge project.

Should you have any further questions, please contact LT Michael Swegles of our Aids to Navigation and Waterways Management Branch at 541-2319.

Sincerely,

H. W. Motekaitis

H. W. MOTEKAITIS
Commander, U. S. Coast Guard
Chief, Aids to Navigation Branch
Fourteenth Coast Guard District
By direction of the District Commander

Encl: (1) Bridge Project Questionnaire

Commander H. W. Motekaitis
U.S. Coast Guard
Chief, Aids to Navigation Branch
Fourteenth Coast Guard District
300 Ala Moana Boulevard
Honolulu, Hawaii 96850-4982

Dear Commander Motekaitis:

Subject: Environmental Assessment for
Kamehameha Highway Force Main Replacement

Thank you for your letter of September 17, 1990 commenting on our Environmental Assessment for the above-described project. We are submitting under separate cover a completed Bridge Project Questionnaire as requested.

We trust the completed questionnaire will allow you to complete your review of our project.

Very truly yours,

C. Michael Street

SAM CALLEJO
Director and Chief Engineer

CORRECTION

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

U.S.Department of Transportation
United States Coast Guard

Commander (oan)
Fourteenth Coast Guard District

Prince Kalaniana'ole Federal Building
300 Ala Moana Blvd.
Honolulu, Hawaii 96850-4982
Phone: (808) 541-2315

90.4475

RECEIVED
DEPT. OF PUBLIC WORKS
SEP 18 4 47 PM '90
TO

16560/SF
Serial 32461
17 SEP 1990

FRANK F. FASI
MAYOR

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

October 17, 1990

WEP 90-256

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

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Sincerely,

H. W. Motekaitis

H. W. MOTEKAITIS
Commander, U. S. Coast Guard
Chief, Aids to Navigation Branch
Fourteenth Coast Guard District
By direction of the District Commander

Encl: (1) Bridge Project Questionnaire

Commander H. W. Motekaitis
U.S. Coast Guard
Chief, Aids to Navigation Branch
Fourteenth Coast Guard District
300 Ala Moana Boulevard
Honolulu, Hawaii 96850-4982

Dear Commander Motekaitis:

Subject: Environmental Assessment for
Kamehameha Highway Force Main Replacement

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We trust the completed questionnaire will allow you to complete your review of our project.

Very truly yours,

C. Michael Street for

SAM CALLEJO
Director and Chief Engineer

JOHN WAIHEE
GOVERNOR OF HAWAII

RECEIVED
DEPT OF PUBLIC WORKS
SEP 20 1 14 PM '90
TO

90-471
Wlm

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

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

FRANK F. FASI
MAYOR

In reply, please refer to:
EPHSD

September 20, 1990

2-163

MEMORANDUM

To: Sam Callejo, Director & Chief Engineer
Department of Public Works
City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Draft Environmental Assessment for
Kamehameha Highway Force Main Replacement
TMK: First Division 1-1-03: 3, 4, 7, 28 & 138
TMK: First Division 1-2-21: 35 & 36

Thank you for allowing us to review and comment on the subject project. It appears that there will be minimal wastewater disposal problems during construction of the force main replacement. During construction, wastewater will be adequately handled by its present means, the Sand Island Wastewater Treatment Plant. No other means of sewage disposal should be allowed.

Adequate provisions must be made and adhered to during construction to prevent wastewater from spilling onto the ground or discharged into state waters.

BRUCE S. ANDERSON, Ph.D.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

October 17, 1990

WEP 90-254

Bruce S. Anderson, Ph.D.
Deputy Director for Environmental Health
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Subject: Draft Environmental Assessment for
Kamehameha Highway Force Main Replacement

Thank you for your letter of September 20, 1990 commenting on our Environmental Assessment for the above-described project.

Provisions will be made to minimize the possibility of sewage spillage and discharge into waterways during construction.

Thank you for your assistance on this project.

Very truly yours,

SAM CALLEJO
Director and Chief Engineer

JOHN WAIHEE
GOVERNOR

RECEIVED
OF PUBLIC WORKS
SEP 20 3 20 PM '90
TO

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

SEP 2 1 1990

98-4786
EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

HWY-PS
2.3483

WWM

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honoluolu, Hawaii 96813

Dear Mr. Callejo:

Draft Environmental Assessment (EA) for
Kamehameha Highway Force Main Replacement

Thank you for your letter of July 23, 1990, transmitting the subject EA for our review and comments.

We have the following comments:

1. The new force main from Station 15+00 to 25+20 should be located as close as possible to Nimitz Highway. This will minimize impacts to future developments on the peninsula between Kalihi and Moanalua Streams. Project developments in this area range from passive park/canal complex to industrial/commercial complex.

2. The estimated construction date of August 1991 for the force main will not conflict with our development plan schedule which will commence after 1991.

3. Proposals for work done within our highway rights-of-way require plan submittal and approval.

4. The contractor will be required to minimize adverse effects on traffic flow through the project area.

5. We would like to have two (2) copies of the final document.

Very truly yours,

Edward Y. Hirata
Director of Transportation

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

October 17, 1990

WEP 90-255

Mr. Edward Y. Hirata, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Hirata:

Subject: Draft Environmental Assessment for
Kamehameha Highway Force Main Replacement

Thank you for your letter of September 20, 1990 commenting on the subject environmental assessment. This letter provides our response to your comments.

The new force main from Station 15+00 to 25+20 will be located as close as possible to Nimitz Highway without interfering with the existing force main. Although the existing force main will be closed off once the new line is installed, it may still be kept in reserve as an emergency line.

The new line also has been coordinated with the State's planned improvements provided in the Keehi Lagoon Recreation Plan and Keehi Lagoon Canoe Complex Master Plan. The plans currently call for recreational use on the makai section of the peninsula away from the highway and possibly industrial use in the mauka area. No detailed plans have been developed yet for the industrial area. The proposed force main replacement will be located adjacent to the existing force main and as close as possible to Nimitz Highway.

Construction vehicles will be present on the site, however their impact on traffic will be minimal. The contractor will be coordinating his mobilization efforts, with the Highways Division of the Department of Transportation to minimize any adverse impact on the state rights-of-way.

We will send you two (2) copies of the final document as requested.

We trust this adequately addresses your concerns. Thank you for your assistance on this project.

Very truly yours,

SAM CALLEJO
Director and Chief Engineer

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

DEPT OF PUBLIC WORKS
AUG 3 2 11 PM '90
TO

Dir Deputy
ENV Attn
WWM 90-4031

FRANK F. FASI
MAYOR

BENJAMIN B. LEE
CHIEF PLANNING OFFICER

ROLANDO LIBBY, JR.
DEPUTY CHIEF PLANNING OFFICER

MH 7/90-2110

August 2, 1990

MEMORANDUM

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR
KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT

Thank you for the opportunity to review and comment on the subject Draft EA. We have the following comments for your consideration.

1. The proposed project is consistent with the City and County of Honolulu's General Plan Objective "To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal."

2. The proposed project is also consistent with the Development Plan Public Facilities Map for the Primary Urban Center which shows a symbol for a publicly funded, 42-inch force main along the makai side of Nimitz Highway in Mapunapuna.

3. Section 14. CIRCULATION, page 25, states that "There will not be a need to improve existing road networks or construct new rights-of-way to accommodate the pipeline replacement." In light of the recent endorsement for a light-rail transit line, we recommend further consultation with the Department of Transportation Services. The EA should discuss the physical location and design of the proposed force main with respect to the proposed light-rail transit line in order to minimize the potential planning, design and engineering conflicts between the two systems.

We hope these comments are helpful in revising the EA. If you have any questions regarding our comments, please contact Matthew Higashida at 527-6056.

BENJAMIN B. LEE
Chief Planning Officer

BBL:js

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

October 17, 1990

WEP 90-257

MEMORANDUM

TO: MR. BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR
KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT

Thank you for your review and comments on the subject Draft EA. The following is a reply to your comments.

Construction for the proposed force main replacement project is scheduled to commence in August 1991, after all government permits and approvals are obtained. In comparison, the proposed light-rail transit line has not gone through detailed engineering and construction design. These actions will commence at the time the force main is being constructed.

The preliminary concept plan for the light-rail transit system shows the alignment to be within the existing Nimitz Highway right-of-way according to the Honolulu Rapid Transit Project Alternative Analysis, Draft Environmental Impact Statement prepared by Parsons Brinckerhoff. The alignment for the proposed force main replacement will be within easements on adjacent properties. If both alignments are kept as planned, conflict between the two systems should not occur.

A copy of the Draft EA has been sent to the Department of Transportation Services for their review.

We trust this reply satisfies your comments. If their are any questions regarding our response, please contact Ed Sakamoto at 523-4325.

SAM CALLEJO
Director and Chief Engineer

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

ENV 2-1
JA/G

WWM

90-4943

William A. Bonnet
Manager
Environmental Department

October 2, 1990

RECEIVED
DEPT OF PUBLIC WORKS
OCT 3 3 32 PM '90

Mr. Sam Callejo
Director and Chief Engineer
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Draft Environmental Assessment for Kamehameha Highway Force Main Replacement (Keehi Lagoon)

We have reviewed the subject EIS, and have the following comments on the proposed project:

(1) There are existing HECO underground facilities presently serving the War Memorial that may have to be relocated to make way for the force main installation.

(2) Reference is made to page 24, paragraph "Electrical Power and Communications." The statement should read, "The Hawaiian Electric Company provides power to the project areas via 12kV distribution lines from Keehi, Kapalama and Sand Island Substations."

HECO shall reserve further comment pertaining to the protection of existing power lines within the project area until construction plans are finalized.

Sincerely,

An HEI Company

DRAFT

November _, 1990

WEP 90-

Mr. William A. Bonnet
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Mr. Bonnet:

Subject: Draft Environmental Assessment for
Kamehameha Highway Force Main Replacement

Thank you for your letter of October 2, 1990 commenting on our Environmental Assessment for the above-described project.

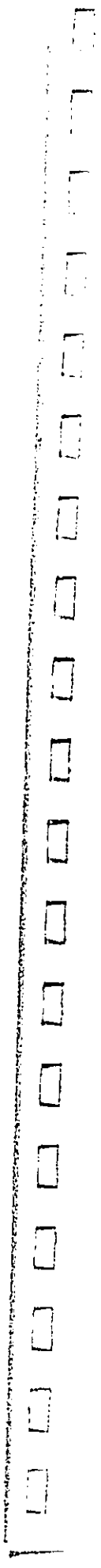
In the final design of the force main installation, provisions will be made to coordinate the construction of the new force main with existing HELCO underground facilities.

Revision has been made per your comment regarding the statement in the paragraph under the heading "Electrical Power and Communications."

Thank you for your assistance on this project.

Very truly yours,

SAM CALLEJO
Director and Chief Engineer



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

90-420B GDIR WWM

AUG 14 1990

REPLY TO ATTENTION OF:
Operations Division

RECEIVED
DEPT. OF PUBLIC WORKS
Aug 15 2 05 PM '90
TO

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

In response to your July 23, 1990 request, we have reviewed the Draft Environmental Assessment (EA) for Kamehameha Highway Force Main Replacement (Keehi Lagoon), Honolulu, Hawaii. As stated on page 12 of the EA, a Department of the Army (DA) permit is required for the sewer force main crossings of Moanalua and Kalihi Streams. A copy of General Permit GP 77-1E, which authorizes construction of utility lines in or above navigable waters in the State of Hawaii, was provided to the project's civil engineer consultants in October 1989. After a decision is made on the bridge or understream crossing alternatives, the terms and conditions of the GP should be reviewed and the procedures for authorization followed.

In the interest of minimizing disturbance to the bottom and impacts on water quality, we concur that the use of land-based or barge-mounted equipment for installation of either the bridge pilings or the understream force main would be preferable. The EA lists a number of practical mitigative measures which should be incorporated into the construction plans to meet the general and special conditions listed in the GP.

File No. PO90-002 has been temporarily assigned to this project. Please refer to this number in all future correspondence.

We appreciate the opportunity to review the EA. If you have any questions on DA permit requirements, please contact the Operations Division at 438-9258.

Sincerely,

Stanley J. Arakaki

Stanley A. Arakaki
Chief, Operations Division

904445

United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS OFFICE
P.O. BOX 50167
HONOLULU, HAWAII 96850

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SEP 11 10 40 AM '90
TO

AUG 31 1990

RECEIVED
SEP 5 AM 9 45
CITY AND COUNTY OF HONOLULU
MAYOR'S OFFICE

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Re: Kamehameha Highway Force Main Replacement

Due to current staff limitations, the Pacific Islands Office, Fish and Wildlife Enhancement cannot devote the time to adequately evaluate potential impacts to important fish and wildlife resources from the proposed project. Please understand that this notification does not represent the Fish and Wildlife Service's approval of the proposed activity. We may review future actions related to this project should workload constraints be alleviated, or if significant adverse impacts to trustee fish and wildlife resources are identified.

Sincerely yours,

Ernest Kosaka
Field Office Supervisor
Fish and Wildlife Enhancement

United States Department of the Interior

GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

TAKE PRIDE IN AMERICA

90-43036

August 17, 1990

RECEIVED
DEPT OF PUBLIC WORKS
AUG 22 2 02 PM '90
TO

Sam Callejo
Director and Chief Engineer
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Draft Environmental Assessment for Kamehameha Highway Force Main Replacement

The Hawaii District office of the U.S. Geological Survey, WRD has revieved the subject Draft Environmental Assessment and we have no comment to make at this time.

The principle reviewer was Iwao Matsuoka, if you have any questions, please feel free to contact him at 541-2655.

Sincerely,

for William Meyer
District Chief

JOHN WAIHEE
GOVERNOR OF HAWAII

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

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WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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MANABU TAGOMORI
RUSSELL N. FURUMOTO

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

REF:OCEA:JN

File No.: 91-57
Doc. No.: 9100E

SEP 12 1990

WWM

The Honorable Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 So. King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Draft EA for the Kamehameha Force main Replacement

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials you submitted and have the following comments.

We concur with statements made in the Draft Environmental Assessment that the project will have "no effect" on historic sites because all construction activites will take place in artificial land fill.

If you have any Archaeological/Historic Preservation question, please contact Carol Kawachi of the Historic Preservation Office, at 548-6408.

Thank you again for your cooperation in this matter. Please feel free to call me, or Jay Lembeck at our Office of Conservation and Environmental Affairs (at 548-7837), if you have any general questions.

Very truly yours,

William W. Paty

STATE OF HAWAII
DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT

KAMAMALU BUILDING, 250 SOUTH KING ST, HONOLULU, HAWAII
MAILING ADDRESS: P.O. BOX 2359, HONOLULU, HAWAII 96804 TELEX: 7430250 HIDPED FAX: (808) 548-8556

JOHN WAIHEE
GOVERNOR
ROGER A. ULVELING
DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
LESLIE S. MATSUBARA
DEPUTY DIRECTOR

July 30, 1990

ENV.: 90-3967
WWM
IN

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Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

RE: Draft Environmental Assessment for Kamehameha Highway Force Main Replacement (WEP 90-180R)

With reference to the above named project, the Department of Business, Economic Development & Tourism has no comments to offer at this time.

Thank you for the opportunity to comment.

Sincerely,

for Roger A. Ulveling

Effective July 1, 1990 the department name has been changed to Department of Business, Economic Development & Tourism

WWM

JOHN WAIHEE
GOVERNOR

90-4319

DIRECTOR

TELEPHONE NO.
548-6915

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
465 SOUTH KING STREET, ROOM 104
HONOLULU, HAWAII 96813

August 21, 1990

RECEIVED
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Aug 23 2 34 PM '90

The Honorable San Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Draft Environmental Assessment for Kamehameha Highway Force Main Replacement

Thank you for the opportunity to comment on the above referenced document. We concur with your decision that the project does not have any significant impacts and a Negative Declaration may be filed.

Sincerely,

Bruce S. Anderson, Ph.D.
Acting Interim Director

50

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DEPT. OF WASTEWATER MANAGEMENT

FRANK F. FASI
MAYOR

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • PHONE 523-4432

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TO

90-4788
WWM

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

LU 7/90 5064

September 20, 1990

Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Special Management Area Review

Tax Map Key : 1-1-03: por. 3, 4, 7, 28, 138;
1-2-21: por. 35, 36
Type of Project : Kamehameha Hwy Force Main Replacement
(Keehi Lagoon) (WEP 90-180A)

The proposed project on the referenced tax map key has been reviewed. We find that it:

[ ] Is not within the Special Management Area.

[X] Is within the Special Management Area, but is not defined as "development" and is therefore, exempt (Exemption No. 4).

Should you have any questions, please contact the Environmental Affairs Branch at 523-4077.

Very truly yours,

DONALD A. CLEGG
Director of Land Utilization

DAC:lg
1194N

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

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TO

WWM
90-4067

FRANK F. FASI
MAYOR

WALTER M. OZAWA
DIRECTOR

HIROAKI MORITA
DEPUTY DIRECTOR

August 6, 1990

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: WALTER M. OZAWA, DIRECTOR

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT (KEEHI LAGOON) (REF. NO. WEP90-180B)

We have reviewed the Draft Environmental Assessment for Kamehameha Highway Force Main Replacement and have no objections. We would appreciate the opportunity to review the project plans for the area adjacent to the Keehi Lagoon Beach Park tennis courts.

Should you have any questions, please contact Wayne Lee of the Advance Planning Branch at extension 4246.

WALTER M. OZAWA, Director

WMO:sl

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

ALFRED J. THIEDE
DIRECTOR

JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

90-4176 WWH

WEP 90-180D
TE-4217
PL90.1.246

August 13, 1990

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MEMORANDUM

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: ALFRED J. THIEDE, DIRECTOR

SUBJECT: KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT
DRAFT ENVIRONMENTAL ASSESSMENT
TMK: 1-1-03: PORTIONS 3, 4, 7, 28, AND 138
1-2-21: PORTIONS 35 AND 36

This is in response to your memorandum of July 23, 1990 requesting our review and comments on the subject project.

We have no comments or recommendations to offer at this time.

Should you have any questions, please contact Wayne Nakamoto of my staff at Local 4190.

ALFRED J. THIEDE

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
1455 SOUTH BERETANIA STREET, ROOM 303
HONOLULU, HAWAII 96814

LIONEL E. CAMARA
FIRE CHIEF

DONALD S.M. CHANG
DEPUTY FIRE CHIEF

90-4147 WWH

August 10, 1990

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: DONALD S. M. CHANG, ACTING FIRE CHIEF

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR
KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT

We have reviewed the subject material provided and have no additional comments.

DONALD S. M. CHANG
Acting Fire Chief

MZ:ny

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
1455 SOUTH BERETANIA STREET
RECEIVED
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AUG 5 11 49 AM '90

FRANK F. FASI
MAYOR

Michael S. Nakamura
CHIEF

TO _____

WWM
90-4055

OUR REFERENCE MF-LK

August 3, 1990

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: MICHAEL S. NAKAMURA, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR
KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT

We have reviewed the attached Draft Environmental Assessment and have determined that the proposed sewer line construction will have no effect upon our department.

As a separate issue we recommend that, prior to the commencement of construction, the contractor work with the police department to mitigate traffic problems.

Thank you for the opportunity to comment.

MICHAEL S. NAKAMURA
Chief of Police

By
JOSEPH AVEIRO
Assistant Chief of Police
Support Services Bureau

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843

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FRANK F. FASI, Mayor
DONNA B. GOTH, Chairman
JOHN K. TSUI
SISTER M. DAVILYN AH CHICK, O.S.F. V-Chm
SAM CALLEJO
EDWARD Y. HIRATA
WALTER O. WATSON, JR.
MAURICE H. YAMASATO

KAZU HAYASHIDA
Manager and Chief Engineer

August 3, 1990

WWM
90-4054

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: YOUR MEMORANDUM OF JULY 23, 1990 REGARDING THE DRAFT ENVIRONMENTAL ASSESSMENT FOR KAMEHAMEHA HIGHWAY FORCE MAIN REPLACEMENT WEP 90-180G

We have no objections to the proposed project. We request that the construction plans be submitted to us for our review and approval to assure the protection of our mains in the area.

If you have any questions, please contact Bert Kuioka at 527-5235.

Pure Water . . . man's greatest need – use it wisely

REFERENCES

A. Design Report For The Kamehameha Highway Force Main Replacement, SSFM Engineers, Inc., April 6, 1990

B. Soils and Foundation Investigation, Proposed Force Main Inspection and Repair/Replacement, Project No. I-89, 1989, addendum letters dated Jan. 11, 1990, Feb. 6, 1990, and Mar. 26, 1990, prepared by Dames & Moore.

C. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, Soil Conservation Service, U.S. Dept. of Agriculture, August 1972.

D. A Statewide Ocean Recreation Management Plan for the State of Hawaii, prepared by State Department of Transportation, Harbors Division, prepared by Aotani and Associates, Inc., Jan. 1988.

E. State Recreation Functional Plan - Technical Reference Document and State Comprehensive Outdoor Recreation Plan (SCORP), prepared by Department of Land and Natural Resources, State of Hawaii, Dec. 1985.

F. Flood Insurance Rate Map (FIRM), Community-Panel No. 150001 0115B, prepared by U.S. Army Corps of Engineers, map revised Sept. 4, 1987.

G. Mokauea Island, A Historical Study, by Historic Preservation Office, Department of Land and Natural Resources, State of Hawaii, Dec. 1976.

H. Coastal View Study, prepared for Dept. of Land Utilization, City and County of Honolulu, prepared by Michael S. Chu and Robert B. Jones, 1987.

I. Honolulu Waterfront Master Plan, Pre-Final Report, prepared for The Office of State Planning, State of Hawaii, prepared by Helber, Hastert & Kimura Planners and R.M. Towill Corporation, Jan. 1989.